

Vertical integration of systems and data from molecular imaging to treatment planning enable precision care at the UK's leading private cancer care provider

Cancer remains one of the United Kingdom's most pressing health challenges, with more than 403,000 new cases diagnosed each year and about one in two people expected to develop cancer in their lifetime. Prostate cancer is the second most common cancer in the UK, with over 57,898 patients diagnosed annually and more than 12,000 deaths each year.

Behind every statistic is an individual patient with unique needs that requires equally personalized care. As diagnoses and treatments become increasingly precise, they demand more than technology—they demand the seamless integration of advanced imaging with treatment planning to ensure every care decision is tailored to the individual patient.

Cancer is personal. Treatments should be as well.

GenesisCare UK is the United Kingdom's leading cancer care provider, specializing in the treatment of complex cancers and transforming patient care with advanced diagnostics, medical oncology, radiotherapy and theranostics. As the only private oncology



At GenesisCare's new purpose-built outpatient cancer center in Surrey, patients can receive traditional image-guided radiation therapy, stereotactic ablative radiotherapy (SABR) and MRI-guided radiation therapy, MR Linac.

provider in the UK, the organization takes an integrated approach to cancer care, with a philosophy of treating the whole patient, not just their cancer.

The organization currently operates 14 outpatient cancer centers, with additional centers opening in Leeds and Royal Tunbridge Wells in 2026. Its newest outpatient cancer center in Surrey delivers traditional image-guided radiation therapy along with the latest advances in cancer treatments, including stereotactic ablative radiotherapy (SABR) and MRI-guided radiation therapy (MR-Linac). As one of the few centers in the UK with an MR-Linac, patients from southeast England come to GenesisCare Surrey for this type of precise radiotherapy.



Dr. Matthew Walker



Professor Vineet Prakash



Emma Blow



GenesisCare's newest specialist outpatient center in Surrey features state-of-the-art molecular imaging and cutting-edge treatment systems

GenesisCare also provides theranostics, a precision medicine approach combining diagnostic imaging with targeted therapy using radiopharmaceuticals. Theranostics is a significant advancement toward personalized patient care, utilizing a radioisotope to image target tumors, followed by a matching therapeutic isotope to destroy the tumor and minimize damage to healthy tissue.

“Our purpose-built oncology center in Surrey treats patients with specific disease conditions from throughout the southeast of England because we are able to deliver very precise, innovative radiotherapy with theranostics or advanced treatment systems like the MR-Linac,” says Audrey O’Brien, Head of Marketing UK for GenesisCare. “We reassure our patients that they are being treated by the leading experts who specialize in oncology, combined with the most up-to-date and innovative treatments available, so they get the best possible outcomes.”

Currently in the UK, theranostic agents approved for use include Lutetium-177 (Lu-177) PSMA, Gallium-68 (Ga-68) PSMA-11, Lu-177 DOTATATE for neuroendocrine tumors, Radium 223 for bone metastases in prostate cancer and Iodine 133 for differentiated thyroid cancer. At GenesisCare Surrey, Lu-177 PSMA treatments are coupled with Ga-68 PSMA-11 and piflufolastat (^{18}F -DCFPyL) PET/CT imaging.

Matthew Walker, PhD, Nuclear Medicine Physics Lead, Professor Vineet Prakash, FRCP, FRCR, Dual Consultant in Radiology and Nuclear Medicine, and Emma Blow, Senior Dosimetrist – Specialist Planner, rely on GE HealthCare and MIM software to unify molecular imaging, theranostics and radiation therapy through integrated, automated workflows. Together, these technologies help support more precise treatment planning, enabling the GenesisCare team to deliver highly personalized cancer care. “Our ethos at GenesisCare is to capture the best image quality possible for our patients,” says Professor Prakash.

Excellence in care begins with exceptional molecular imaging

High-resolution and high-sensitivity molecular imaging is paramount to enabling better patient outcomes at GenesisCare in Surrey, which is equipped with an Omni Legend 16 PET/CT and NM/CT 860. The center uses Omni Legend and MIM software to identify suitable patients for theranostics.

“With Omni Legend, we get data with high count density, and that translates to higher image quality,” says Dr. Walker. He adds the platform is aligned with the potential growth in theranostic services and also provides the high-quality diagnostic CT they need for radiotherapy planning. “It is important in our institution that we can do everything with the Omni scanner.”

The team relies on tools such as MotionFree for device-less respiratory gating, Q.Clear reconstruction for an increase in both SNR and SUV recovery over OSEM methods, and Precision DL, GE HealthCare’s deep-learning-based software that delivers the quality performance characteristics of Time-of-Flight—higher contrast-to-noise ratio and higher contrast recovery—by leveraging the power of deep-learning with the high sensitivity of the dBGO detector.

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Dr. Walker collaborated with GE HealthCare scientists in the early clinical evaluation of MotionFree and Precision DL, which was recently updated at GenesisCare with a new software version that supports PSMA in addition to FDG. Omni Legend is also upgradeable to a higher axial field of view.

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Omni Legend streamlines the imaging workflow for efficiency and quality

According to the GenesisCare team, the Omni Legend automates and streamlines patient set-up and positioning with the AI-based Auto Positioning feature that generates a 3D model of the patient’s body, pinpointing the center of the scan range and automatically aligning it with the isocenter of the bore. This process makes patient positioning more consistent across technologists, which minimizes variability across exams. The touchscreen interface on the scanner provides simplified protocol selection and allows for any adjustments while the technologist is by the patient’s side.

The automated respiratory gating feature is completely device-less—not belts or cameras—simplifying set-up and improving patient comfort, which reduces the risk of motion artifacts. Also, the ambient

lighting and distraction patterns enhance the patient experience, and when coupled with the fast scanning speed of Omni Legend, patients are more relaxed and less likely to move during the exam.

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Professor Prakash worked with GenesisCare physicists and GE HealthCare clinical applications specialists to optimize the PET/CT image quality using Q.Clear and Precision DL.

“I was very impressed by Precision DL because it allowed us to find the sweet spot to obtain high-resolution, high-sensitivity PET imaging,” says Professor Prakash. “This allows me to be more confident in lesion detection, which is particularly important for cancer where we are looking for small lesions.”

Omni Legend delivers exceptional small, low-contrast lesion detectability for reliable quantification, even in anatomical areas that are traditionally difficult to obtain, such as the pelvis and near the urinary bladder.

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MIM enhances clinical confidence in imaging results and analysis

The high-quality images from Omni Legend give Professor Prakash greater confidence in reviewing studies through MIM Software, reducing uncertainty around whether a lesion is clinically significant or a false positive. This added diagnostic confidence also helps streamline presenting findings to multi-disciplinary teams and tumor boards.

“I’m more confident in my diagnosis; I’m not giving an unequivocal or indeterminate findings. For our patients, this confidence can save them time because it potentially reduces the need for unnecessary further investigations and imaging,” he explains.

For example, the multimodality feature in MIM allows him to use all the imaging data available to evaluate bony lesions and whether they are metastatic. In cases of prostate cancer, he first measures the lesion on PET, using the PROMISE V2 framework, to see if the lesion is greater than the background normal liver or spleen, depending on the reference value of the tracer that was used. Then, he examines the CT



High resolution and high sensitivity molecular imaging is paramount to enabling better patient outcomes at GenesisCare in Surrey, which is equipped with an Omni Legend 16 PET/CT (shown) and NM/CT 860.

imaging component looking for any distortion of the CT architecture, including subtle sclerosis which is more commonly seen in prostate cancer. If the CT shows no abnormality and the SUV metrics are less than background normal liver, then he is confident the lesion is not metastatic disease, although he may assess that lesion on follow-up imaging examinations.

Another example is evaluating a prostate cancer patient post-prostatectomy who has rising PSA that suggests biochemical recurrence. The key question is whether the recurrence is localized so it can be treated with radiotherapy, or if it is oligometastatic disease that would be amenable to SABR. Professor Prakash recalls a patient case where the imaging was performed at another site with an analog scanner. The patient's PSA continued to rise, so he was referred to GenesisCare Surrey. With Omni Legend, Professor Prakash detected a 4 mm node in the pelvis that was not PSMA avid on the prior scan. Using the metrics in MIM software, Professor Prakash determined the lesion was PSMA avid and slightly greater than background normal liver for the tracer used, deeming the lesion as positive. Because this was the only site of the disease, the patient received radiotherapy.

With the combination of Omni Legend and MIM software, Professor Prakash can identify small lesions in the bone and oligometastatic progressive disease that can be treated with SABR. "It is a paradigm shift that we are now using PSMA PET for patient selection with SABR because of its improved lesion detectability," he says.

MIM software, and the quantitation it provides, is an integral component in patient selection for theranostics, SABR and radiotherapy. It also provides insight into a patient's response to therapy. Patients on Lu-177 PSMA therapy receive follow-up PET/CT imaging after their second and fourth treatment cycles—there is a maximum of six treatments—to determine if they are responding or progressing. These follow-up imaging reports are presented to the multi-disciplinary team, along with other biomarker data, such as PSA levels and blood tests, to determine if treatment continues (response) or is stopped (complete response or progression).

Powerful, intuitive workflows support confident and precise clinical decisions

MIM Encore™ and MIM Maestro™—both part of the MIM Platform—enable high-quality, automated workflows across the continuum of oncology care. MIM Encore facilitates nuclear medicine data management, including advanced quantitation. It provides easy-to-use, automated workflows for molecular imaging, from image reconstruction through reporting.

MIM Maestro streamlines radiation oncology plan preparation through standardized workflows, productivity-boosting automation and vendor-neutral compatibility with all treatment planning systems, oncology information systems and electronic health records.

"MIM offers a platform where we can all share information in a meaningful way," adds Mrs. Blow.



Oncology is a multi-disciplinary team effort. With the Omni Legend 16 PET/CT and MIM software integration, GenesisCare can achieve high-quality, automated workflows.

These applications provide seamless use throughout the entire GenesisCare network—onsite and remotely—enabling cross-departmental collaboration to plan and manage patient care across disciplines.

"MIM provides mature, well-developed image reporting and radiotherapy planning solutions that have been consistently improved over many years," says Dr. Walker. "We also benefit from MIM in that it can work across our whole network of centers. It is a highly reliable platform. MIM very rarely fails, which helps prevent treatment delays."

MIM is an integral part of the radiotherapy workflow at GenesisCare, with all radiotherapy scans from Omni Legend being transferred to the platform for a seamless and efficient process. GenesisCare has moved all contouring from its planning systems to MIM across all treatment modalities—conventional linacs, MR-Linacs and theranostics.

"MIM offers a platform where we can all share information in a meaningful way and work efficiently as a multi-disciplinary team," adds Mrs. Blow. With MIM, each team member can easily track contributions made by others through the session naming and session note functions, which helps with the peer review process. They can view and share the planning scan with the diagnostic imaging and previous treatments.

Contouring is one of the more time-consuming tasks when developing a patient's treatment plan. MIM Maestro provides Mrs. Blow with user-friendly and versatile contouring tools that allow her to create "high-quality contours in a short time. The auto-contouring in MIM Contour ProtégéAI+ is very useful and minimizes the time it takes to contour large anatomies, such as the bowel and the lung, which can be quite time consuming."

GenesisCare uses the pelvis, breast and chest auto-contouring tools for each case/scan. With this feature, Mrs. Blow estimates it takes half the time to complete larger contours compared to performing this task in the treatment planning system. MIM also enables the use of multi-modality imaging data when contouring.

Lu-177 PSMA (Pluvicto) Treatment Response via ¹⁸F-PSMA PET/CT

Patient Case

A 62-year-old male, weighing 72 kg, presented with progressive metastatic castration-resistant prostate cancer (mCRPC). His oncologic history includes prior treatment with enzalutamide and definitive radiotherapy to the prostate. Despite these interventions, he experienced biochemical and radiographic progression and subsequently received taxane-based chemotherapy with docetaxel, after which further biochemical progression was documented.

Given the continued rise in prostate-specific antigen (PSA) levels and evidence of disease progression, the patient was referred for

lutetium-177-labeled prostate-specific membrane antigen (Lu-177 PSMA) radioligand therapy. At the time of referral, he remained clinically stable with an ECOG Performance Status of 1, reporting no significant cancer-related symptoms.

The patient underwent evaluation and treatment at GenesisCare Surrey in 2025, where he was deemed an appropriate candidate for Lu-177 PSMA therapy based on disease characteristics, prior treatment history and preserved functional status.

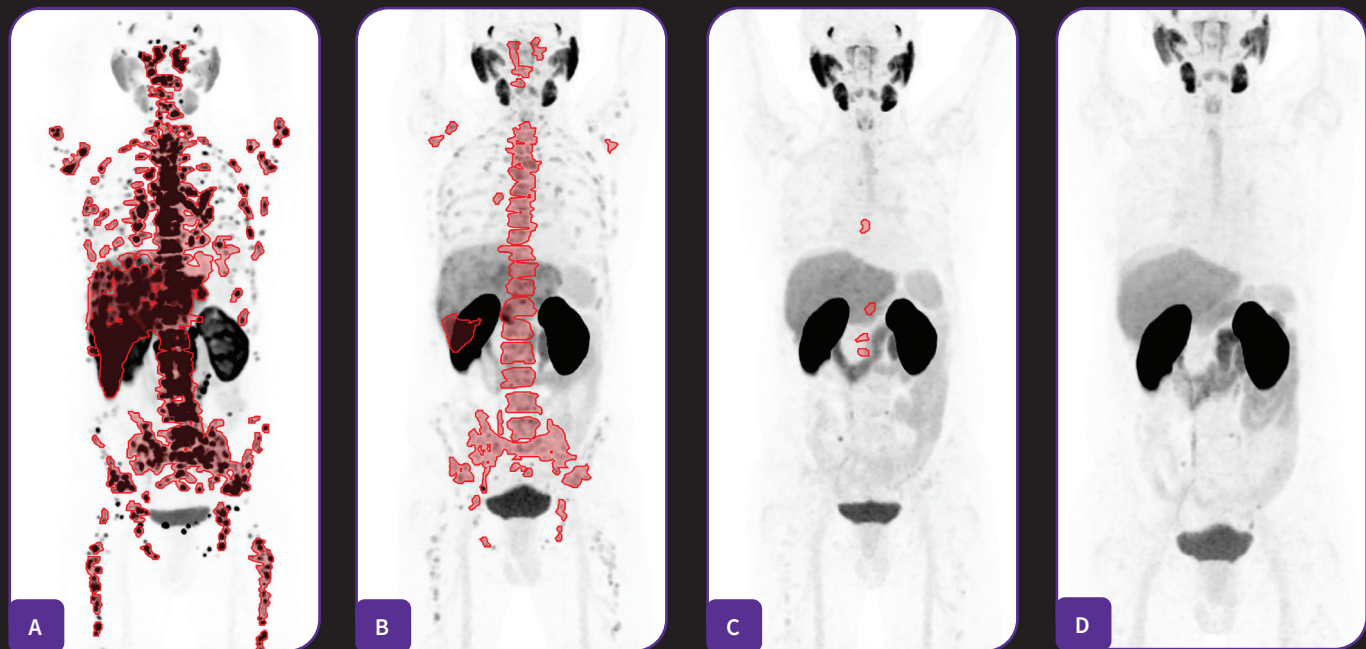


Figure 1: LesionID Pro post processing of ¹⁸F-PSMA (PyL) PET-CT scans performed on the Omni PET/CT with ~260 MBq injected and 1 hour uptake time demonstrating Lu-177 PSMA treatment response. All images are MIPs on an SUV scale 0-15. (A) Baseline imaging, week 0, PSA=5554 ug/L; (B) post cycle 2, week 13, PSA=18 ug/L; (C) post cycle 4, week 25, PSA=3.7 ug/L; and (D) post cycle 6, week 37, PSA=6.0 ug/L. The LesionID Pro method has a lower volume cutoff of 1 mL. Data was processed by MIM software on behalf of GenesisCare.

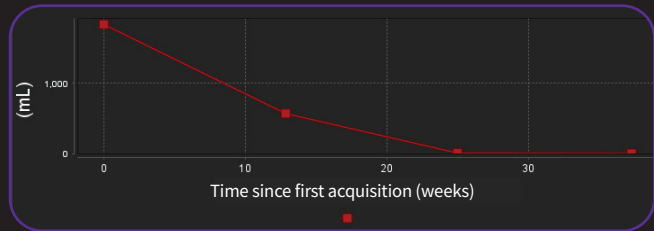


Figure 2: Total tumor volume (mL)

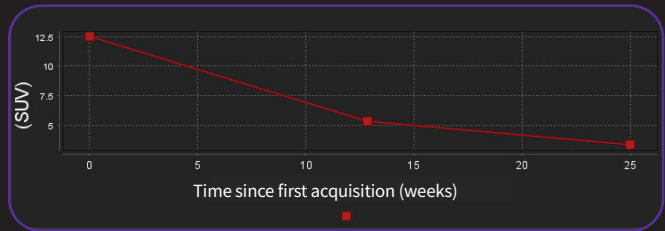


Figure 3: Total tumor SUVmean

	PET (Mar 25, 2025)	PET (Jun 23, 2025)	% Δ	PET (Sep 16, 2025)	% Δ	PET (Dec 11, 2025)	% Δ
Volume (mL)	1840.3	569.7	-69	6	-99.7	0	-100
SUVmean (SUV)	12.5	5.3	-57.4	3.4	-73.2	N/A	N/A
TLA (SUV*mL)	23008.6	3037.1	-86.8	20.1	-99.9	N/A	N/A
SUVmax (SUV)	100.2	31.8	-68.2	4.3	-95.7	N/A	N/A

Table 1: Total tumor burden statistics

“There is a versatility of displaying multiple data sets simultaneously that is unique to MIM and invaluable when contouring complex cases,” adds Mrs. Blow. For example, in a spine SABR case, she can view the planning CT scan with T1 and T2 MRI scans side-by-side to ensure the contour delineations are an accurate representation of the anatomy as depicted by all the scans. She can create a workflow with 4D CT images and all associated images, such as MIPs, the average CT axial image and the PET scan, and display them in a consistent way that is beneficial when presenting cases to the multi-disciplinary team.

“When it comes to the contouring, our team is getting the same information each time, and that helps with efficiency and improves the quality within our team,” she says.

Professor Prakash uses custom hanging protocols integrated with the organization’s PACS to efficiently report SUV data, including measuring SUV_{max} , SUV_{mean} and total tumor burden for monitoring treatment response post Lu-177 PSMA. It’s the perfect solution that meets the demands of his dual roles as a diagnostic radiologist and nuclear medicine physician providing theranostics.

A comprehensive, integrated end-to-end solution poised for the future

With the Omni Legend 16 PET/CT and NM/CT 860 integration with MIM, GenesisCare can achieve high-quality, automated workflows. Scans from the PET/CT and SPECT/CT are automatically imported into MIM for a seamless, efficient process. Professor Prakash can integrate diagnostic reports with radiotherapy contours within a single workflow solution, as well as identify suitable patients for theranostics.

“The integration of MIM Software for both diagnostics and response assessment is very important. MIM enables quantitative analysis and longitudinal comparison across the diagnostic and therapy scans,” says Professor Prakash. “We have a vertical integration model, which is very nice for diagnostic reporting and response assessment. Most importantly, it helps with accurate patient selection and disease monitoring when treating my patients.”

Oncology is a multi-disciplinary team effort. Whether it is sharing the planning scan along with the diagnostic imaging and prior treatment, creating consistent reports when presenting cases to the tumor board, or identifying appropriate patients for theranostics, the integration of MIM with GE HealthCare molecular imaging systems improves quality and clinical efficiency across the team.

As important, GenesisCare has the technologies in place to support theranostics and research. Key areas of research in theranostics includes alpha-particle emitters, expanding currently approved

radioligand therapies and developing new fibroblast activation protein inhibitors for hard-to-treat cancers. GenesisCare expects to begin an alpha-based treatment trial in its Windsor center mid-2026 and have final approvals to start another in the Surrey center by year end.

“The equipment we now have in place in Surrey also supports our research teams,” says Dr. Walker. “We are set up to participate in trials using novel therapies such as alpha-based treatments like actinium-225.”

Add Professor Prakash, “The intention to use MIM in research is paramount for us. Having quantitative analysis for response as per the trial protocol is very important. Using MIM LesionID Pro, for example, for whole tumor burden is becoming very important for evaluating tumor biology, determining tumor heterogeneity, and more reliable and comprehensive assessment of treatment response.”

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With the combination of GE HealthCare’s advanced molecular imaging systems and intelligent MIM software to automate and streamline workflow across the continuum care, GenesisCare is delivering exceptional personalized oncology care to patients.

“GE HealthCare has a long-standing, well-deserved reputation for delivering high-quality PET/CT technology, while MIM Software provides well-developed solutions for image reporting and radiotherapy planning,” said Dr. Walker. “When you work with these technologies, you can see the depth of development behind them and the continuous improvements that have been made over the years.”

GenesisCare UK



<https://www.genescare.com/uk>

GE HealthCare



<https://tinyurl.com/GEHCM1>

MIM software



<https://tinyurl.com/GEHCMIM>

