香港中文大學醫院
CUHK
Medical Centre

香港中文大學醫院
放射治療中心
CUHK Medical Centre
Radiotherapy Centre

中大領航 · 醫研惠民
CUHK Leads - Transforming Research into Care

簡介 Introduction

香港中文大學醫院（中大醫院）放射治療中心自2021年7月起投入服務，為病人提供放射治療（電療）服務。

放射治療中心於籌劃階段已確立以先進的技術為基礎，致力提供高質素及高效益的放射治療服務。配合全面電子化的智慧醫院運作模式及完善的資訊科技系統，中心致力為病人帶來優質及完善的醫療新體驗。

除了體外放射治療外，我們於2022年引入放射性核素治療，進一步拓展治療範疇，彰顯我們在精準醫療方面日益重要的角色。

The Radiotherapy Centre at the CUHK Medical Centre (CUHKMC) commenced service in July 2021, providing radiotherapy treatments for patients.

Since its planning stage, the Centre has been founded on the application of advanced technologies, with a commitment to delivering high quality and effective radiotherapy services. Supported by a fully digitalised smart hospital operating model and a comprehensive information technology infrastructure, the Centre is dedicated to providing patients with a high standard of care and a seamless, all-rounded healthcare experience.

In addition to external radiotherapy, radionuclide treatments were introduced in 2022, further broadening the scope of services and underscoring the Centre's increasingly significant role in the advancement of precision medicine.

我們的服務 Our Services

我們致力提供優質的放射治療服務，務求達致理想的醫療效果，同時盡量減輕病人在整個療程間的身體及心理不適。

本中心的醫療團隊由專業且經驗豐富的腫瘤科專科醫生及醫護人員組成。我們為每位病人安排專屬的聯絡主任作為治療伙伴，為病人及其家屬在整個治療過程提供持續而個人化的照顧及支援。中心亦致力營造舒適、安全的治療環境，讓病人能安心接受放射治療服務。

We are committed to providing high-quality radiation therapy services that achieve optimal medical outcomes while minimising patients' physical and emotional discomfort throughout the entire course of treatment.

Our healthcare team consists of professional and experienced oncologists and clinical staff. Each patient is supported by a dedicated care coordinator who serves as a treatment companion, offering continuous and personalised care, information, and support for both patients and their families. We also strive to create a comfortable and safe treatment environment, allowing patients to undergo radiation therapy with complete peace of mind.

我們致力提供安全、專業、以病人為本的放射治療服務，涵蓋乳癌、肺癌、直腸癌、前列腺癌等多種常見癌症。

此外，專責聯絡主任會協助安排各項流程，確保流程快捷順暢。我們採用 100% 影像導航技術、提供個人化預約時間，並可按需要安排全女性治療師團隊。我們亦提供舒適寧靜的治療環境，確保病人獲得最佳的治療體驗。

We provide safe, professional, and patient-focused radiation therapy for common cancers, including breast, lung, rectal, and prostate cancers.

In addition, our dedicated care coordinator ensures efficient arrangements. We utilise 100% image-guided technology, provide personalised appointment scheduling, and can arrange an all-female therapist team upon request. We also offer a calm and comfortable treatment environment to ensure every patient receives the best possible experience.

病人治療歷程
Patient Treatment Journey

我們明白放射治療對許多人都很陌生，因此我們會讓病人清晰掌握整個流程，並在每一個步驟提供周全支持。

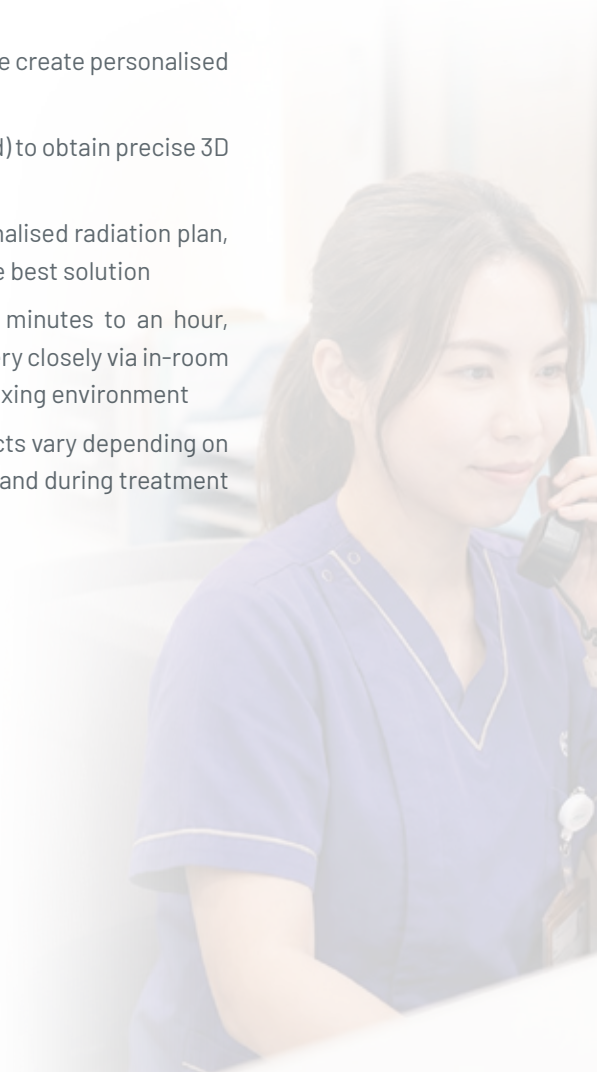
- **轉介：**由腫瘤科專科醫生轉介至本中心
- **接待：**專屬聯絡主任全程協助病人及其家人，提供指引及全面支援
- **個人化定位輔助工具：**為確保治療準確並提升舒適度，我們會為每位病人度身訂製定位模具
- **模擬定位：**病人需進行電腦掃描（有時亦需磁力共振掃描）以獲取治療部位的精準影像
- **治療計劃：**醫生及專業臨床團隊會共同設計個人化的放射治療方案，仔細描繪腫瘤及鄰近健康組織，以制定最佳治療策略
- **進行治療：**每次治療約15分鐘至1小時（視乎治療計劃而定）。期間我們會透過治療室內監察設備密切觀察治療過程，亦可播放病人喜愛的音樂，營造更輕鬆的環境

整個療程一般需數天至數週不等。副作用因治療部位而異。我們的醫療團隊會在治療前及過程中詳細解釋相關情況，並提供適切護理，以減輕病人的不適。

Radiation therapy may feel unfamiliar to many, so we aim to help patients understand the process clearly and provide support every step of the treatment journey.

- **Referral:** Patients are referred by an oncologist
- **Reception:** A dedicated care coordinator supports patients and their families, offering guidance and comprehensive assistance
- **Custom Devices:** To ensure treatment accuracy and enhance comfort, we create personalised positioning aids tailored to each patient
- **Simulation:** Patients undergo a CT scan (and sometimes an MRI is needed) to obtain precise 3D images of the treatment area
- **Treatment Planning:** Doctors and our professional team design a personalised radiation plan, carefully outlining the tumour and nearby healthy tissue, customising the best solution
- **Treatment Sessions:** Each treatment session lasts approximately 15 minutes to an hour, depending on the treatment plans. We monitor patients' treatment delivery closely via in-room cameras, and we can play patients' preferred music to create a more relaxing environment

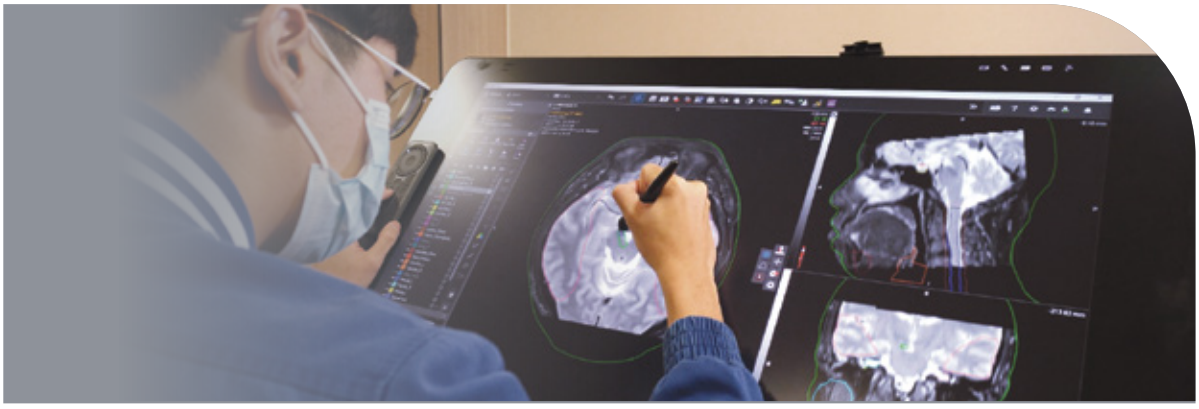
The full course of treatment usually takes several days to weeks. Side effects vary depending on the treatment area. Our medical team will explain these thoroughly before and during treatment and will provide appropriate care to help minimise discomfort.



治療師在線 *Tel: 3946 6698*

以關懷解答您的疑慮
Your Concerns, Our Care
Therapists Ready on the Enquiry Hotline

精準個人化治療設計流程
Precise Personalised Treatment Planning Workflow

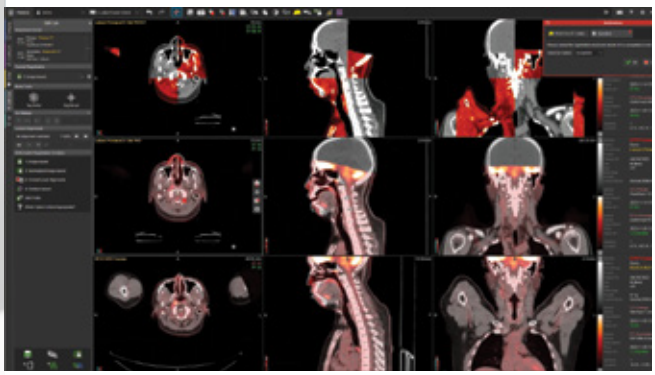


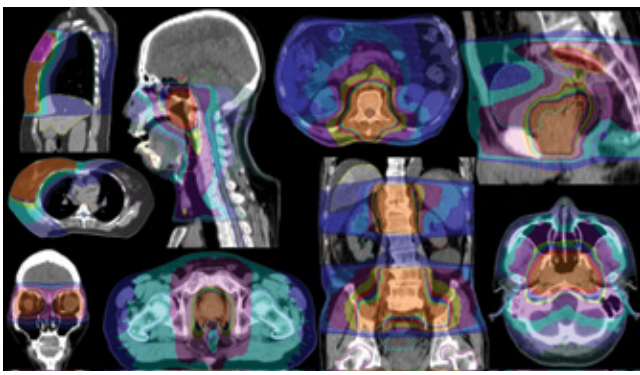
我們先為病人製作固定體位模具，協助病人在整個治療期間能固定治療位置並保持體位一致。完成精準的電腦掃描後，治療師會進行多模態影像的影像融合（Image Fusion），將電腦掃描與病人其他的診斷掃描影像（例如磁力共振掃描和正電子電腦掃描，如適用）的資訊結合，以更清晰地顯示腫瘤及鄰近的重要器官。其後，我們的醫療團隊會詳細描畫治療靶區及器官，確保準確界定治療邊界，同時保護相鄰的健康組織。

在高效精準的治療設計流程中，我們會利用專業電腦系統進行個人化電腦劑量計劃（Computer Planning），制定兼顧腫瘤控制與正常組織保護的最佳放射線分佈。完成計劃後，團隊會進行嚴謹的電腦計劃質素保證（Computer Plan QA），確保治療劑量準確並可安全執行。我們的目標是為每位病人制定最適切的治療方案，實現真正個人化、精準且安全的放射治療。

We begin by creating customised immobilisation devices to help patients maintain a stable and reproducible treatment position throughout therapy. Following a precise CT simulation, our therapists perform multimodality image fusion by combining CT with diagnostic imaging such as MRI or PET (when applicable). This integration provides clear visualisation of tumours and surrounding critical organs. Our clinical team then completes detailed contouring of the target areas and organs-at-risk, ensuring accurate treatment boundaries and protection of healthy tissues.

Within our efficient and precise planning workflow, we utilise a professional dosimetry system to generate computer plan that optimises tumour coverage while minimising radiation exposure to normal tissues. The plan then undergoes strict computer plan quality assurance (QA) to confirm accuracy and deliverability. Our goal is to create the most suitable treatment plan for every patient, achieving truly personalised, precise, and safe radiotherapy.





精準個人化治療設計流程 Precise Personalised Treatment Planning Workflow

我們的儀器 Our Equipment

中心配備了兩組嶄新的影像導航放射治療(IGRT)系統，以支援準確而穩定的放射治療。透過將先進的掃描影像技術融入放射治療流程，我們能更清晰地即時驗證放射治療範圍與腫瘤及周邊組織的位置，有助於提升治療的精確度，從而達致理想的臨床療效及長期的腫瘤控制。相對於傳統治療，此技術可減少照射腫瘤範圍的邊界及附近的健康組織，將放射治療的副作用盡量減低。此確定性亦能提高每次輻射劑量，從而縮短治療療程。

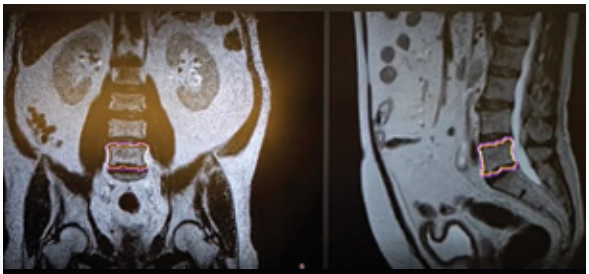
Our centre is equipped with two state-of-the-art Image-Guided Radiotherapy (IGRT) treatment units that support accurate and consistent radiation delivery. By integrating advanced imaging technology with radiation therapy, we are able to verify the treatment target and surrounding healthy tissues with clarity, helping ensure precise treatment delivery and supporting effective clinical outcomes and long-term cancer control. A reduction of the margins of treating volume with certainty helps spare more of the surrounding healthy tissues than ever before so that a higher radiation dose can be delivered each time to make the treatment course shorter.

核磁影像導向系統 Unity MR-Linac

核磁影像導向系統揉合了1.5T高場核磁共振成像(MRI)和放射治療的精粹於一身。透過「核磁驗證」、「調整方案」及「精準治療」三步曲，能在治療的一刻將腫瘤清晰呈現，從而驗證及提高治療的精確度。

The MR-Linac integrates the power of 1.5T high-field Magnetic Resonance Imaging (MRI) with radiation therapy. The scan-plan-treat approach enables precise dose delivery with clear visualisation of the tumour.

- 在腫瘤及周邊範圍可提供高質素的軟組織成像
  Provides an excellent soft-tissue visualisation of the tumour and surrounding healthy tissues
- 對於在療程內腫瘤每日的變化，可以運用實時適應性流程 ，調整放射線以確保治療的準確性
  Allows online plan adaptation workflow to shape radiation beams to the changing tumour each day over the course of treatment
- 可以監測腫瘤對於治療的反應
  Enables feasibility of monitoring tumour response to treatment
- 配備實時腫瘤位置定向功能(CMM)，令治療不受隨機或周期性呼吸運動影響，使胸腔部及腹部治療更精準，減低治療副作用
  Equipped with real-time Comprehensive Motion Management (CMM) function resulting in enhanced treatment precision not affected by respiratory or random movements



核磁影像導向系統及放射治療範圍即時驗證影像
Unity MR-Linac Unit and Treatment Verification Images

核磁影像導向系統的技術 MR-Linac Technique

- 影像導向放射治療
  Image-Guided Radiotherapy (IGRT)
- 適應性放射治療
  Adaptive Radiotherapy (ART)
- 強度調控放射治療
  Intensity-Modulated Radiotherapy (IMRT)
- 立體定位放射手術/放射治療
  Stereotactic Radiosurgery/Radiotherapy (SRS/SRT)
- 軀體立體定位放射治療
  Stereotactic Body Radiotherapy (SBRT)
- 實時腫瘤位置定向功能
  Comprehensive Motion Management (CMM)

實時腫瘤位置定向功能 Comprehensive Motion Management (CMM)

CMM 結合即時磁力共振掃描追蹤、自動出束控制以及偏移校正，讓治療更安全、更快速、更精準。

CMM combines real-time MRI tracking, automatic beam control, and drift correction for safer, faster, and more precise treatment.

實時磁力共振掃描追蹤
Anatomic Position Monitoring (APM)

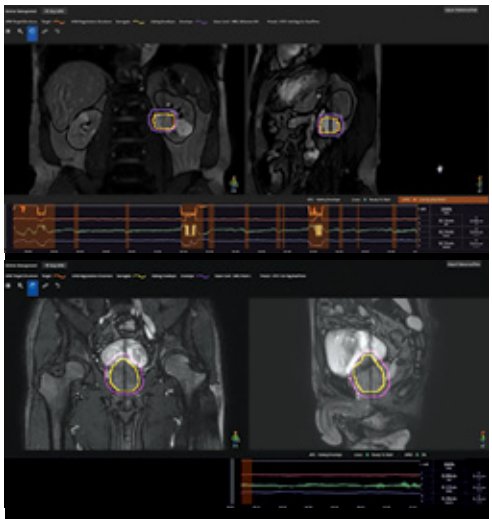
- 在治療期間實時監測腫瘤位置
  Tumour position is monitored in real time during treatment

自動閘控
Anatomic Tolerance Check (ATC)

- 若腫瘤因呼吸或其他生理運動離開治療靶區，射束會自動暫停
  If the tumour moves outside the target area (e.g. due to breathing), the beam pauses automatically
- 患者自然呼吸時，治療仍保持精準
  Treatment stays accurate while patient breathes normally

偏移校正
Baseline Shift Plan

- 腫瘤在治療中可能會慢慢移動（稱為偏移）
  Tumours can slowly shift during treatment (known as drift)
- CMM 能即時偵測並讓治療師快速調整，以確保射束持續精確覆蓋腫瘤
  CMM detects this immediately, allowing quick adjustments to keep radiation on target



實時腫瘤位置定向影像 CMM Online Images:
系統會實時監測治療區域的狀態（如呼吸運動、膀胱容量、腸道蠕動等），以進行追蹤、閘控及漂移校正
The system continuously monitors the real-time status of the treatment area (such as respiratory motion, bladder volume, and bowel peristalsis) to enable tracking, gating, and drift correction

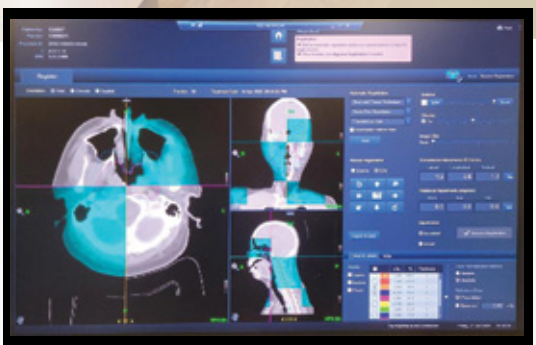
CMM 會實時監察腫瘤——腫瘤移動就暫停，偏移就修正，確保精準治療而不需延誤。

CMM monitors the tumour live, pauses if it moves, and corrects if it drifts—ensuring precision without delays.

螺旋放射治療系統 Radixact X9
Tomotherapy with Synchrony Tracking System

螺旋放射治療系統結合了電腦掃描影像及其獨有的螺旋形照射模式來提供準確的放射治療。放射治療配合治療床同步移動，環繞運行，放射線可從不同角度照射而達到治療所需要的劑量。

Tomotherapy delivers precise radiation treatment by combining integrated CT imaging with its unique helical treatment delivery method. Radiation is delivered from all angles as the gantry rotates and the couch translates through the gantry.



螺旋放射治療系統及放射治療範圍即時驗證影像
Tomotherapy Radixact X9 Unit and Treatment Verification Images

- 每次治療以電腦掃描影像作校對以確保準確性
  Verifies every treatment by CT imaging to ensure accuracy
- 新系統採用自動實時腫瘤動態同步技術Synchrony。它能針對不斷移動的腫瘤作集中治療，同時亦避免附近健康組織的照射
  Features with Synchrony system and allows real-time tracking of moving tumour for target-focused treatments while avoiding surrounding healthy tissues
- 治療範圍長度可達135厘米，可以無縫地照射特長或全身多處的治療區域
  Allows a maximum treatment length of 135 cm for seamless coverage of long-shaped targets or multi-lesions

螺旋放射治療系統的技術 Tomotherapy Technique

- 影像導向放射治療
  Image-Guided Radiotherapy (IGRT)
- 螺旋放射治療
  Helical Tomotherapy (HT)
- 呼吸同步放射治療
  Breathing-Synchronised Radiotherapy (BSRT)
- 強度調控放射治療
  Intensity-Modulated Radiotherapy (IMRT)
- 立體定位放射手術/放射治療
  Stereotactic Radiosurgery/Radiotherapy (SRS/SRT)
- 軀體立體定位放射治療
  Stereotactic Body Radiotherapy (SBRT)
- 深吸氣屏氣放射治療
  Deep Inspiration Breath-hold (DIBH)

深吸氣屏氣放射治療技術 Deep Inspiration Breath-hold (DIBH) Radiotherapy

中心以深吸氣屏氣放射治療技術(DIBH)，結合主動呼吸控制系統(ABC)與螺旋放射治療系統Radixact X9，為乳腺癌的病人提供更精準與安全的治療體驗。

Our Centre uses the Deep Inspiration Breath-hold (DIBH) technique, combined with the Active Breathing Coordinator (ABC) system and the Radixact X9 helical radiotherapy system, to provide breast cancer patients with a more precise and safer treatment experience.

- 主要用於乳腺癌的治療，也可用於胸腔部及腹部之腫瘤，如肺癌、肝癌、胰臟癌等
  Primarily used for the treatment of breast cancers, also applicable to thoracic and abdominal tumours such as lung, liver, and pancreatic cancers
- 可以減少呼吸引起的胸部和腹部活動，從而減少身體移動的可能性
  Helps reduce chest and abdominal motion caused by breathing, thereby lowering the chance of body movement during treatment
- 在屏住呼吸的情況下，肺部的擴張可使心臟遠離治療區域，減少心臟所接受的輻射劑量
  When holding a deep breath, lung expansion helps move the heart away from the treatment area, reducing radiation dose to the heart
- 提高了放射治療的精準度並減少對周圍健康組織的損傷
  Improves radiotherapy precision and reduces damage to surrounding healthy tissues

結合主動呼吸控制系統與螺旋放射治療系統的屏氣放射治療技術
Breath-holding Radiotherapy Treatments in Radixact with Active Breathing Coordinator

學術文獻
Published Paper

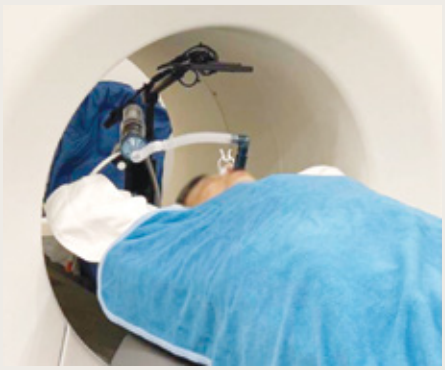
香港中文大學醫院是首間醫院結合使用螺旋放射治療系統 (Accuray Radixact X9) 和主動呼吸控制系統 (Elekta ABC) 進行屏氣放射治療。

CUHK Medical Centre is the first hospital to combine the use of Accuray Radixact X9 with Elekta Active Breathing Coordinator in performing breath-holding radiotherapy treatments.

對病人的好處 Patient Benefits:

- 協助病人在治療過程中屏氣
  Assist patient to hold their breaths during treatment delivery
- 減少腫瘤移動幅度，使精確定位變得更容易
  Reduce tumour motion, making it easier to target precisely
- 保護附近的健康組織，降低損傷風險
  Protect nearby healthy tissues, reducing the risk of damage
- 提高治療準確性
  Improve treatment accuracy

屏氣放射治療 Treatment during Breath-holding



適用於 Applicable to:

- 肝癌 Liver cancer
- 乳腺癌 Breast cancer
- 肺癌 Lung cancer
- 胰腺癌 Pancreatic cancer

電腦掃描及磁力共振掃描模擬器
CT and MR Simulators

為配合先進的治療系統，我們亦配置了專用的電腦掃描模擬器 (Somatom Confidence) 及磁力共振掃描模擬器 (Ingenia Elition 3.0T) 作設計定位，準確地找出治療區域及附近健康組織的位置，設計最適切的治療方案。

To complement our advanced treatment units, we have also installed a dedicated CT simulator (Somatom Confidence) and an MR simulator (Ingenia Elition 3.0T) for outlining the treatment target and surrounding healthy tissues with high accuracy in order to design the best possible radiation treatment plans.

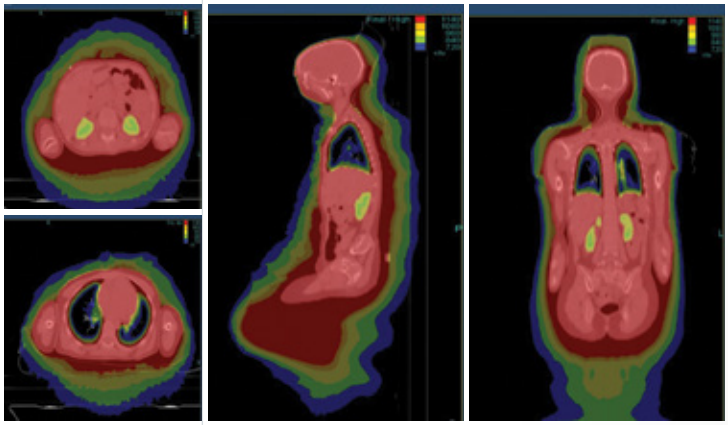
電腦掃描模擬器及定位模具
CT Simulator Unit and Immobilisation Device

突破界限：放射治療新方案
Breaking Boundaries: New Solutions in Radiotherapy

我們的團隊成功創下里程碑，在本港完成首宗採用螺旋斷層放射治療 (Helical Tomotherapy) 的兒科全身放射 (Total Body Irradiation, TBI) 療程。此技術能提供高精準度的影像導向放射治療，確保劑量均勻並有效保護重要器官，免除傳統技術所需的度身訂制遮蔽裝置。TBI是骨髓或幹細胞移植前的重要步驟，有助於徹底清除癌細胞並降低移植排斥風險。

我們的團隊克服重重挑戰，我們在機器有限的孔徑範圍內，設計了專屬的全身固定裝置，維持從頭到腳的準確定位，同時安排額外試療及探訪，減輕年幼病人及家屬的焦慮，營造安心的治療體驗。結合尖端科技與貼心照護，團隊進一步推動兒科腫瘤治療的發展，彰顯我們對醫療創新、安全及卓越服務的承諾。

Our Team proudly marks a milestone with Hong Kong's first paediatric Total Body Irradiation (TBI) treatment using advanced helical Tomotherapy. This technique delivers highly precise, image-guided radiation with exceptional dose homogeneity and organ sparing, eliminating the need for traditional shielding. TBI is a vital component of conditioning for stem cell transplantation, helping to eradicate cancer cells and reduce transplant rejection risk.



This achievement was made possible by overcoming significant technical and patient-care challenges. The team developed a customised full-body immobilisation setup within the machine's limited bore size, ensuring accurate positioning from head to toe. We also provided extra trial sessions to ease anxiety for the young patient and family, fostering a reassuring treatment experience. By integrating cutting-edge technology with compassionate care, the team has advanced paediatric oncology treatment, underscoring our commitment to innovation, safety, and excellence for patients of all ages.

此外，我們的團隊成功將呼吸屏氣技術應用於MR-Linac治療，為本地臨床應用邁出重要一步。這項創新技術可引導病人精準屏氣，將腫瘤「鎖定」於最佳位置與時機，從而確保放射劑量的準確投射。病人透過即時影像回饋模式自主控制屏氣（VFBH），進一步提升治療效率與精準度。未來，中心亦將主動呼吸控制（ABC）技術納入MR-Linac工作流程，以實現深吸氣屏氣（DIBH）治療模式。這一系列技術進展，將為腫瘤科醫生及病人提供更多元化的個人化精準治療方案，推動癌症治療持續發展。

Additionally, Our Team has taken an important step forward in Hong Kong by successfully applying breath-hold technology to MR-Linac treatment. This innovative approach guides patients to accurately hold their breath, "freezing" the tumour in the optimal position and timing to ensure precise radiation delivery.Through a real-time Visual Feedback Breath-hold (VFBH) system, patients can autonomously control their breath-hold, significantly enhancing treatment precision and efficiency. In the future, the Centre will further integrate Active Breathing Coordinator (ABC) technology into the MR-Linac workflow, enabling the Deep Inspiration Breath-hold (DIBH) treatment mode. These series of technological advancements will offer oncologists and patients with a broader range of personalised and precise treatment options, driving the continuous advancement of cancer therapy.

放射性核素治療
Radionuclide Services

除了體外放射治療，本中心亦提供先進的放射性核素治療，利用放射性同位素將輻射精準地傳送至治療部位，是一種微創且安全的治療方式。

In addition to external radiotherapy, we also offer advanced radionuclide therapies – minimally invasive treatments that deliver targeted radiation precisely to treatment areas using radionuclide.

- **甲狀腺亢進症放射碘-131治療 Iodine-131 Therapy for Thyrotoxicosis (I - 131)**
  適用於治療甲狀腺亢進症
  Indicated for patients with thyrotoxicosis

- **鐳-223治療 Radium-223 Therapy (Ra - 223)**
  適用於有骨轉移症狀，但未發生內臟轉移的前列腺癌症患者
  Indicated for prostate cancer patients with symptomatic bone metastases and no known visceral metastases

- **釔-90治療 Yttrium-90 Therapy (Y - 90)**
  適用於早中期肝癌患者 (肝腫瘤大小在八厘米以下，亦需要在肝動脈造影檢查中找到合適的血管進行Y-90注射)
  Indicated for early- or intermediate-stage liver cancer patients (with tumour size <8 cm and feasible vasculature for safe Y-90 microsphere delivery after hepatic angiography)

- **鑥-177-PRRT治療 Lutetium-177-PRRT Therapy (Lu - 177 - PRRT)**
  適用於腸胃胰神經內分泌腫瘤患者
  Indicated for patients with gastroenteropancreatic neuroendocrine cancer

- **鑥-177-PSMA治療 Lutetium-177-PSMA Therapy (Lu - 177 - PSMA)**
  適用於轉移性去勢抵抗性前列腺癌患者
  Indicated for patients with metastatic castration-resistant prostate cancer

服藥及注射間 Dose Administration Suite

服藥及注射室 Dose Administration Room

放射隔離病房 Radiation Isolation Ward

臨床實踐與國際標準
Clinical Practice and International Standards

為確保患者之安全及治療準確性，本中心遵循嚴格國際標準。這些標準以美國醫學物理協會（AAPM）和國際原子能機構（IAEA）的指引為核心，用於執行設備校準、劑量測定和質量保證。合規的中心必須配備先進且定期維護的直線加速器、高端的治療計劃系統，以及完善的輻射安全措施。認證亦要求擁有跨專科團隊，包括臨床腫瘤科專科醫生、醫學物理學家和劑量師，並持續進行專業培訓。關鍵在於，遵循這些標準能確保腫瘤定位更為精準、減少副作用，並提供以實證為基礎、以病人為先的護理，從而建立信任，確保具國際標準的臨床成果。

To ensure patient safety and treatment accuracy, our Centre adheres to rigorous international standards. These standards, based on guidelines from The American Association of Physicists in Medicine (AAPM) and the International Atomic Energy Agency (IAEA), enforce protocols for equipment calibration, dosimetry, and quality assurance. A compliant centre must be equipped with regularly maintained linear accelerators, advanced treatment planning systems, and robust radiation safety measures. Accreditation also requires a multidisciplinary team comprising clinical oncologists, medical physicists, and dosimetrists, all engaged in continuous professional training. Ultimately, adherence to these standards ensures precise tumour targeting, minimises side effects, and provides evidence-based, patient-centred care, fostering trust and ensuring clinical outcomes that meet international standards.

研究與開發
Research and Development

本中心不僅專注於臨床卓越，亦積極投入研究與開發，致力提升病人安全及改善整體治療體驗。我們的創新研究持續推動放射治療技術的進步，並定期在國際知名期刊發表成果。

Our Centre goes beyond clinical excellence by actively pursuing research and development to enhance patient safety and improve the overall treatment experience. Our innovative studies contribute to advancing radiotherapy practices, with findings regularly published in renowned international journals.

在核磁影像導向放射治療系統中，基於視覺 — 觸覺引導的屏氣門控治療的可行性研究
Feasibility of Breath-Hold Gating with Visual – Tactile Guidance on an MR-Linac

學術文獻
Published Paper

核磁影像導向放射治療系統的綜合運動管理可實現對腫瘤的即時監測與追蹤。屏氣特別適用於受呼吸影響部位的放射治療。我們開發並測試了一套創新的視覺 — 觸覺引導系統，以支援在綜合運動管理工作流程下進行屏氣治療。

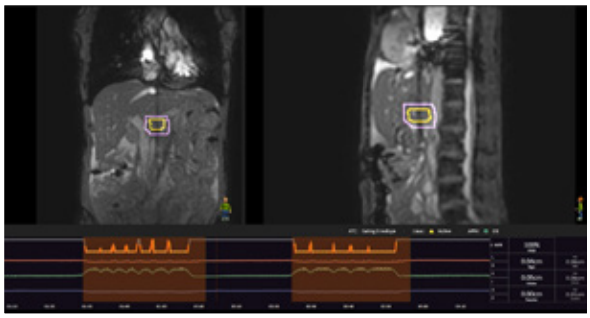
以Python編寫的視覺引導程式會顯示呼吸各階段（吸氣、屏氣、呼氣及放鬆）。三維打印的觸覺指針可以提供溫和的觸覺反饋。引導介面會透過三維打印鏡子橋架或可穿戴式稜鏡潛望鏡呈現給病人觀看。該系統已在臨床上應用。

Comprehensive Motion Management (CMM) on an MR-Linac enables real-time monitoring and tracking of the tumour. Breath-hold (BH) is particularly useful for radiotherapy in regions affected by respiration. We developed and tested an innovative visual-tactile guidance system to support BH treatments within the CMM workflow.

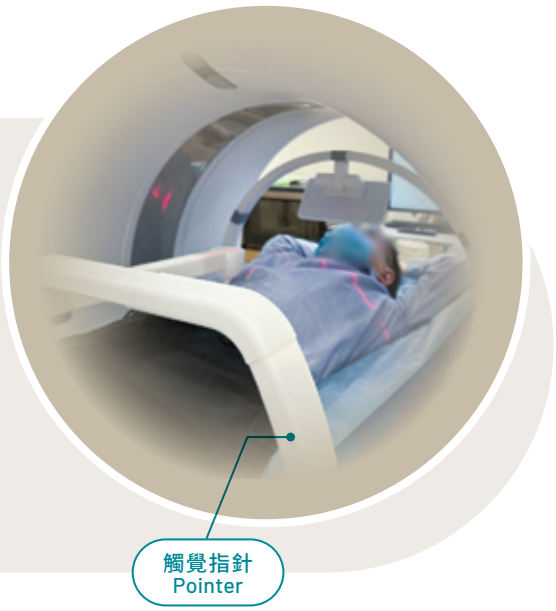
A Python-based visual guidance programme displays the breathing phases (inhale, breath-hold, exhale, and relaxation). A 3D-printed tactile pointer provides gentle touch feedback. The guidance interface is shown to patients using either a 3D-printed mirror bridge or a wearable prism periscope. This system has been successfully implemented.

核磁影像導向放射治療系統輸出 MR-Linac Delivery

綜合運動管理界面 CMM Interface



視覺—觸覺引導系統 Visual-Tactile Guidance System



眼部放射治療的創新眼動追蹤系統
Eye Tracking System for Radiotherapy

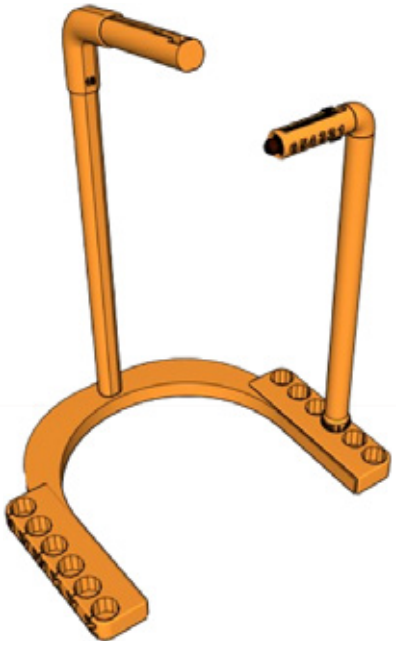
我們開發了一套自家研製的眼動追蹤系統，用於放射治療，以提高眼部放射治療的精確性和安全性。

We have developed an in-house eye tracking system for radiotherapy to enhance the precision and safety of radiation treatment delivery to the eye.

學術文獻
Published Paper

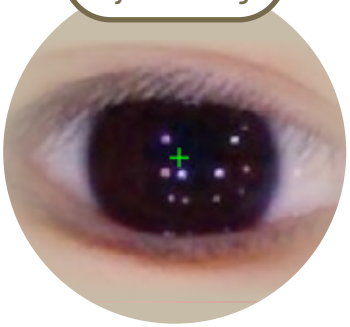
系統特色 System Features:

- 設計適用於眼睛附近或眼內的放射治療
  Designed for radiotherapy near or in the eye
- 可依個別病人需求度身訂製
  Can be customised for each patient
- 提供實時眼動追蹤和反饋
  Provide real-time eye tracking and feedback
- 提升治療的準確性
  Improve the accuracy of treatment delivery

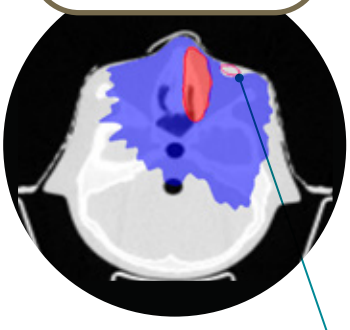


三維設計
3D Design

眼動追蹤
Eye Tracking



治療設計
Treatment Planning



晶體在放射區以外
Lens spared

核磁影像導向放射治療系統分段全身放射治療
MR-Linac Segmental Total Body Irradiation

我們研發了利用1.5T核磁影像導向放射治療系統進行分段全身放射治療的新技術，實現精準的全身劑量覆蓋。

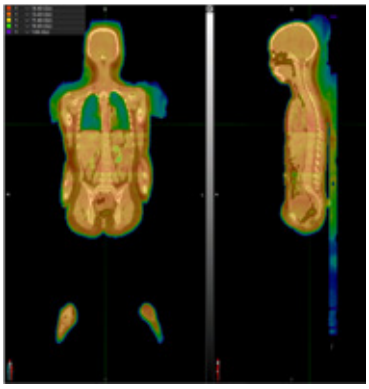
We have developed a novel segmental Total Body Irradiation (segTBI) technique using the 1.5T MR-Linac to ensure precise full-body coverage.

學術文獻
Published Paper

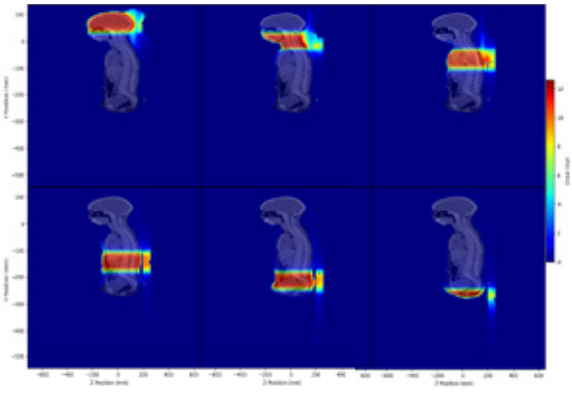
特點 Key Features:

- 採用多個等中心點設計覆蓋全身範圍
  Multiple isocentres for full-body coverage
- 利用劑量羽化技術確保劑量均勻
  Uses dose feathering for uniform dose distribution
- 每一分段均提供核磁影像導向
  Provides MR image guidance for every segment
- 透過精準劑量調控提升器官保護
  Enhances organ sparing with precise dose modulation

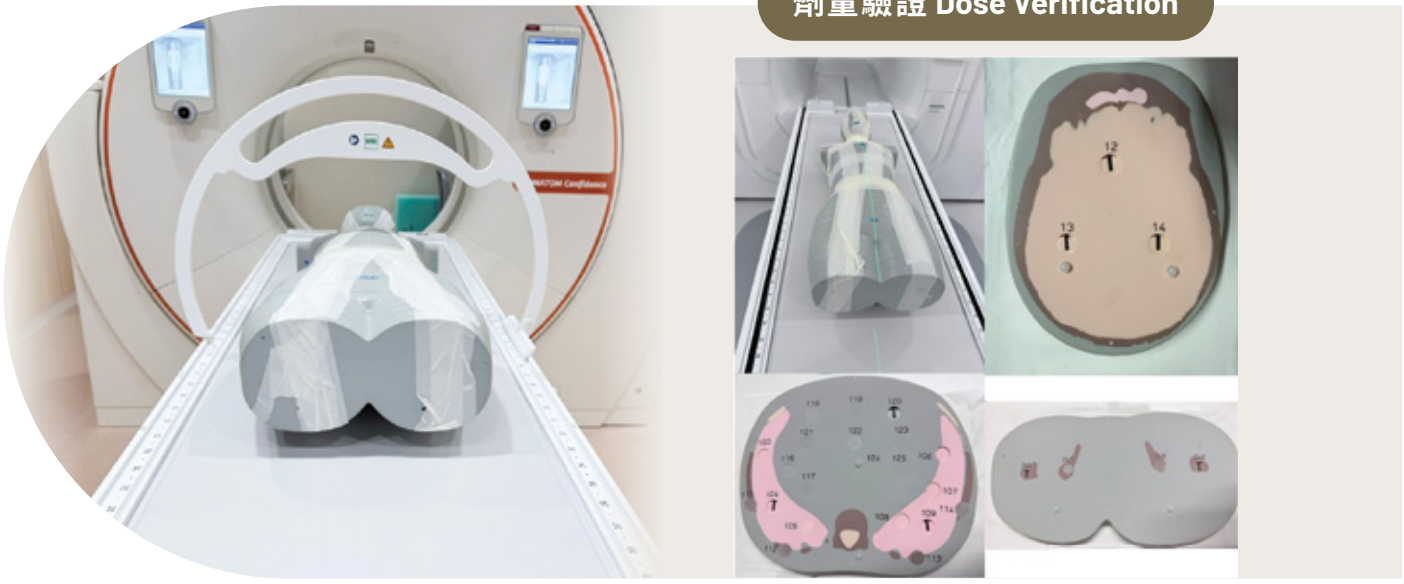
劑量分佈 Dose Distribution



分段策略示意圖 Segmentation Strategy



劑量驗證 Dose Verification



轉介與收費計劃 Referrals and Packages

病人可由腫瘤科專科醫生轉介至本中心，我們的聯絡主任會迅速為病人安排治療，確保流程順暢。
Patients can be referred to our centre by oncologists, and our care coordinators will promptly coordinate treatment arrangements to ensure a smooth process.

我們的放射治療服務秉持清晰透明的收費原則，讓病人充分了解治療過程中的每一個步驟。透過超過230項標準化收費項目，我們致力於滿足不同病人的需要，同時保持公平與清晰，並提供多種靈活的收費計劃。
Our radiation therapy services follow a clear and transparent pricing policy, enabling patients to fully understand every step of their treatment journey. With over 230 standardised fee items, we strive to meet the diverse needs of patients while maintaining fairness and transparency, offering a range of flexible payment plans.

為了進一步提升便利性，我們與多家可信賴的保險合作夥伴建立網絡，提供保險支援及直接結算服務，讓病人能安心專注於治療。
To further enhance convenience, we have established insurance network with trusted partners, providing insurance support and direct billing services, allowing patients to focus on their treatment with peace of mind.

請瀏覽我們的網站以獲取最新資訊。
Please visit our website for the latest information.

資助計劃 Subsidy Scheme

何善衡慈善基金會特別於本院設立何善衡核磁影像導向放射治療中心病人支援基金，透過基金的投資回報，讓合資格的香港居民受惠於先進及優質的放射治療。「軀體立體定位放射治療支援計劃」旨在為合資格的癌症患者提供資助，協助他們於中大醫院接受核磁影像導向放射治療。軀體立體定位放射治療可應用於肝癌、胰臟癌、前列腺癌、膀胱癌、腦癌、腎上腺癌，以及骨轉移和寡頭轉移等情況。
The S.H. Ho Foundation has established the S.H. Ho MR-Linac Centre Patient Endowment Fund at our Hospital. Through this investment returns, the Fund enables eligible Hong Kong residents to benefit from advanced and high-quality radiotherapy services. The Stereotactic Body Radiation Therapy (SBRT) Subsidy Scheme aims to provide financial support to eligible cancer patients, allowing them to receive MR image-guided radiotherapy (IGRT) at our Centre. This treatment can be used for tumours of the liver, pancreas, prostate, bladder, brain, adrenal gland, as well as for bone metastasis and oligometastasis.

- **基本要求 Basic criteria:**
  - 香港居民
    Hong Kong residents
  - 病人沒有任何醫療保險保障
    Patient without medical care insurance cover
  - 須經財政資格評估
    Scheme financial approval required
- **資助內容 Subsidy details:**
  - 放射治療定位所需模具及製作
    Immobilisation device required for the treatment
  - 放射治療設計及規劃(包括電腦掃描及醫生設計費)
    Radiation therapy planning (including Computed Tomography scan and doctor's planning fee)
  - 最多5次核磁影像導向放射治療，每次由臨床腫瘤科專科醫生即時評估及調整規劃
    Up to 5 fractions of MR IGRT, attended by specialist in Clinical Oncology for plan assessment and adaptation
  - 治療期間基本醫療監察
    Basic clinical observation over the treatment course

申請人經財政資格評估後，合資格病人會按其財政狀況獲得不同費用的資助。綜合社會保障援助計劃 (CSSA) 受助人更可獲得全額資助。
After an applicant undergoes a financial eligibility assessment, eligible patients will receive subsidies for varying amounts based on their financial situation. Recipients of the Comprehensive Social Security Assistance Scheme (CSSA) may also receive a full waiver of the fees listed above for subsidies.

地址 Address :

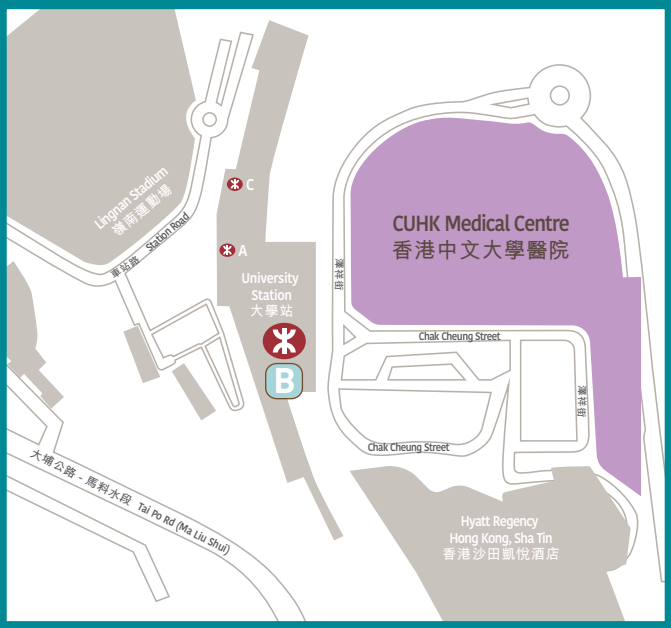
香港新界沙田澤祥街9號
香港中文大學醫院LG/F
LG/F, CUHK Medical Centre,
9 Chak Cheung Street, Shatin,
New Territories, Hong Kong

服務時間 Service Hours :

星期一至五	上午9:00 - 下午5:30
星期六	上午9:00 - 下午1:00
星期日及公眾假期	休息
Monday to Friday	9:00AM - 5:30PM
Saturday	9:00AM - 1:00PM

Closed on Sundays and Public Holidays

醫院位置 Location



查詢 Enquiries :

(852) 3946 6698

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Introduction Video

Facebook:	Instagram:	WeChat:	Email:	Website:
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