



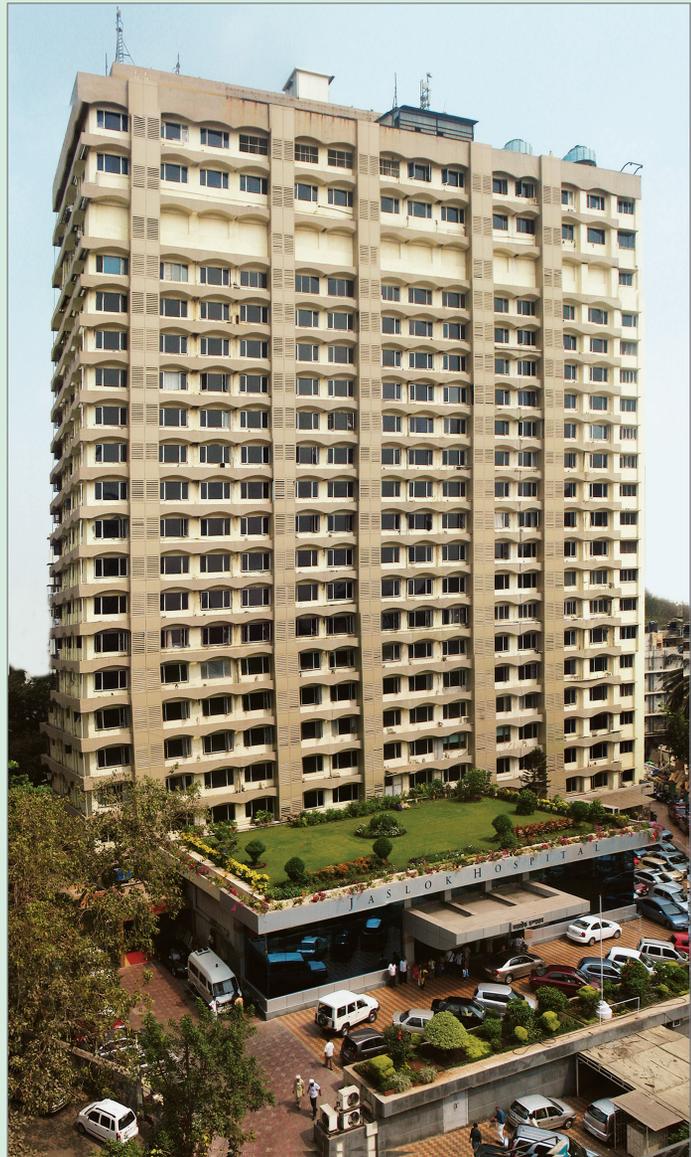
# Discovery IQ 5-Ring Low Dose Capabilities, Short Scan Times Deliver Economic Value for Jaslok Hospital

When Jaslok Hospital & Research Centre opened its doors in 1973, its mission was simple: provide the best possible medical care using state-of-the-art technology to every single patient, irrespective of their social background or financial ability. Today, the hospital is an internationally recognized, multi-specialty 365-bed hospital with 20% of the beds offered free of charge to the poor.

The Department of Nuclear Medicine at Jaslok Hospital has achieved many “firsts” in India, including: nuclear cardiology multiple-gated acquisition (MUGA) scans; brain perfusion imaging; dopamine transporter (DaT) imaging for Parkinson’s; and the first 5-ring 16-slice PET/CT—Discovery™ IQ. While most PET/CT studies are performed with  $^{18}\text{F}$ -FDG, 22% of the 270 studies performed each month are with other tracers, including Gallium-68 ( $^{68}\text{Ga}$ ) DOTATATE,  $^{68}\text{Ga}$ -PSMA,<sup>1</sup> and  $^{18}\text{F}$  fluorothymidine.<sup>1</sup>

So when Jaslok Hospital heard about the Discovery IQ 5-Ring PET/CT system with its high sensitivity, the nuclear medicine department was intrigued. While the department’s leaders found the image quality was impressive, they were also very interested in the potential to use lower volumes of radioisotope due to the system’s high sensitivity and Q.Clear reconstruction.

The next step for the hospital was to conduct a site visit at one of the first sites that had a Discovery IQ 5-Ring installed.



Jaslok Hospital and Research Centre, Mumbai, India

“ First, with Discovery IQ 5-Ring the average  $^{18}\text{F}$ -FDG dose per patient has dropped in half, from 10 mCi to 4.5-5 mCi. ”

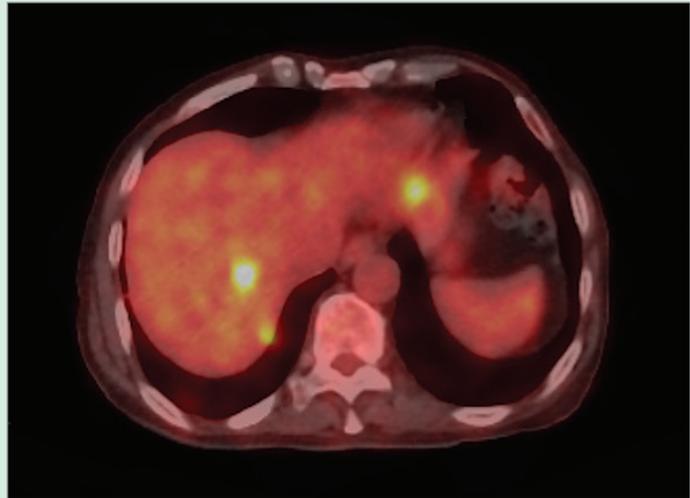
While the nuclear medicine department leaders knew that time-of-flight imaging produced sharper images, they weren't sure what to expect from the Discovery IQ 5-Ring system. What they saw was impressive: Discovery IQ is increasingly sensitive to detecting small forms of disease and delivers consistent, quantitative measurements. It boasts the highest sensitivity in the industry<sup>2</sup> at up to 22 cps/kBq, enabling very fast acquisition times and allowing for low dose scans.

Lowering dose was an important consideration for the department, from both an operational and a financial perspective. Jaslok Hospital does not have a cyclotron on-site; the department receives  $^{18}\text{F}$ -FDG and other isotopes from a commercial cyclotron in Mumbai. Reducing the volume of injected dose for each study would reduce the overall cost and would also make it possible to image more patients each day.

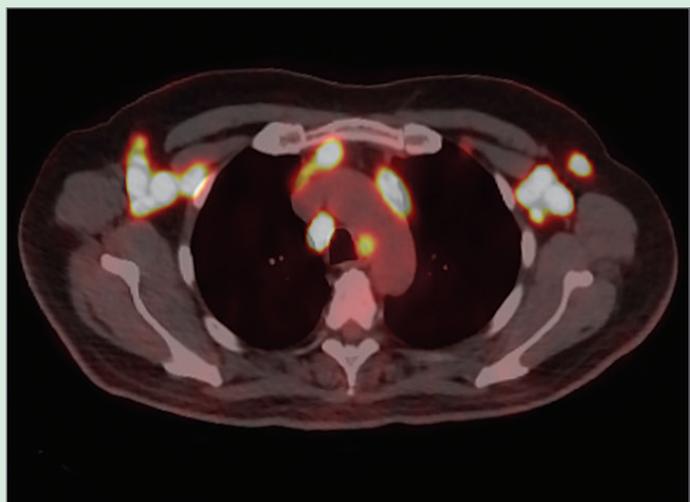
Jaslok Hospital also learned that Discovery IQ 5-Ring has the largest axial field-of-view (AFOV) coverage in the industry<sup>2</sup>, providing up to 26 cm AFOV coverage, which further enables scanning in the fewest possible bed positions. And, with the highest clinical noise-equivalent-count-rate (NECR) for clinical  $^{18}\text{F}$  acquisition in the industry<sup>2</sup>, Discovery IQ 5-Ring is optimized for oncology imaging—making it the right solution to fill Jaslok Hospital's clinical imaging needs.

### Economic impact

There are two significant economic impacts the system has had at Jaslok Hospital. First, with Discovery IQ 5-Ring the average  $^{18}\text{F}$ -FDG dose per patient has dropped in half, from 10 mCi to 4.5-5 mCi.<sup>4</sup> This is particularly important when using



**Figure 1.** A 68-year-old patient with adenocarcinoma of the prostate post cysto-prostatectomy, post bilateral orchidectomy referred for evaluation. Low-dose PET, 2.2 mCi of  $^{68}\text{Ga}$ -PSMA<sup>1</sup> injected intravenously;<sup>4</sup> patient scanned 152 minutes post-injection.



**Figure 2.** Same patient as in Figure 1, patient scanned two months after  $^{68}\text{Ga}$ -PSMA<sup>1</sup> PET/CT exam. Low-dose PET, 4.05 mCi of  $^{18}\text{F}$ -FDG injected intravenously;<sup>4</sup> scanned 65 minutes post-injection. Additional metastases were seen that did not appear on the prior  $^{68}\text{Ga}$ -PSMA<sup>1</sup> scan and are unlikely to represent metastases from carcinoma prostate; possibility of other pathology, such as lymphoma, should be ruled out. Patient referred for biopsy.



“ For facilities that have limited access to a cyclotron and radioisotopes or higher volume departments that want to increase throughput and maximize revenue, Discovery IQ 5-Ring is an ideal choice. ”

a low count of injected activity, as is the case with  $^{68}\text{Ga}$ . The clinical team in the nuclear medicine department is impressed with the results and currently they can obtain very good quality studies at 2-3 mCi.<sup>4</sup>

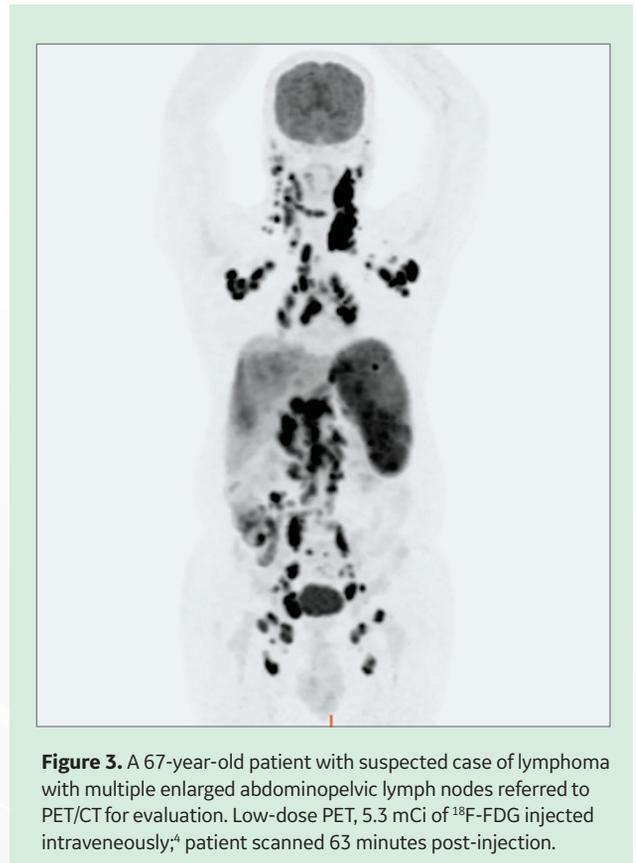
The other economic benefit is the shorter scan times. With the large coverage, technologists can perform a PET/CT study with just 5-6 bed positions, down from 8-9 bed positions. And, the time per bed position has decreased from 2-3 minutes to 1 minute.

These capabilities translate to imaging more patients than previously possible. Prior to installing Discovery IQ 5-Ring, the department was imaging roughly eight patients each day on the existing PET/CT scanner; now the department can scan up to 14 patients each day—a nearly 60% increase. With reduced exam times and fewer bed positions, there is an added benefit for the very sick patients undergoing PET/CT imaging at Jaslok Hospital—the scan is completed much quicker.

In addition to generating more income from Discovery IQ 5-Ring with the increased patient volume, Jaslok Hospital has also saved Rupees by reducing the amount of radioisotope used on patients. Currently, the hospital is saving \$76,000 each year, or 5,100,736 Rupees on the purchase of radioisotopes.<sup>3</sup>

Overall, Discovery IQ 5-Ring has led to a better return on investment for Jaslok Hospital. With the current rate, the nuclear medicine department anticipates it can recover the system cost in 3.5 to 4 years. That means the department can continue to invest in new technologies, which is central to the hospital's mission.

The system's high sensitivity has also helped in emergency cases. If an urgent case requires  $^{68}\text{Ga}$  and there is only 1 mCi<sup>4</sup> available in the nuclear medicine department, the clinician can increase the scan time and with the system's high count rate capability can generate a quality study comparable to one performed on a prior generation system utilizing three times the activity. While this is not a routine use of very low dose levels at 1 mCi,<sup>4</sup> it can be done if needed. Another clinical benefit of Discovery IQ is the



**Figure 3.** A 67-year-old patient with suspected case of lymphoma with multiple enlarged abdominopelvic lymph nodes referred to PET/CT for evaluation. Low-dose PET, 5.3 mCi of  $^{18}\text{F}$ -FDG injected intravenously;<sup>4</sup> patient scanned 63 minutes post-injection.

ability to add respiratory gating without impacting the remaining scheduled patients.

For facilities that have limited access to a cyclotron and radioisotopes or higher volume departments that want to increase throughput and maximize revenue, Discovery IQ 5-Ring is an ideal choice. ■

1. Radiopharmaceuticals discussed here may not be approved in every country; may not be available in all markets.
2. Comparing Discovery IQ 5-Ring to other PET/CT scanners reported in ITN online comparison charts (April 2014).
3. This represents a single user's experience and may not be representative of other clinical settings and use cases.
4. Consult full prescribing information for indications for use and administration information of radiopharmaceutical.