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Produce positron emission tomography/computed tomography (pet/ct) images for diagnostic purposes



Overview

SFHCI.J SFHCI.J This standard is concerned with the use of Positron Emission Tomography/Computed tomography (PET/CT) equipment and procedures to produce images for diagnostic purposes. It includes selecting the most appropriate scan protocol depending on the individual's condition and clinical history. Key people are those involved in the individual's care and others involved in provision of services. Users of this standard will need to ensure that practice reflects up to

Performance criteria

You must be able to:

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1.
apply standard precautions for infection control and other appropriate health and safety measures
2.
ensure all necessary preparations have been made by the individual and staff before starting the procedure
3.
check and prepare the equipment required for the examination
4.
ensure the environment is conducive to maintaining the privacy and dignity of the individual
5.
check the identification details before commencing the procedure in accordance with local policies and procedures
6.
introduce yourself and other members of staff present during the examination
7.
communicate with the individual / key people to facilitate their understanding of and co-operation with the examination
8.
establish the individuals capacity to understand the procedure with the help of key people if necessary
9.
obtain valid consent for the procedure in accordance with national and local guidelines
10.
respect the individuals privacy, dignity, beliefs and decisions
11.
check individuals of child-bearing potential for pregnancy or

possible pregnancy and breast-feeding status, if appropriate to the examination, and take action in accordance with local protocols

12.

confirm the status of key people before the examination and, where their presence is required, adhering to local guidelines

13.

clearly explain the procedure and possible outcomes, including risk, benefits and limitations

14.

check for any contraindications for the proposed procedure and take appropriate action in response to identified risks

15.

prepare the site for intravenous access

16.

obtain intravenous access using cannulation

17.

administer radioisotopes using the appropriate equipment

18.

enter the identification details of the individual into the PET/CT scanner or, if details have previously been entered, check them for accuracy

19.

accurately select all parameters required for the scan according to local scan protocols for the procedure, assess and any required modifications and take appropriate action

20.

position the individual and adjust their clothing according to the protocols for the examination to be performed in a manner which allows an optimal outcome to be achieved while:

20.1 recognising the individuals need to retain their dignity and self-

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respect

20.2 ensuring their comfort as far as possible

20.3 preventing the appearance of artefacts

21.

check the room prior to making the exposure to ensure that only essential, protected persons remain with the individual, that all local

protocols have been adhered to and take appropriate action if this does not occur

22.

commence the scan and monitor the individuals condition and compliance throughout the procedure and take action appropriate to their needs

23.

view the images on completion of the scan to ensure they are technically acceptable and suitable for diagnostic purposes

24.

create multi-planar reformats (MPR) from the relevant datasets as appropriate

25.

review images for clinical acceptability, take appropriate action, including further imaging if required

26.

monitor and record the individuals exposure to ionising radiation throughout the procedure according to local protocols

27.

observe the individuals condition and well-being at all times and take appropriate action

28.

following the preliminary imaging examination, inform the appropriate person if an abnormality is observed on the image which is likely to require further investigation or treatment

29.

provide the individual with information relating to the procedure and aftercare where necessary

30.

explain the process for obtaining results

31.

optimise, record, collate and prepare appropriate information, documentation and images for transfer or storage according to local protocols

32.

verify that the images have arrived/been stored according to local protocols

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33.

recognise where help or advice is required and obtain this from appropriate sources

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Knowledge and understanding

You need to know and understand:

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1.
legal, organisational and policy requirements relevant to your role, the role of others in your organisation and the activities being carried out
2.
the relevant national and local standards, guidelines, policies and procedures that are available and how and when they should be accessed
3.
the importance of respecting individuals culture, privacy, dignity, wishes, beliefs and decisions
4.
the limitations of your own knowledge and experience and the importance of operating within your scope of practice
5.
the roles and responsibilities of other team members
6.
the importance of obtaining valid consent in line with national and local guidelines
7.
clinical appropriateness of the examination request and the action to take when the request is not appropriate
8.
the gross surface and cross-sectional anatomy of the areas to be scanned
9.
the relevant physiology of the areas to be scanned
10.
the harmful effects of radiation to the human body and use of radiation protection equipment

11.
how to apply the principles of time, shielding and distance to reduce radiation exposure to staff
12.
the medical terminology relevant to the examination including abbreviations
13.
contra-indications to PET/CT scanning including the clinical implications of any allergies, pregnancy status, breastfeeding status and uncontrolled diabetes mellitus relevant to the examination
14.
how to measure and interpret blood sugar levels using a glucometer
15.
the aseptic techniques involving in intravenous cannulation
16.
the care and preparation of intravenous access routes for dose administration
17.
the requirements for administration of pharmaceuticals to reduce brown fat uptake in individuals less than 18 years of age
18.
the physiological uptake pathways for different PET tracers and the impact upon optimal image quality
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19.
the physical, biological and effective half-life of different PET tracers and consequently the radiation protection aftercare advice for individuals and key people
20.
the calculation of administered radioactivity to an individual
21.
the calculation of residual radioactivity post injection of a PET tracer
22.
the common normal variants and their appearance on PET/CT

images

23.

common pathologies of the areas to be scanned and their appearance on PET/CT images

24.

manifestations of individuals physical and emotional status

25.

when additional images are required to aid diagnosis and to enhance the examination

26.

production, interactions and properties of x-rays, alpha, beta particles and gamma rays

27.

the physical processes involved in the production of PET/CT images, scanning techniques and protocols

28.

the ways in which PET/CT images can be captured, processed and permanently stored

29.

the physical principles of PET/CT scanning

30.

alternative imaging examinations that may be employed alongside PET/CT scanning

31.

the technical and diagnostic quality requirements of the image

32.

artefacts on images - their causes and avoidance strategies

33.

factors which influence the decision to repeat images or take additional PET/CT images

34.

the safe operation of the PET/CT scanner and accessories in use

35.

the use of quality assurance equipment, recording results and taking appropriate action

36.

equipment capabilities, limitations and routine maintenance

including the quality control processes required by the operator
37.

the importance of timely equipment fault recognition and local procedures for reporting these

38.

how to adapt communication styles, ask questions, and listen carefully in ways which are appropriate to the needs of the individual

39.

methods of communicating difficult and complex information to individuals and key people

40.

the importance of providing individuals and key people with opportunities to ask questions and increase their understanding

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41.

the importance of respecting individuals culture, privacy, dignity, wishes, beliefs and decisions

42.

the information that should be given to individuals before, during and on completion of the examination

43.

preparation of the environment, individual and equipment for PET/CT Scanning

44.

procedures relating to recording, collating and preparing appropriate information, documentation and images for transfer or storage according to local protocols

45.

how to keep full, accurate and clear records in line with organisational procedures

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