

X-Ray Technician

Theory & Practical

| National Occupational Standards (NOS) | Performance Criteria (PC) |
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| 1. HSS/ N 0711: Comprehend conventional radiological needs of patients | PC1. Explain the subdivisions of anatomy, terms of location and position, fundamental planes, vertebrate structure of man, organisation of the body cells and tissues |
| | PC2. Explain the pathology of various systems: cardiovascular system, respiratory system, central nervous system, musculoskeletal system, GIT, GUT and reproductive system |
| | PC3. Explain the pathology of radiation injury and malignancies |
| | PC4. Understand specific requests of physicians with respect to the scans required |
| | PC5. Take medical history of the patient and document it as required |
| | PC6. Understand and interpret instructions and requirements documented by the physician in the patient's prescription |
| | PC7. Determine the radiological diagnostic tests required for the patient based on the physician's prescription and the medical history |
| 2. HSS/ N 0712: Prepare the patient and the room for Conventional Radiological procedure | PC1. Prepare the room, apparatus and instruments for conventional radiological procedures like X-ray, BMD or Mammography |
| | PC2. Set up the machine for the desired procedure |
| | PC3. Position the patient correctly for an X-ray in the following positions: a. Erect b. Sitting c. Supine d. Prone e. Lateral f. Oblique g. Decubitus |
| | PC4. Explain relative positions of X-ray tube and patient and the relevant exposure factors related to these |
| | PC5. Explain the use of accessories such as Radiographic cones, grid and positioning aids |
| | PC6. Explain the anatomic and physiological basis of the procedure to be undertaken |
| | PC7. Explain the radiographic appearances of both normal and common abnormal conditions in order to ensure application of the appropriate radiographic technique |
| | PC8. Apply modifications in positioning technique for various disabilities and types of subject |
| | PC9. Explain the principles of radiation physics detection and measurement |
| | PC10. Explain the biological effects of radiation |
| | PC11. Explain the principles of radiation protection: Maximum permissible exposure concept b. Annual dose equivalent limits (ADEL) ALARA concept c. International recommendations and current code of practice for the |

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| | protection of persons against ionising radiation from medical and dental use |
| | PC12. Explain the use of protective materials: a. Lead b. Lead –impregnated substances c. Building materials d. Concept of barriers e. Lead equivalents and variations f. Design of X-ray tubes related to protection. g. Structural shielding design (work-load, use factor, occupancy factor, distance |
| | PC13. Explain the instruments of radiation protection, use of gonad shield and practical methods for reducing radiation dose to the patient |
| | PC14. Ensure protection of self, patients, departmental staff and public from radiation through use of protection instruments and monitoring personnel and the work area |
| 3. HSS/ N 0713: Operate and oversee operation of conventional radiological equipment | PC1. Describe the construction and operation of general radiographic equipment |
| | PC2. Reliably perform all non-contrast plain Radiography, and contrast radiography in special situations |
| | PC3. Apply quality control procedures for all radiologic equipment |
| | PC4. Control and manipulate parameters associated with exposure and processing to produce a required image of desirable quality |
| | PC5. Practice the procedures employed in producing a radiographic image |
| | PC6. Describe methods of measuring exposure and doses of radiographic beams |
| | PC7. Discuss and apply radiation protection principles and codes of practice |
| | PC8. Demonstrate an understanding of processing of images in digital form and be familiar with recent advances in imaging |
| | PC9. Set up the X-ray machine for the procedure |
| | PC10. Carry out routine procedures associated with maintenance of imaging and processing systems |
| | PC11. Ensure protection of patients, departmental staff and public from radiation through use of protection instruments and monitoring personnel and the work area |
| 4. HSS/ N 0714: Process X-ray films/ Images | PC1. Explain the principles of conventional radiographic imaging |
| | PC2. Apply knowledge of conventional radiographic imaging to the production of radiographs and the assessment of image quality |
| | PC3. Understand the construction and operation of image processing equipment |
| | PC4. Control and manipulate parameters associated with exposure and processing to produce a required image of desirable quality |
| | PC5. Perform X-ray film / image processing techniques (including dark room techniques) |
| | PC6. Explain and implement the fundamentals, concepts and applications of processing of images in digital form using computer |

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| | based systems |
| | PC7. Carry out quality control for automatic film processing, evaluate and act on results |
| 5.HSS/ N 0715: Prepare and document conventional radiological reports | PC1. Correctly identify anatomical features on the radiographs and identify some major pathological and traumatic conditions |
| | PC2. Seek the advice of the Radiologist on conditions identified |
| | PC3. Document the comments and diagnosis of the Radiologist in a report for the patient |
| | PC4. Maintaining the patient record |
| HSS/ N 9614 : Recognize Healthy body systems | PC1. Correctly use and interpret the medical terminology that describes normal structure, function & location of major body systems |
| | PC2. Correctly use and interpret the information that relates to the interrelationship between major components of each body system and other structure |
| | PC3. Review the factors that contribute to maintain whole body health |
| | PC4. Evaluate how relationship between different body systems affect and support healthy functioning |
| | PC5. Enhance quality of work by using and sharing information about healthy functioning of the body |
| 7. HSS/ N 9608: Follow radiation safety guidelines | PC1. Confirm sources of radiation and likely type of exposure for all individuals within the work area |
| | PC2. Apply appropriate assessment methodology suitable for source, type of exposure, dose, level of risk and the recipients' exposure time |
| | PC3. Confirm that all required procedures and associated safety measures are compliant with current and relevant legislation requirements |
| | PC4. Determine and assess the appropriateness of the projected radiation dose over a suitable period of time for an individual or key staff and other personnel |
| | PC5. Record the results of the assessment accurately and in correct format, referencing any monitoring measurements taken to accepted published values to indicate conformance within accepted safety guidance limits for the procedures undertaken within the work practice |
| | PC6. Communicate and provide information, advice and guidance effectively in the appropriate medium to meet the individuals needs and preferences |
| | PC7. Report actual and potential risks from radiation, in context, to other healthcare professionals and where appropriate seek assistance and advice |
| | PC8. Maintain full, accurate and legible records of information and store in correct location in line with current legislation, guidelines, policies and protocols |
| | PC9. Confirm that all required procedures and associated safety measures are current and compliant with relevant legislation |
| | PC10. Maintain full, accurate and legible records of information and store in correct location in line with current legislation, guidelines, local policies and protocols |
| 8. HSS/ N 9610 (Follow | PC1. Perform the standard precautions to prevent the spread of infection in |

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| infection control policies and procedures) | accordance with organisation requirements |
| | PC2. Perform the additional precautions when standard precautions alone may not be sufficient to prevent transmission of infection |
| | PC3. Minimise contamination of materials, equipment and instruments by aerosols and splatter |
| | PC4. Identify infection risks and implement an appropriate response within own role and responsibility |
| | PC5. Document and report activities and tasks that put patients and/or other workers at risk |
| | PC6. Respond appropriately to situations that pose an infection risk in accordance with the policies and procedures of the organization |
| | PC7. Follow procedures for risk control and risk containment for specific risks |
| | PC8. Follow protocols for care following exposure to blood or other body fluids as required |
| | PC9. Place appropriate signs when and where appropriate |
| | PC10. Remove spills in accordance with the policies and procedures of the organization |
| | PC11. Maintain hand hygiene by washing hands before and after patient contact and/or after any activity likely to cause contamination |
| | PC12. Follow hand washing procedures |
| | PC13. Implement hand care procedures |
| | PC14. Cover cuts and abrasions with water-proof dressings and change as necessary |
| | PC15. Wear personal protective clothing and equipment that complies with Indian Standards, and is appropriate for the intended use |
| | PC16. Change protective clothing and gowns/aprons daily, more frequently if soiled and where appropriate, after each patient contact |
| | PC17. Demarcate and maintain clean and contaminated zones in all aspects of health care work |
| | PC18. Confine records, materials and medicaments to a well-designated clean zone |
| | PC19. Confine contaminated instruments and equipment to a well-designated contaminated zone |
| | PC20. Wear appropriate personal protective clothing and equipment in accordance with occupational health and safety policies and procedures when handling waste |
| | PC22. Store clinical or related waste in an area that is accessible only to authorised persons |
| | PC23. Handle, package, label, store, transport and dispose of waste appropriately to minimise potential for contact with the waste and to reduce the risk to the environment from accidental release |
| | PC24. Dispose of waste safely in accordance with policies and procedures of the organisation and |

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| | legislative requirements |
| | PC25. Wear personal protective clothing and equipment during cleaning procedures |
| | PC26. Remove all dust, dirt and physical debris from work surfaces |
| | PC27. Clean all work surfaces with a neutral detergent and warm water solution before and after each session or when visibly soiled |
| | PC28. Decontaminate equipment requiring special processing in accordance with quality management systems to ensure full compliance with cleaning, disinfection and sterilisation protocols |
| | PC29. Dry all work surfaces before and after use |
| | PC30. Replace surface covers where applicable |
| | PC31. Maintain and store cleaning equipment |
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Soft Skill Communication

| National Occupational Standards (NOS) | Performance Criteria (PC) |
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| Part 1 | |
| 1. Attitude | |
| HSS/ N 9603 (Act within the limits of one's competence and authority) | PC1. Adhere to legislation, protocols and guidelines relevant to one's role and field of practice |
| | PC2. Work within organisational systems and requirements as appropriate to one's role |
| | PC3. Recognise the boundary of one's role and responsibility and seek supervision when situations are beyond one's competence and authority |
| | PC4. Maintain competence within one's role and field of practice |
| | PC5. Use relevant research based protocols and guidelines as evidence to inform one's practice |
| | PC6. Promote and demonstrate good practice as an individual and as a team member at all times |
| | PC7. Identify and manage potential and actual risks to the quality and safety of practice |
| | PC8. Evaluate and reflect on the quality of one's work and make continuing improvements |
| 2. Work Management | |
| HSS/ N 9602 (Ensure availability of medical and diagnostic supplies) | PC1. Maintain adequate supplies of medical and diagnostic supplies |
| | PC2. Arrive at actual demand as accurately as possible |
| | PC3. Anticipate future demand based on internal, external and other contributing factors as accurately as possible |
| | PC4. Handle situations of stock-outs or unavailability of stocks without compromising health needs of patients/ individuals |
| 3. Etiquette | |

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| HSS/ N9601 (Collate and Communicate Health Information) | PC1. Respond to queries and information needs of all individuals |
| | PC2. Communicate effectively with all individuals regardless of age, caste, gender, community or other characteristics |
| | PC3. Communicate with individuals at a pace and level fitting their understanding, without using terminology unfamiliar to them |
| | PC4. Utilise all training and information at one's disposal to provide relevant information to the individual |
| | PC5. Confirm that the needs of the individual have been met |
| | PC6. Adhere to guidelines provided by one's organisation or regulatory body relating to confidentiality |
| | PC7. Respect the individual's need for privacy |
| | PC8. Maintain any records required at the end of the interaction |
| Part 2 | |
| 1. Team Work 2. Safety management | |
| HSS/N9606 (Maintain a safe, healthy, and secure working environment) | PC1. Identify individual responsibilities in relation to maintaining workplace health safety and security requirements |
| | PC2. Comply with health, safety and security procedures for the workplace |
| | PC3. Report any identified breaches in health, safety, and security procedures to the designated person |
| | PC4. Identify potential hazards and breaches of safe work practices |
| | PC5. Correct any hazards that individual can deal with safely, competently and within the limits of authority |
| | PC6. Promptly and accurately report the hazards that individual is not allowed to deal with, to the relevant person and warn other people who may get affected |
| | PC7. Follow the organisation's emergency procedures promptly, calmly, and efficiently |
| | PC8. Identify and recommend opportunities for improving health, safety, and security to the designated person |
| | PC9. Complete any health and safety records legibly and accurately |
| 3. Waste Management | |
| HSS/ N 9609 (Follow biomedical waste disposal protocols) | PC1. Follow the appropriate procedures, policies and protocols for the method of collection and containment level according to the waste type |
| | PC2. Apply appropriate health and safety measures and standard precautions for infection prevention and control and personal protective equipment relevant to the type and category of waste |
| | PC3. Segregate the waste material from work areas in line with current legislation and organisational requirements |
| | PC4. Segregation should happen at source with proper containment, by using different colour coded bins for different categories of waste |
| | PC5. Check the accuracy of the labelling that identifies the type and content of waste |
| | PC6. Confirm suitability of containers for any required course of action appropriate to the type of waste disposal |
| | PC7. Check the waste has undergone the required processes to make it safe for transport and disposal |

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| | PC8. Transport the waste to the disposal site, taking into consideration its associated risks |
| | PC9. Report and deal with spillages and contamination in accordance with current legislation and procedures |
| | PC10. Maintain full, accurate and legible records of information and store in correct location in line with current legislation, guidelines, local policies and protocols |
| 4. Quality Assurance | |
| HSS/ N 9611: Monitor and assure quality | PC1. Conduct appropriate research and analysis |
| | PC2. Evaluate potential solutions thoroughly |
| | PC3. Participate in education programs which include current techniques, technology and trends pertaining to the dental industry |
| | PC4. Read Dental hygiene, dental and medical publications related to quality consistently and thoroughly |
| | PC5. Report any identified breaches in health, safety, and security procedures to the designated person |
| | PC6. Identify and correct any hazards that he/she can deal with safely, competently and within the limits of his/her authority |
| | PC7. Promptly and accurately report any hazards that he/she is not allowed to deal with to the relevant person and warn other people who may be affected |
| | PC8. Follow the organisation's emergency procedures promptly, calmly, and efficiently |
| | PC9. Identify and recommend opportunities for improving health, safety, and security to the designated person |
| | PC10. Complete any health and safety records legibly and accurately |
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