DOPS / OCE

		DOPS / OCE	Examples of evidence which may relate to this DOPS / OCE	Competencies which may share evidence with this DOPS / OCE
RT DOPS	RT1	Assist in the adjustment of linac beam parameters and discuss the implications for clinical use		RT1-8 RT1-9
		Assist in the correction of out-of-tolerance results for mechanical movements and discuss the implications for clinical use		RT1-9
		Calibrate an ionisation chamber for a kV quality as per the code of practice	Undertake cross calibration measurements for field chamber vs. secondary standard under observation, and perform other measurements / calculations required to relate measured factors back to secondary standard calibration certificate	RT1-3 RT1-4
		Calibrate an ionisation chamber for a MV quality as per the code of practice		RT1-3 RT1-5
		Calibrate an ionisation chamber for an electron beam as per the code of practice		RT1-3 RT1-5
		Convert depth ionisation to depth dose for an electron beam and characterise in terms of R50,d etc.	Undertake water-tank measurements under supervision to acquire PDIs (and PDDs, if suitable detector equipment available) for at least one electron energy; perform calculations to convert PDI(s) to PDD(s); compare with measured PDD curves (where possible) commenting on suitability of detectors used	RT1-2
		Participate in the calibration of the dose delivery system on a linac		RT1-8
		Perform acceptance measurements on new treatment machine (alongside qualified staff)		RT1-1 RT1-10
		Perform definitive calibration measurements across a range radiotherapy beam energies		RT1-5 RT1-8
		Perform ion recombination measurements for photon and electron beams		RT1-5
		Perform measurements as part of interdepartmental or clinical trial dosimetry and planning audits		RT1-5
		Perform measurements on an OBI/kV imaging system to be able to assess the associated dose given to patients		RT1-5 RT1-6
		Perform measurements or calculations to compare a fixed SSD calculation system with an isocentric system.		RT1-7
		Perform required measurements to characterise a MV treatment beam		RT1-1 RT1-10
		Perform required measurements to characterise an electron treatment beam		RT1-2 RT1-10
	RT2	Analyse the dosimetric effect of an error in the treatment process and propose a correction strategy		RT2-10
		Calculate biological effective doses for different fractionation regimes for tumours and organs at risk, including a compensation strategy for an unintended gap in treatment	Create a spreadsheet to calc BED for different fractionation regimes and treatment gaps	RT2-9
		Generate outlines for anatomical structures and ICRU volumes for complex situations	Undertake OAR outlining for a clinical case under observation	RT2-4
		Measure and analyse in-vivo dosimetry data		RT2-12 RT2-13
		Perform image registration of planning (e.g. MRI to CT) and verification (e.g. CBCT to CT) using available software. Discuss the potential uncertainties in the results	Undertake image registration of a clinical case under observation	RT2-3
	RT3	Create a dose distribution using a standard system for each of intra-cavity and interstitial techniques including image guided techniques		RT3-5
		Handle radioactive sources safely	E.g. one of the following: undertake Sr-90 chamber checks under observation; undertake sealed source activity checks under observation; undertake a HDR source wipe test under observation	RT3-3
		Perform an independent dose calculation and treatment calculation	Carry out independent brachytherapy dose calculation using site-specific calculation check software (or TG43 data tables) under observation	RT3-7
		Perform QA on brachytherapy treatment equipment	Carry out all aspects of a HDR unit monthly QA protocol under observation	RT3-2
		Perform stock-control audits and source integrity checks on sealed sources within the department		RT3-3
	RT4	Perform routine treatment planning software systems QA, critically evaluating the results and reporting issues found		RT4-6
		Undertake a risk assessment and produce a programme of checks following a software upgrade involving the treatment planning system or oncology information system		RT4-1 RT4-4 RT4-5
		Undertake a risk assessment of data transfer integrity through the RT planning / treatment pathway		RT4-1
		Undertake a risk assessment on the network configuration in radiotherapy, identify mission critical systems and critically comment on storage redundancy and backup / archive provision	Discuss in detail the department's RT network configuration (i.e. demonstrate an understanding of all its elements and data transfer processes), identify highest risk aspects and make sound judgements as to risks associated with these and steps that could be taken to mitigate these	RT4-1
		Validate the use of a piece of software or spreadsheet that the trainee has written themselves for use in radiotherapy physics	Demonstrate and describe the validation process for original piece of software / spreadsheet; demonstrate understanding of medical devices legislation where relevant	RT4-5 PP1-C-24
RT OCE	RT1	Develop a protocol for a new technique or piece of equipment and present to supervisor and colleagues with rationale and implications for patient and service benefits.		RT1-10 PP1-C23 PP1-C-24
		Discuss the problems of small field dosimetry and appropriate use of detectors		RT1-1 RT1-10
		Discuss the rationale behind QA tests required following changes in major items on the linac e.g. gun, waveguide, ion chamber, magnetron		RT1-5
		Discuss the sources of uncertainty in the intercomparison of the field chamber, including the dosimetric chain		RT1-3
		Discuss, with a senior colleague, the effects of any mechanical or dosimetric variance of a treatment unit on the delivered dose to a patient		RT1-5
		Perform patient specific quality assurance checks for complex treatment plans. Discuss the findings with a senior colleague identifying where the uncertainties in the measurement present and the potential affect on the patient treatment		RT1-11

RT OCE	RT2	Advise a clinical team on the use of electron beams taking into account energy, applicators, appropriate field size, cut-outs, changes of FSD, use of bolus etc.		RT2-8
		Attend a multidisciplinary meeting and explain the treatment plan options for a patient undergoing radiotherapy treatment		RT2-5
		Discuss with the clinical team the value of DVHs in assessing complex treatment plans. Include a discussion on the uncertainties involved		RT2-5
		Identify and explain the advantages and shortcomings of treatment planning algorithms in routine use for a variety of treatment sites		RT2-1
		Participate in the resolution of clinical queries and explain possible solutions to clinical colleagues to ensure successful patient delivery		
	RT3	Attend an MDT and provide advice to clinical colleagues on brachytherapy treatment techniques		RT3-1 RT3-5 RT3-6
		Create treatment plans for a variety of treatments sites using standard, template methods and image-guided methodologies and present them to colleagues		RT3-5
	RT4	Explain to non-scientific staff the governance arrangements for a complex ICT system		RT4-2 RT4-7
		Undertake a risk assessment on the computer systems related to radiotherapy and the associated network infrastructure and present the results to colleagues		RT4-1 RT4-3 RT4-4 RT4-5

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
RT CbD	RT1	Consider advantages / disadvantages of different types of in vivo dosimetry equipment, e.g. diodes & EPID (transit dosimetry), depending on equipment / techniques available at training centre(s)	Report(s) and competency evidence on aspects affecting dosimetric accuracy of IVD equipment	RT2-11
		Consider advantages / disadvantages of different patient-specific QA methods / equipment, e.g. dose measurements in phantom using chamber + detector array & beam fluence measurements using EPID (portal dosimetry), depending on equipment / techniques available at training centre(s)	Report(s) and competency evidence on patient specific QA methods / systems ; including purpose of patient specific QA and types of errors which should be detected.	RT1-11
		Explain in detail the dosimetry codes of practice (kV photons / MV photons / electrons)	Report(s) and competency evidence on each CoP	RT1-3
	RT2	Consider in detail case studies of patients whose treatment plans have become clinically unsuitable during the course of treatment	Report(s) and competency evidence / anonymised screenshots showing the nature of the clinical changes	RT2-7
		Consider in detail clinical electron treatment patient cases	Report(s) and competency evidence, taking into account electron energy, applicators, appropriate field size, cut-outs, changes of FSD, use of bolus, etc.	RT2-8
		Consider in detail clinical RT treatment errors (could be major nationally publicised cases or minor locally-reported examples)	Report(s) and competency evidence, including the specific sources of error and risk mitigation	RT2-10
		Consider in detail different types of complex / novel planning technique undertaken within the department	Report(s) and competency evidence on each planning technique	RT2-4 RT2-5
		Follow a patient through the whole treatment process from referral to treatment, including reasons for choosing the particular treatment pathway	Report(s) and competency evidence / anonymised screenshots showing the nature of the treatment process	
		Discuss different independent dose calculation check methods	Report(s) and competency evidence	RP-C-16 RT2-6
	RT3	Consider in detail the brachytherapy equipment QA protocols	Report(s) and competency evidence	RT3-2
		Consider in detail the planning & treatment process for two different brachytherapy example patient cases (e.g. LDR prostate & HDR cervix brachytherapy)	Report(s) and competency evidence	RT3-5 RT3-6
	RT4	Consider in detail different in-house software development within the RT department	Report(s) and competency evidence including quality management and risk mitigation	RT4-4 RT4-5
		Consider in detail different RT-based ICT risk management / disaster recovery scenarios	Report(s) and competency evidence including wider impact of IT systems on RT service provision	RT4-1 RT4-3 RT4-4 RT4-5
		Consider in detail possible methods of data storage, archiving & backup within RT (e.g. for DICOM RT images and RT plans)	Report(s) and competency evidence	RT4-7

Competencies

Learning Outcome Subject	Code	Competency	Examples of evidence	Other competencies which may be demonstrated by this evidence
Dosimetry and Treatment Equipment	RT1-1	Measure the depth dose curves and profiles of a MV photon beam and evaluate the effect of chamber design	Could be incorporated into RT1-2 Report of evidence of assisting in a commissioning; annual QA; 3-monthly QA; other session in which water tank measurements of profiles / PDDs are performed and include understanding of why different types of detector are used for different types of measurement Evidence could include: • Screenshots of depth doses and profiles and a description of how the tank was set up; • Report/confirmation of conversation with a registered physicist on ; • Measurements with varying parameters - field size, SSD, beam energy; • Calculations of relevant metrics - e.g. flatness & symmetry	RP-C-7 (Rotational competency) RT1-5, 10
	RT1-2	Measure the depth ionisation curves and profiles of an electron beam and, with reference to the code of practice, evaluate the effect of chamber design. Determine the depth dose curve	Could be incorporated into RT1-1 • Include screenshots of electron ionisation curves and CoP calc to get to depth ionisation; • Spreadsheet could cover both of these, with some explanatory commentary; • Report of measurements demonstrating understanding of why different types of detector are used for different types of measurement	RT1-5, 10

Dosimetry and Treatment Equipment	RT1-3	Use the relevant codes of practice (kV, MV, electrons), including traceability, and establish the required factors, including performing inter-comparisons, and compare with the current values	Perform field chamber cross-calibrations across all modalities (kV, MV and electrons. Example evidence: • Evidence of assisting with field chamber cross-calibrations (e.g. standard departmental forms / screenshots where applicable), countersigned by a qualified member of staff. Evidence of associated calculations including an assessment of the accuracy, traceability; • Project to recalculate instrument factors for clinically used energies from first principles using NPL calibration certificates (evidence e.g. spreadsheet, followed by discussion of CoPs); • Report should demonstrate understanding of CoP dose calculation and included factors	
	RT1-4	Evaluate the beam profile and dose output for a kV machine	Could be incorporated into RT1-5 • Routine QA + output reports including applicator factor checks etc.; • Monthly QA applicator uniformity films; • Report should include understanding and description of factors influencing profiles e.g. heel effect; • Report on a specific simple experiment to cover evaluation of kV beam profile? (e.g. scanning & analysis of applicator films) by discussion of CoPs	RT1-3, RT1-5
	RT1-5	Perform routine quality assurance (QA) on treatment machines, including MV and kV imaging as appropriate	• Scans/screen shots of standard departmental QA forms where the trainee, countersigned by a qualified member of staff, has completed measurements; • Summary document of key QA metrics, including explanations of any that are not done despite the guidance/national recommendations/professional body recommending it. E.G. feature not used, QA'd at upgrade, etc.	RT1-3 RT1-6 RT1-4 RT2-11
	RT1-6	Perform QA on imaging equipment used for radiotherapy (e.g. CT, MRI, kV, as appropriate)	• Scans/screen shots of standard departmental QA forms where the trainee, countersigned by a qualified member of staff, has completed measurements; • Summary document of key QA metrics, including explanations of any that are not done despite the guidance/national recommendations/professional body recommending it. E.G. feature not used, QA'd at upgrade, etc.; • Results must cover image quality (contrast/spatial resolution, S/N and HU reproducibility), comparison of tolerances to the radiotherapy process, comparison to baselines, and an understanding of the imaging dose and image quality trade off as part of the radiotherapy pathway	RT1-5 imaging equipment part only
	RT1-7	Perform measurements or calculations to compare a fixed SSD calculation system with an isocentric system	Could use MV versus Electron set ups to show difference. Evidence could include: • Calculation of depth dose values for a fixed SSD treatment and a comparison to doses at the same depths for same dose prescription point delivered with isocentric set up (e.g. a whole CNS); • Should indicate understanding of difference in principle between the two types of calculation system (e.g. with reference AAPM Report 114)	RP-C-16 (Rotational competency) RT2-7
	RT1-8	Assist in the correction of the calibration of the dose delivery system and the beam parameters on a linac	• Report - including tolerances and implications for treatment; • Example of a dose adjustment calculation and a description of the process (including importance of independent checks)	RT1-5
	RT1-9	Assist in the correction of out-of tolerance results for mechanical movements (e.g. field size)	• Report - including tolerances and implications for treatment; • Example(s) of mechanical parameter adjustment and a description of the process (e.g. short report)	
	RT1-10	Assist with the practical aspects of commissioning new treatment machines/techniques or revalidate the data in use, e.g. by selecting an appropriate detector, acquiring beam data and critically appraising with respect to reference data	Evidence (report, presentation etc.) of assisting with one or more of these: • Commissioning anything machine related; • Brachytherapy commissioning; • Treatment planning system upgrades/changes of use. If this includes a risk assessment can link to Computing RT-4-1; • Water-tank commissioning measurements; • Commissioning of new techniques such as 4DCT / SABR; • Revalidation of any of the above	RT1-1 RT1-2 RT4-1
	RT1-11	Perform patient-specific QA checks for complex treatment plans	Report that could include: • Set up of patient specific QA measurements (e.g. for a SABR,VMAT or any IMRT delivery), including transfer of data from the planning system to the linac and to the measuring device; • Description of the measuring device (e.g. Delta4/ MapCheck, MatriXX, EPID etc.) and its advantages and limitations; • Explanation of how measurements are analysed, e.g. using Gamma analysis/profile analysis and actions taken if tolerance levels not met; • Screenshots of results; • Discussion of the rationale for patient specific QA; • In-vivo measurements, if performed, should be included; • The trainee should demonstrate awareness of techniques available but not used in their dept	RT2-11,12,13
Treatment Planning	RT2-1	Identify and review types of treatment-planning algorithms, explaining the effect of the choice on clinical treatment plans	• CBD/report: e.g. lung or breast plan created with type 'A' and type 'B' algorithm. Short report explaining difference in PTV coverage displayed and OAR doses. A second example showing the same for a pelvis plan; • CBD/report: lung or breast plan created with type 'B' algorithm. Short report explaining what differences would typically be seen with a type 'A' algorithm in PTV coverage displayed and OAR doses. A second example showing the same for a pelvis plan; • Short report on treatment planning algorithms for MV photon external beam RT in general; • Short report on treatment planning algorithms for external beam RT in general incorporating MeV electron calculation algorithms	
	RT2-2	Audit and critically appraise a departmental treatment planning procedure	• Written confirmation of test/proof reading a draft planning procedure prior to being accepted within the departmental quality system; • Written report of audit and appraisal of a departmental treatment planning procedure	RT2-5
	RT2-3	Perform image registration using available software Computed Tomography (CT) to CT, Magnetic Resonance Imaging (MRI) to CT, Positron emission tomography (PET) to CT), critically evaluate results of image registration and explain any shortcomings of each imaging method and the registration technique	Report covering CT to CT , CT to MR and CT to CBCT; including: • Screenshots of examples of image registrations carried out, with regions of good agreement and poor agreement highlighted; • Description of which structures are used for matching and why; • Explanation of type of registration algorithm used; • Evidence of local sign off (if appropriate)	RP-C-10 (Rotational competency) RT2-7
	RT2-4	Generate outlines for anatomical structures and International Commission on Radiation Units and Measurements (ICRU) volumes for complex situations	• Screenshots of simple contours generated in the course of planning using either manual or auto-contouring tools e.g. spinal cord, lung; o Description of ICRU volumes in IMRT planning for dose reporting or optimisation; o Descriptions of the concepts of PRVs, Boolean operators, margins, auto windowing and levelling; o Discussion showing an appreciation of how poor contouring can affect accuracy of DVH stats; • Evidence of local sign off (if appropriate)	RT2-5

Treatment Planning	RT2-5	Plan and critically assess non routine/complex treatments (e.g. intensity-modulated radiation therapy (IMRT), craniospinal irradiation, total body irradiation, Stereotactic radiosurgery (SRS), Stereotactic body radiation therapy (SABR)	• Report containing: o Screenshots of a prostate IMRT/VMAT plan with associated DVH information; o Prostate and pelvic nodes or H&N IMRT/VMAT plan to demonstrate technique used with multiple prescription levels; o Screenshots of optimisation parameters used and explain why they were chosen; o Optional additional complex planning technique, e.g. CNS/ TBI/ SABR/ Tomo/ clinical trial /breast complex conformal; • Evidence of local sign off (if appropriate); NOTE: Complex does not refer to 'difficult' plans but is a label similar to 'conformal' IMRT and VMAT treatments fall into the category complex. Prostate VMAT may not be seen as difficult in a particular centre but they are classed as 'complex' and are still acceptable under this competency. However trainees should be able to demonstrate understanding of simultaneous integrated boost as well if only experience is single dose level prostate	RT1-11 RT2-3 RT2-4 RT2-6
	RT2-6	Undertake independent monitor unit calculations and critically appraise the results	• Screen shot from an independent monitor unit calculation and definition of all factors used. • Short description of what the tolerance levels are and explanation of possible reasons for discrepancies between MUs calculated by TPS and independent check; • This could tie in with the plans used to illustrate understanding of different algorithms. Good examples would be a Thorax plan and a breast plan	RP-C-16
	RT2-7	Identify the course of action to be taken should a plan become clinically unsuitable during treatment (e.g. changes of shape, position, etc.)	• Report covering several case studies (e.g. weight loss adjustment action for H&N patient, setup change where patient can no longer tolerate planned immobilisation), or one case in detail, depending on the clinical case-load. Should include: o Screenshot of original plan on planning CT alongside a CBCT showing changes; o Anonymised patient history setting the context for the decision; o Details of the investigation to inform the decision; o Explanation of the course of action that was followed. E.g. TPR/TMR calc or replan; • Evidence of local sign off (if appropriate)	PP1-C-17 (Professional Competency)
	RT2-8	Advise on the use of electron beams taking into account energy, applicators, appropriate field size, cut-outs, changes of FSD, use of bolus, etc.	• Report covering several case studies, or one case in detail depending on the clinical case-load. Should include: o Details of electron planning sessions attended with a description of why parameters were chosen; o Anonymised patient history setting the context for the decision; o Include copies of any planning information/calculations carried out; o Explanation of the clinical plan that was used; • Evidence of local sign off (if appropriate)	
	RT2-9	Calculate biological effective doses for different fractionation regimens for tumours and organs at risk	• Report including: o Calculation of BEDs for different lung prescriptions (e.g. 55Gy/20 and 64Gy/32) and corresponding tolerances for lungs -ITV, heart and spinal cord; o Discussion of when each of these fractionation regimes would be appropriate and why; • Outline a strategy for making up for gaps in treatment; • Perform a gap calculation including tumour and OAR BED; • Evidence of local sign off (if appropriate)	
	RT2-10	Analyse the dosimetric effect of an error in the treatment process and propose a correction strategy	Report/presentation/CBD including: • Calculation performed after a treatment error, e.g. incorrect SSD set or incorrect MUs delivered (this could be a hypothetical situation); • Description of the procedures followed including appropriate reporting making specific reference to reporting levels. Reporting levels are a key part of this competency, so should be included in report	RT1-7
	RT2-11	Calibrate in-vivo dosimetry equipment	• Screenshot of diode calibration software and a description of measurement set up - both routine measurements and recalibrations if possible, including definition of all factors used • Screenshot of other in-vivo system, e.g. Dosimetry Check software and a description of measurement set up - both routine measurements and recalibrations if possible; • Short critical evaluation of diode and other systems; • Evidence of participation with commissioning of diode system or transit dosimetry; Will depend on equipment available. Report should include some awareness of systems used elsewhere	RT1-5 RT2-12 RT2-13
	RT2-12	Undertake in-vivo dosimetry during patient treatments	• Report demonstrating attendance at a TBI delivery to observe diode placement or at a breast treatment where diodes used for tangential delivery. o Include explanation of tolerance levels set and action taken for out of tolerance readings. • Report demonstrating participation in eye dose TLD / diode measurements. o Include explanation of tolerance levels set and action taken for out of tolerance readings	RT2-11, RT2-13
	RT2-13	Analyse in-vivo dosimetry measurements	• Report incorporating post-measurement analysis of transit dosimetry images • Discussion of reporting / corrective actions relating to out-of-tolerance IVD meas	RT2-11, RT2-12

Brachytherapy	RT3-1	Determine appropriate use of brachytherapy.	Report including • Description of common sites and main types of brachytherapy (e.g. intracavity / interstitial / surface) • Explanation (with examples) of why it might be preferable to external beam (radiobiological considerations)	RT3-5, 3-6
	RT3-2	Perform quality assurance (QA) on the treatment equipment, including source calibration, source strength checks, source positioning, dosimetry and interlock tests, including after a source exchange	Report including: • Routine QA forms showing calibration calculations performed by trainee. • Description of technique reference to the HDR CoP, • Description of transfer of plan, • Discussion of what could go wrong, e.g. what could happen if source data/dates weren't correct.	RT3-3
	RT3-3	Handle radioactive sources safely under supervision	• Report including o Emergency procedures for HDR; o Summary on IRR99 source control, Local Rules, ARSAC licences, HASS, EPR2010, Environment Agency Permit, source transport, LDR seed assay etc. • Could be based on LDR/HDR as appropriate for the centre but must be brachytherapy specific	RP-C-1 (Rotational competency)
	RT3-4	Calculate radiation dose to the worker from a source (including the use of suitable protection)	Report including: • Explanation of safety procedures; • A calculation is usually required in the local rules/risk assessments where a source is handled (strontium), or in the event of an emergency (HDR source stick); the trainee can do these calculations and consider time, distance, shielding)	RADS-C-1 (Rotational competency) RP-C-3 (Rotational competency) RT3-3
	RT3-5	Treatment planning for a variety of treatments sites using standard template methods and image guided methodologies	• Report on planning of multiple sites (image guided site, e.g. cervix, a line source treatment, e.g. vaginal and an iridium wire) including: o Plan screenshots; o Evaluation of the plans compared to prescription and local tolerances; o Comparison of TG43 versus older/other algorithms; • Evidence of local sign off (if appropriate); • CBD examining brachytherapy planning & treatment techniques	RT3-1
	RT3-6	Evaluate brachytherapy plans for a range of clinical sites and different methodologies	• Dose reporting on plans, • Manual radiobiology calculation to convert gynae brachy doses to EQD2 • CBD examining brachytherapy planning & treatment techniques	RT3-1 RT3-5
	RT3-7	Perform an independent dose calculation and treatment calculation	• Screenshot of independent calculation; • Manual calculation; • Short description of TPS algorithm and TG43	RT3-5, RT3-6
	RT3-8	Perform QA on the treatment planning and associated imaging systems	Short report on: • Observation and participation in post source change TPS QA. • Involvement in checks on a new upgrade of the brachy TPS. • Trials-related TPS QA where applicable, e.g. Interlace	PP1-C-23 (Professional Competency) RT3-2
Computing Related to Radiotherapy	RT4-1	Undertake a risk assessment on the computer systems related to radiotherapy and the associated network infrastructure	• Complete a standard risk assessment form (including a risk matrix), under supervision, for e.g. TPS and electronic transfer of plan data to R&V system;. server configuration; data backup; disaster recover; o include reference to firewalls, data protection, virus protection, safety critical devices, potential pitfalls/checks of using in house software). • One report with RT4-2, RT4-3 and additional certificates for mandatory training	RT4-2
	RT4-2	Identify relevant legislation, data protection and ICT security standards for collection, storage and transmission, and relate to the systems used	• Complete mandatory training on Information Governance and include certification. • Short report demonstrating awareness of legislation & national guidance pertaining to data protection (e.g. Caldicott principles; plus links to RT4-7 & 8 for issues relating to data storage and anonymisation of patient data)	RT4-1, RT4-7, RT4-8
	RT4-3	Evaluate connectivity of all systems in use in radiotherapy	Short report including: • Flow diagram of radiotherapy data • Explanation of any paths where information transfer is not fully automated. • Link this in with the Risk Assessment	RT4-1, RT4-2
	RT4-4	Review and/or produce a project plan for a system upgrade, including risk assessment and subsequent checks	Report covering: • TPS upgrade or other software- QA,R&V; • Standard risk assessment; • Describe methods and meaning of risk mitigation; If TPS-type software considered here, can also serve as evidence for RT4-5	RT4-5, RT4-6
	RT4-5	Assist with the commissioning/verification of treatment-planning software, participating in the associated risk assessment	Report including: • Evaluation of standard plans for TPS software upgrade. • Discussion and performance of additional tests depending on aspects of TPS affected by upgrade. • Appreciation of relevant guidelines (N.B. can also serve as evidence for RT4-4). Any in-house / original software pertaining to patient dose calculations (e.g. MU checker), esp. if created by the trainee, could be used as evidence here. Attention should be given to associated testing & quality / risk management	RT4-4, RT4-6
	RT4-6	Perform routine treatment planning software systems QA, critically evaluating the results and reporting issues found	Description of departmental process and examples of tests carried out	RT3-8 (Brachy), RT4-4, RT4-5
	RT4-7	Review arrangements for data warehousing for archiving and storage, and relevant legislation regarding the required retention time for information (including picture archiving and communication system, Picture Archiving and Communications System (PACS))	Report including: • Written description of data storage requirements; • Description of information governance issues e.g. What information should be stored? What is the archiving procedure?	RT4-1, RT4-3, RT4-2
	RT4-8	Anonymise a range of patient data to meet the requirements of clinical trials	Report/presentation/ written confirmation of discussion with registered physicist covering: • Explanation of the processes: manual and automated methods (including specific difficulties where the patient data is part of the image; • Description of the levels of anonymisation; • Description of issues regarding patient consent and information governance	RT4-2