Nuclear Medicine

- Facilities available: The department of Nuclear Medicine in NCI Jhajjar is currently functional with one digital-ready PET-CT scanner (with 128-slice CT) and one dual headed SPECT-CT gamma camera. PET-CT scans with ^{18}F-FDG are routinely performed playing crucial role in the management of cancer patients. Apart from FDG, ^{68}Ga-PSMA and ^{68}Ga-DOTANOC scans are also available in the department to guide individualistic treatment for specific cancers like prostate carcinoma and neuroendocrine neoplasms. Further, the entire gamut of planar and SPECT-CT scans with ^{99m}Tc-based tracers are performed including renal scan, GFR estimation, HIDA, bone scan, lung perfusion study, thyroid & parathyroid scans and MUGA etc. The overall aim remains to provide the state-of-the-art radioisotope based molecular imaging to patients coming from the most underprivileged sections of the society, at the lowest cost possible. Apart from the diagnostic services, a high-dose radionuclide therapy ward is near its completion and would soon be functional with 21 isolation beds, thus becoming the largest such facility in India.

- *Present Faculty*

1. **Dr Abhinav Singhal (Associate Professor):** Dr Singhal is a Doctor of Medicine (MD) in Nuclear Medicine from the prestigious AIIMS New Delhi. He completed his 3-year senior residency training in the same institute. He is also conferred with coveted fellowship of the Asian Nuclear Medicine Board (FANMB). After short stints in corporate and other government sector hospitals, he joined NCI as a regular faculty (Assistant Professor) in 2019. The facility of Nuclear Medicine in NCI was established under his direct supervision with clinical services including PET-CT and SPECT-CT imaging starting from March 2022. He has been promoted to the post of Associate Professor effective from July 2023.

- **What is your expertise:** Hybrid molecular imaging including PET-CT, SPECT-CT and planar gamma scintigraphy. Applications of 18F-FDG and other novel radiotracers in onco-imaging. Nuclear Medicine based management of thyroid cancers. Theranostics.

- **Profile photo of faculty:**

- **Bio-sketch**
    - M.B.B.S. (2008)
    - M.D. Nuclear Medicine (2013)

- Year of joining: 2019
- Area of work: Nuclear Medicine diagnostic imaging and radionuclide therapy, Theranostics.
- **Publications:**

1. Sulochana Sarswat, Abhinav Singhal, Aparna Sharma, Rajni Yadav. Primary Small Cell Carcinoma of the Kidney: A Case Study with Emphasis on Fluorodeoxyglucose Positron Emission Tomography–Computed Tomography Findings. Indian J Nucl Med. Jan–Feb 2024, 39(1): p 55-58.
2. Saifi T, **Singhal A**, Gupta P, Chandra KB, Pandey AK, Patel C, Kumar R. Global and regional gastric emptying parameters: establishment of reference values and comparison of different camera view methods. Indian J Nucl Med. 2022, 37(1):12-22.
3. Chandra KB, **Singhal A.** Predictors of Macrovascular Invasion and Extrahepatic Metastasis in Treatment Naive Hepatocellular Carcinoma: When Is [(18)F] FDG PET/CT Relevant? Nucl Med Mol Imaging. 2021;55(6):293-301.
4. Khangembam BC, **Singhal A**, Kumar R, Bal C. Tc-99m Glucoheptonate Single Photon Emission Computed Tomography-Computed Tomography for Detection of Recurrent Glioma: A Prospective Comparison with N-13 Ammonia Positron Emission Tomography-Computed Tomography. Indian J Nucl Med. 2019;34(2):107-17.
5. **Singhal A**, Khangembam BC, Seth S, Patel C. Equilibrium Radionuclide Angiography in Evaluation of Left Ventricular Mechanical Dyssynchrony in Patients with Dilated Cardiomyopathy: Comparison with Electrocardiographic Parameters and Speckle-Tracking Echocardiography. Indian J Nucl Med. 2019;34(2):88-95.
6. Tripathy S, Passah A, **Singhal A**, Prashanth A, Kumar R. Malignant Peripheral Nerve Sheath Tumor with Bilateral Adrenal Metastases: Role of 18F-FDG PET/CT in Response Assessment to Tyrosine Kinase Inhibitor and Liposomal Doxorubicin. Clin Nucl Med. 2019;44(6):494-5.
7. Parida GK, Tripathy S, Datta Gupta S, **Singhal A**, Kumar R, Bal C, et.al. Adenocarcinoma prostate with neuroendocrine differentiation: potential utility of ^{18}F-FDG PET-CT and 68GA-DOTANOC PET-CT over 68GA-PSMA PET-CT. Clin Nucl Med. 2018 Apr; 43(4): 248-249.
8. Kumar M, Arora G, Damle NA, Kumar P, Tripathi M, **Singhal A,** et.al. Comparison between Two-sample Method with ^{99m}Tc-diethylenetriaminepentaacetic acid, Gates' Method and Estimated Glomerular Filtration Rate Values by Formula Based Methods in Healthy Kidney Donor Population. Indian J Nucl Med. 2017 Jul-Sep; 32(3): 188-193.

9. **Singhal A**, Peepre K, Damle NA, Mukherjee A, Bal C, Tripathi M. Urinoma in a young child 6 months following dual cadaveric renal transplantation detected on technetium-99m ethylene dicysteine renal dynamic scan confirmed on SPECT/CT. Indian J Nucl Med. 2014 Apr; 29(2):128-30.
10. **Singhal A,** Singla S, Sharma P, Dhull VS, Khangembam BC, Kumar R. ^{68}Ga DOTANOC PET/CT for Accurate Delineation of Disease Extent in a Case of Sinonasal Small Cell Neuroendocrine Carcinoma. Clin Nucl Med. 2013 Oct; 38(10): e395-e396.
11. **Singhal A,** Sharma P, Karunanithi S, Khangembam BC, Singla S, Bal C, et.al. 18F-FDG PET-CT for detection of recurrent spinal ependymoma. Nucl Med and Mol Imag: March 2013, Volume 47, Issue 1, pp 63-64.
12. Sharma P, **Singhal A,** Kumar A, Bal C, Malhotra A, Kumar R. Evaluation of thymic tumors with 18F-FDG PET-CT: a pictorial review. Acta Radiol. 2013 Feb 1; 54(1): 14-21.

- **ORCID link:** https://orcid.org/0000-0003-4484-8372

- **Important award/achievement:** Awarded the certificate of merit for obtaining the first position with highest score in the Good Clinical Practice (GCP) training course organized by Translational Health Science and Technology Institute (THSTI), Department of Biotechnology (DBT) in Feb-Mar 2022.

- Latest research (As PI) and (both funded and non-funded with Ethics and CTRI no

No	Project title	Funding agency	Project CTRI no	Status (completed/Ongoing)
1.	Evaluation of 68Ga-NOTA-Ubiquicidin PET-CT for diagnostic differentiation of infective and malignant lesions in oncology patients	AIIMS New Delhi	Not applied for	Ongoing

- Thesis ongoing as Guide by the faculty of NCI

No	Thesis topic	Year	Thesis candidate
1.	Feasibility of blood glucose optimization using intravenous insulin in patients presenting with unexpected hyperglycemia before 18-FDG PET-CT	2023	Dr Akhil Venugopal