Guide for STP Trainees : Radiation Protection

IPEM trainee network

DOPS

		DOPS	Examples of evidence which may relate to this DOPS	Competencies which may share evidence with this DOPS
RADS DOPS		Carry out measurements to assess patient dose for a radiographic procedure	• Use a phantom to take relevant measurements to assess patient doses e.g. for optimisation of a procedure • Carry out checks to ensure patient dose measurement equipment is within tolerance e.g. DAP meters, assessment of DLP	•RADS-C-15
		Organise and record the outcome of rehearsal of a contingency plan	• Organise the rehearsal of a contingency plan contained within a set of Local Rules	• RADS-C-26
		Choose an appropriate instrument and carry out an environmental survey of a radiation facility	•Carry out an environmental survey of a radiation facility ○Select appropriate instrument and carry out necessary function checks ○Make and record appropriate measurements ○Interpret measurements and produce a report with suitable recommendations	•RADS-C-17 to 21

CbD

	Examples of possible subjects for CbD. Note that these are not prescribed within the Learning Guide	Examples of possible evidence	Competencies which may share evidence with this CbD
RADS CbD	Discussion of relevant ionising and non-ionising radiation legislation	• Ionising and non-ionising audit reports reflecting awareness of relevant legislative requirements	RADS-C-1, RADS-C-11 to 13
	Discussion of an optimisation project that has been carried out	• Report concerning measurement and consequent optimisation of patient dose e.g. patient dose audit	RADS-C-14 to 16
	Discussion of ionising/non-ionising radiation room design requirements	• Ionising Radiation room shielding plan and room design - including relevant references • Non-Ionising Radiation room design report - including relevant references	RADS-C-2 to 5
	Discussion of equipment testing requirements, methods and equipment	• Equipment QC testing reports	RADS-C-6-10 and RADS-C-17-21
	Discussion of radiation incidents, including calculation of patient dose, relevant legislation, references and follow-up actions	• Incident reports	RADS-C-22 to 25
	Discussion of radiation monitoring requirements	• Personnel dose reports • Environmental dose reports	RADS-C-9

Competencies

Learning Outcome Subject	Code	Competency	Examples of evidence	Other competencies which may be demonstrated by this evidence
	RADS-C-1	Undertake risk assessment for a radiation facility	•Undertake a risk assessment	
	RADS-C-2	Undertake room design from first principles for a diagnostic x-ray facility and surgical laser facility	•Produce a room design for a DR facility including control features, with reference to the relevant standards, guidance and regulations •Produce room design including control features for lasers with reference to the relevant standards, guidance and regulations	•INIR-C-12

New Facilitie	RADS-C-3	Specify the design and control features for each of the facilities	•Produce a room design for a DR facility including control features, with reference to the relevant standards, guidance and regulations •Produce room design including control features for lasers with reference to the relevant standards, guidance and regulations	•INIR-C-12,13
	RADS-C-4	In conjunction with the user, develop the local rules procedures for the new facilities	•Meet with user to discuss and record details for Local Rules document e.g. carry out an audit •Produce a Local Rules document for a diagnostic radiology and a laser facility with reference to the relevant standards, guidance and regulations	•RADS-C-22, 26 •INIR-C-12 , 13
Facility Safety Assessment	RADS-C-5	Compare the design features and control systems of a facility with the specified design	•Carry out an audit to ensure that all features and systems comply with recommended room design principles •Carry out shielding measurements to verify specified level of lead shielding	
	RADS-C-6	Calibrate and test equipment that measures radiation and obtain measurements required and the safety features to be tested as part of the critical examination	•Carry out critical exam and commissioning checks on X-ray room including AEC and DAP calibration, and write a report •Carry out calibration of an ionisation chamber or radiation monitor and use to carry out critical examination of equipment or assessment of shielding	•RADS-C-6 to 10 •RADS-C-17 to 21 •IIR-C-19 , 21, 23
	RADS-C-7	Compare the results of the critical examination with relevant legislation, standards and guidance	•Carry out critical exam and commissioning checks on X-ray room including AEC and DAP calibration, and write a report including reference to the relevant standards, guidance and regulations	•RADS-C-6 to 10 •RADS-C-17 to 21 •IIR-C-19 , 21, 23
	RADS-C-8	Report findings of the critical examination and make recommendations for improvements within specified timescale	•Carry out critical exam and commissioning checks on X-ray room including AEC and DAP calibration, and write a report	•RADS-C-6 to 10 •RADS-C-17 to 21 •IIR-C-19 , 21, 23
	RADS-C-9	Confirm acceptability of radiation levels within the defined area or distance from the source	• Carry out environmental monitoring to ensure acceptable radiation levels in a specified area •Carry out radiation leakage measurements at critical examination	
	RADS-C-10	Confirm that warning devices, interlocks and safety cut-off mechanisms are fully operational	•Carry out critical exam and commissioning checks on X-ray room, and write a report	•RADS-C-6 and 7
Radiation Safety Audits	RADS-C-11	Assess audit reports, action plans and outcomes against legislative requirements	•Carry out a radiation audit and compile an audit report, discuss the outcome and actions with reference to legislative requirements •Review a standard audit document pro-forma with reference to relevant legislation	RADS-C-12 & 13
	RADS-C-12	Undertake a simple audit of an area where radiation is used according to local standard operating procedures.	•Carry out a radiation audit and compile an audit report with recommendations and dates for future actions •Review equipment and methods for measuring occupational radiation exposure (personal dosimetry, etc.) •Review dosimetry records for a group of staff (e.g. Cardiology Staff)	RADS-C-11 & 13
	RADS-C-13	Report findings; specify degree of compliance, recommendations for further action and date of follow-up review	•Carry out a radiation audit and compile an audit report with recommendations and dates for future actions •Review equipment and methods for measuring occupational radiation exposure (personal dosimetry, etc.) •Review dosimetry records for a group of staff (e.g. Cardiology Staff)	RADS-C-11 & 12
Optimisation	RADS-C-14	Participate in, or review, patient dose audit data to assess optimisation including the use of diagnostic reference levels	•Review methods for patient dose assessment •Review requirements for diagnostic reference levels and look at method for establishing DRLs in IPEM Report 88 •Calculate DRLs for diagnostic x-ray and CT examinations using appropriate metrics	•IIR-C-14
	RADS-C-15	Undertake measurements to assess patient dose and image quality in a plain x-ray or fluoroscopy room	•Review X-ray equipment features relating to optimisation •Evidence of performance IQ measurements in a DDR room (e.g. TO20 test object, different kV, mA parameters, grid in/out) including understanding of optimisation and the relationship between IQ and patient dose	

	RADS-C-16	Review the outcome of image quality and patient dose measurements and recommend optimisation strategies	•Review X-ray equipment features relating to optimisation •Evidence of performance IQ measurements in a DDR room (e.g. TO20 test object, different kV, mA parameters, grid in/out) including understanding of optimisation and the relationship between IQ and patient dose	
Measure Radiation Levels	RADS-C-17	Select appropriate monitor or dosemeter for the type(s) of radiation to be measured for a range of ionising and non-ionising radiation	•Carry out x-ray equipment testing using a range of dosemeters and discuss why different dosemeters are suitable for different measurements •Carry out shielding or environmental measurements and discuss which monitors are suitable for detecting different types of radiation e.g. shielding using a radioactive source, spill clear-up, area monitoring in areas where radioactive substances are used •Tutorial on laser power meters and various detectors, spectoradiometers/radiometers and gauss meters	•IIR-C-18 •INIR-C-9
	RADS-C-18	Ensure selected device is in working order and within calibration	•Carry out testing on a range of CT & diagnostic x-ray equipment, record the results and make recommendations based on the results	•IIR-C-17
	RADS-C-19	Perform the full range of measurement activities specified, using a range of recording methods	•Carry out critical exam and commissioning checks on X-ray room including AEC and DAP calibration, and write a report •Carry out testing on a range of CT & diagnostic x-ray and equipment, record the results in a report format and make recommendations based on the results	•RADS-C-6 to 8 •RADS-C-17 to 21 •IIR-C-19 , 21, 23
	RADS-C-20	Record the results of measurements accurately and in correct format	•Carry out critical exam and commissioning checks on X-ray room including AEC and DAP calibration, and write a report •Carry out testing on a range of CT & x-ray equipment, record the results in a report format and make recommendations based on the results	•RADS-C-6 to 8 •RADS-C-17 to 21 •IIR-C-19 , 21, 23
	RADS-C-21	Interpret the significance of measurements and draw conclusions	•Carry out critical exam and commissioning checks on X-ray room including AEC and DAP calibration, and write a report •Write a summary of legislation and guidance (IPEM reports, MDGN, IRR99, Dept Protocols etc.) •Carry out testing on a range of CT & diagnostic x-ray equipment, record the results in a report format and make recommendations based on the results	•RADS-C-6 to 8 •RADS-C-17 to 21 •IIR-C-19 , 21, 23
Contingency Plans	RADS-C-22	Critically appraise contingency plans within local rules	• Critically review the local rules with a view to comparing against the Environment Agency's need to have contingency plans in place •Assess local rules against requirements of relevant standards, guidance, regulations and ICRP Principles	•RADS-C-4 •RADS-C-26
	RADS-C-23	Identify and plan an exercise to rehearse contingency plans (e.g. a contamination incident, loss of source)	• Assist with organising and running an exercise to rehearse contingency plans – this can be done by simulating a spill in one of the wards and train ward staff/Physics staff	
	RADS-C-24	Analyse recent radiation incidents and summarise the types and causes of incidents	•Produce a dose report for a patient dose greater than intended •Carry out a foetal dose assessment •Review most recent CQC annual IRMER report	•RADS-C-25 •IIR-C-24 and 25
	RADS-C-25	Participate in the investigation of a radiation incident	•Produce a dose report for a patient dose greater than intended •Carry out a foetal dose assessment •Review most recent CQC annual IRMER report	•RADS-C-24 •IIR-C-24 and 25

Policy and Procedures	RADS-C-26	Perform a critical appraisal of the content of local rules against legislative requirements for ionising and non-ionising radiation settings	•Assess local rules against requirements of relevant standards, guidance, regulations and ICRP Principles •Assess local rules for Artificial Optical Radiation Risk Assessment against relevant standards, guidance and regulations •For Laser and MRI local rules assess against relevant standards, guidance and regulations	•RADS-C-4 •RADS-C-22 •INIR-C-12