B

CI.K Produce Positron Emission Tomography/Magnetic Resonance images (PET/MRI) for diagnostic purposes

OVERVIEW

This standard is concerned with the use of Positron Emission Tomography/ Magnetic Resonance imaging (PET/MRI) equipment and procedures to produce images for diagnostic purposes. 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 date information and policies.Version No 1

KNOWLEDGE AND UNDERSTANDING

You will need to know and understand:

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. clinical appropriateness of the examination request and the action to take when the request is not appropriate
7. the gross, surface and cross-sectional anatomy of the areas to be scanned
8. the medical terminology relevant to the examination, including abbreviations
9. the relevant physiology of the areas to be scanned
10. the common normal variants and their appearance on Magnetic Resonance images
11. common pathologies of the areas to be scanned and their appearance on Magnetic Resonance images
12. manifestations of individuals' physical and emotional status
13. contra-indications to Magnetic Resonance scanning, including absolute and relative
14. contra-indications to PET/MRI scanning including the clinical implications of any allergies, pregnancy status, breastfeeding status and uncontrolled diabetes mellitus relevant to the examination
15. contraindications to MRI contrast agents including the clinical implications of any allergy relevant to the examination
16. the importance of assessing for presence of ferro-metallic objects/prostheses and

implanted medical devices and the appropriate action to take if these are identified
17. when additional images are required to aid diagnosis and to enhance the examination
18. how to adapt communication styles, ask questions, and listen carefully in ways which are appropriate for the needs of the individual
19. methods of communicating difficult and complex information to individuals and key people
20. the importance of providing individuals and key people with opportunities to ask questions and increase their understanding
21. the information that should be given to individuals before, during and on completion of the examination
22. the harmful effects of radiation to the human body and use of radiation protection equipment
23. how to apply the principles of time, shielding and distance to reduce radiation exposure to staff
24. the medical terminology relevant to the examination including abbreviations
25. how to measure and interpret blood sugar levels using a glucometer
26. the aseptic techniques involving in intravenous cannulation
27. the care and preparation of intravenous access routes for dose administration
28. the requirements for administration of pharmaceuticals to reduce brown fat uptake in individuals less than 18 years old
29. the physiological uptake pathways and half-life for different PET tracers and the impact upon optimal image quality
30. the physical, biological and effective half-life of different PET tracers and consequently the radiation protection aftercare advice for individuals and key people
31. the calculation of administered radioactivity to an individual
32. the calculation of residual radioactivity post injection of a PET tracer
33. controlled access areas and safety requirements in the MRI environment in line with current MRI safety guidelines
34. the physical principles of Magnetic Resonance scanning, techniques and protocols
35. production, interactions and properties of gamma rays
36. the technical and diagnostic quality requirements of the image
37. artefacts on images - their causes and avoidance strategies
38. factors which influence the decision to repeat images or take additional images
39. alternative imaging examinations
40. the safe operation of the Magnetic Resonance scanner and accessories in use
41. the safe use of quality assurance equipment, recording results and taking appropriate action
42. how to deal with spillages and the action to take if spillages occur in line with national MRI safety guidance
43. equipment capabilities, limitations and routine maintenance including the quality control processes required by the operator
44. the importance of timely equipment fault recognition and local procedures for reporting these
45. procedures for preparation of the individual, environment and equipment for Magnetic Resonance scanning
46. procedures relating to recording, collating and preparing appropriate documentation and images for transfer or storage according to local protocols
47. how to keep full, accurate and clear records in line with organisational procedures

PERFORMANCE CRITERIA

You must be able to do the following:

1. apply standard precautions for infection prevention and 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 individual's 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 individual's privacy, dignity, beliefs and decisions
11. clearly explain the procedure and possible outcomes, including risk, benefits and limitations
12. check for Magnetic Resonance imaging safety by use of the department Magnetic Resonance imaging safety check list which will include checking for the presence of ferro-metallic objects/prostheses and implanted medical devices
13. take appropriate action if any of these are found to be present
14. check for any contraindications for the proposed procedure and take appropriate action in response to identified risks
15. examine previous relevant images and clinical information, where available, to ensure that the correct procedure and techniques are employed
16. assess the individual's clinical and physical condition prior to the start of the examination with a view to proceeding
17. 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
18. prepare the site for intravenous access
19. obtain intravenous access using cannulation
20. administer radioisotopes using the appropriate equipment
21. administer gadolinium using the appropriate equipment
22. confirm the MRI safety status of key people before the examination and, where their presence is required, adhering to local guidelines
23. enter the identification details of the individual into the Magnetic Resonance scanner or, if details have previously been entered, check them for accuracy
24. select all sequences required for the scan according to local protocols for the procedure, assess and any required modifications and take appropriate action
25. position the individual, provide any hearing protection 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:
    1. ensuring their comfort as far as possible
    2. preventing the appearance of artefacts
26. correctly and safely position appropriate Radio Frequency (RF) coils, cables and monitoring equipment

27. check the room prior to taking the scan to ensure that only essential protected persons remain and that all local rules have been adhered to, taking appropriate action where necessary
28. commence the scan and monitor the individual's condition and compliance throughout the procedure and take action appropriate to their needs
29. view the images on completion of the scan to ensure they are technically acceptable and suitable for diagnostic purposes
30. create multi-planar reformats (MPR) from the relevant datasets as appropriate
31. review images for clinical acceptability, take appropriate action, including further imaging if required
32. provide the individual with information relating to the procedure and aftercare where necessary
33. explain the process for obtaining results
34. 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
35. optimise, record, collate and prepare appropriate documentation and images for transfer or storage according to local protocols
36. verify that the images have arrived/been stored according to local protocols
37. recognise where help or advice is required and obtain this from appropriate sources

ADDITIONAL INFORMATION

This National Occupational Standard was developed by Skills for Health. This standard links with the following dimension within the NHS Knowledge and Skills Framework (October 2004):Dimension: HWB6 Assessment and treatment planning