



**For information
on 22.9.2022**

HAB-P328

Hospital Authority

Cluster Presentation Programme – New Territories West Cluster Service Development of Positron Emission Tomography / Computed Tomography Centre

Advice Sought

Members are invited to note for information the development and operation of the Positron Emission Tomography/Computed Tomography (PET-CT) service in Tuen Mun Hospital (TMH).

Background

2. PET-CT, being one of the most advanced medical imaging technologies, is commonly used for the preliminary diagnosis of diseases such as malignancy, nervous system diseases, cardiovascular diseases, etc. It also serves as an important tool for assisting doctors to differentiate between benign and malignant tumours, and whether the tumour is primary or metastatic. In addition to oncology, there is an increased application of PET-CT in various aspects, such as infectious, cardiological and neurological diseases including cognitive disorders and epilepsy.

3. Before 2020, Pamela Youde Nethersole Eastern Hospital (PYNEH) and Queen Elizabeth Hospital (QEH) were the only two Hospital Authority (HA) hospitals that furnished diagnostic PET-CT service. The referral network for PET-CT service in general was arranged as PYNEH to support cases from Hong Kong East Cluster and Hong Kong West Cluster and QEH for cases from Kowloon Central Cluster, Kowloon East Cluster, Kowloon West Cluster (KWC), New Territories East Cluster and New Territories West Cluster (NTWC). Due to the lack of both public and private PET-CT service in NTWC, patients from NTWC needed to travel across regions to receive the PET-CT service in either QEH or private institutions.

4. With a munificent donation of \$35 million from the Li Ka Shing Foundation “Love Can Help” Medical Assistance Programme, the NTWC Li Ka Shing PET-CT Centre (NTWC PET-CT Centre) was established in 2020, rendering TMH the third HA hospital that could provide PET-CT scan service.

Service Delivery

5. The service model of NTWC PET-CT Centre focuses on cancer diagnosis, staging, treatment monitoring and recurrence, which is similar to that of PYNEH and QEH. According to the HA PET-CT standard services, clinical indications that are covered by NTWC PET-CT Centre includes, amongst others, cervical nodal metastasis from carcinoma of unknown origin, staging of oesophageal carcinoma and non-small cell lung carcinoma, staging and restaging of colorectal carcinoma, nasopharyngeal carcinoma, pre-treatment staging, restaging and response assessment of lymphoma. PET-CT service is predominantly delivered as an out-patient service with a small proportion of in-patient service to provide prompt and potentially life-saving diagnostic information.

6. The NTWC PET-CT Centre commenced operation in December 2020 with a capacity of eight to nine patients per day. Since July 2021, NTWC PET-CT Centre also rendered support to patients from KWC requiring PET-CT examinations. The attendance was 2 120 patients in 2021/22, most of whom (i.e. around 73%) were from NTWC.

Service Statistics in 2021/22

	2021									2022		
	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
NTWC	116	155	164	155	141	126	106	125	123	127	99	114
KWC				15	38	46	56	79	79	92	77	87

Advanced Technology and Clinical Expertise of PET-CT

7. NTWC PET-CT Centre is the first in HA to utilise state-of-the-art Silicon-Photomultipliers (SiPM)-based PET-CT system, equipping with 4-ring digital PET detector and an innovative reconstruction technology with the combination of Time-of-Flight and Q.Clear algorithms. The SiPM-based PET-CT system is able to reduce the radiation dose, shorten scan time and enhance diagnostic accuracy through improving imaging quality.

8. NTWC PET-CT Centre is served by radiographers who are adequately trained either locally or overseas, including clinical attachment in Zurich Hospital (Switzerland) or local PET centres. The majority of the specialised PET radiographers in the Centre are certified with Distance Assisted Training Programme which is affiliated with International Atomic Energy Agency. The nuclear medicine physicians in TMH have ample experience in PET-CT and are trained specialists with in-depth knowledge of PET physics, cyclotron, novel PET tracers and PET radiation safety. NTWC PET-CT centre provides clinical care in accordance with evidence-based medicine.

Enhancement of Patient Services

9. The availability of PET-CT in NTWC has led to a change in clinical patient care. Nuclear medicine physicians work closely with oncologists and doctors from relevant specialties to provide timely imaging reports and opinions to guide clinicians' decision on

patient management. Taking oesophageal cancer as an example, PET-CT is more sensitive than contrast CT for detecting nodal and distant metastasis. PET-CT revealed additional metastasis that might not be detected by contrast CT and changed clinical management of patients through improving their selection for radical surgery.

10. In addition, PET-CT could provide clinicians information on treatment response so that modification on treatment regimen could be initiated once the disease progresses.

11. The one stop NTWC PET-CT service improves patients' clinical outcome with early, or even curative, intervention based on the prompt provision of diagnostic information.

Way Forward

12. The clinical indications of HA PET-CT standard services will be reviewed from time to time, to identify room for enhancement and expansion for meeting the service needs. The referral network for PET-CT service among the three HA PET-CT Centres would be subject to regular reviews, having regard to the service development and actual service demand. In parallel, NTWC would continue to keep in view the service demand and plan for measures to enhance the service of NTWC PET-CT centre where appropriate.