ISRS

International Stereotactic Radiosurgery Society

THE MINIMUM STANDARDS FOR CRANIAL RADIOSURGERY CERTIFICATION

The intent of this document is to assist institutions who want to start the process of certification offered by ISRS. It illustrates minimum standards, whose compliance is the first step along the certification path.

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STANDARDS COMPLIANCE:

MANDATORY: An absolute requirement for certification.
STRONGLY RECOMMENDED: Failure to comply does not necessarily mean that certification won't be granted but will need individual assessment by the auditing team and expert group.
RECOMMENDED: A recommendation for centres striving to deliver the very best SRS service.

	FIELD OF APPLICATION	CRITERIA FOR COMPLIANCE	REQUIREMENT
STAFFING	Staffing levels	The following specialists should be integral members of the SRS team OR available for consultation: • Radiation Oncologist, • Neurosurgeon, • Neuroradiologist, • Medical Physicist, • Radiation Technologist* • Nurse Staffing levels should be proportional to the number and types of patients treated. *For countries where the profession of Radiation Technologists/Radiographers is established.	**MANDATORY**
		• There is an experienced SRS-trained medical physicist present during clinical treatments • Organisational diagram summarising responsibilities and reporting lines present • Job descriptions present for all staff involved in SRS	**MANDATORY**
	Training	• Staff should have documented evidence that they have received specific SRS training • Staff should have access to continual education on at least a 2-yearly basis	**STRONGLY RECOMMENDED**
FACILITIES AND EQUIPMENT	Imaging	CT images with ≤1.5mm slice thickness are used for planning, if applicable. • T1w MRI + Gd with ≤1.5mm slice thickness is used for imaging solid targets. • T2 weighted images (and/or appropriate sequences for each specific indication) are routinely acquired for benign targets. • For the targeting of AVMs, Digital Subtraction Angiography (DSA) (or CT angiography, MR angiography, rotational angiography) is used for delineating the nidus. • For functional indications a slice thickness of ≤1mm is used • Images for treatment planning of malignant targets are acquired ≤7 calendar days prior to treatment.	**MANDATORY**
		• There is an established quality assurance procedure for checking geometrical distortion in MRI or a patient-specific method for verifying MR distortion. • There is an established quality assurance procedure for checking the image quality and stability of the CT and CBCT	**STRONGLY RECOMMENDED**
	Treatment planning	• Target delineation is practiced for all solid targets on the appropriate MR sequence (e.g. T1 post-gad MR for brain metastases) • OARs at risk of receiving their respective tolerance dose are delineated using an appropriate imaging modality e.g. T2 weighted MR to contour the cochlea (CT also acceptable) or visualize the cranial nerves for vestibular schwannoma • For most targets a PTV expansion of ≤1mm is used unless it can be justified according to specific needs, according to the overall geometric and dosimetric accuracy of the system and the treated pathology. (e.g., for single isocentre treatments where some targets are at an extended distance from the isocentre).	**MANDATORY**
		• Treatment planning creates plans with adequate conformity (e.g., Paddick Conformity Indices average >0.75 for the treatment of vestibular schwannoma)* • Treatment plans are created with adequate gradient (Gradient Index ≤3.5 for benign targets >1cc)* • A radiologist should be available for contouring consultation, if needed For centres that treat a limited range of indications certification can be applied for specific indications. * Treatment quality assessment parameters will be averaged for the last 10 vestibular schwannoma plans treated (≥0.5cc), or for inexperienced centres, via benchmark testing	**STRONGLY RECOMMENDED**
	Record and Verify	There is an R&V system documenting delivered treatments	**STRONGLY RECOMMENDED**
	Dose prescripttion	• A reference document of fraction schemes and dose ranges is in accordance with literature for different pathologies. If applicable, these are based on national or international guidelines • The treatment course, including the dose schedule, normal tissue constraints, and, if applicable, CTV/ITV and PTV margins, and IGRT instructions and tolerances, is clearly documented within the prescription	**STRONGLY RECOMMENDED**
	Technical specifications	• MLC width at isocenter is ≤ 5mm • If using cones, diameters ≤ 5mm are available • The centre has documented evidence to demonstrate that submillimetre and sub-Mandatory degree geometric accuracy is achieved for treatments in all 6 dimensions. • Fixed, relocatable head frames or a mask system are used for immobilization. For mask-based treatments, pre-treatment image guidance/verification and intrafraction monitoring is performed • For mask-based treatments, automatically gated motion management is employed.	**MANDATORY**
	Multidisciplinary working	• Treatment plan approval involves more than one member of staff.	**MANDATORY**

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PATIENT	Patient Selection	Patients are discussed prior to treatment at a multidisciplinary tumour board meeting	**STRONGLY RECOMMENDED**
	Minimum numbers	• On average, ≥50 intracranial SRS patients are treated per year (applies to established centres only). • For certification of benign indications: ≥10 benign target treatments per year • For certification of vascular indications: ≥10 vascular target treatments per year (an allowance can be made for previous experience). Surgical and endovascular management opinions should be available. • For certification of functional targets ≥10 functional treatments per year (an allowance can be made for previous experience). Surgical and pain management opinions should be available.	**STRONGLY RECOMMENDED**
	Follow up	• Patients are routinely followed up • Patient data including follow up and complications are routinely stored in a clinical database and reviewed at a multidisciplinary meeting if needed.	**RECOMMENDED**
PHYSICS QUALITY CHECKS	QA Equipment	• A chamber for absolute dose calibration is available with a valid calibration certificate traceable to a national standard laboratory in conformance with local regulation • One or more detectors appropriate for small field dosimetry are available	**MANDATORY**
	Frequency	• Treatment unit output measurements for linacs are performed daily. • Independent treatment plan specific QA is available and performed for SRS treatments. Eg. Independent MU calculation and/or patient specific QA measurements • A timeout is performed prior to initiating treatment • Radiation versus mechanical isocentre/beam position tests are performed on a planned and systematic basis (Recommended on a daily basis, mandatory on a monthly basis) • If image guidance is used, the imaging isocenter is verified to match the treatment isocenter on regular basis. • If surface guidance is used a QA programme, tailored for SRS is performed on a regular basis	**MANDATORY**
		• The commissioning/acceptance of the treatment platform has been documented. • The SRS equipment has undergone an independent dosimetrical audit for SRS related treatments (For new centres the audit performed at the ISRS certification visit can be used)	**STRONGLY RECOMMENDED**
	ISRS dosimetrical audit	For the ISRS independent dosimetrical audit: • Dosimetric accuracy must be achieved within 3% if measured with a chamber or 5% is measured with OSLDs • A Gamma criteria of 5%/1mm global and 3%/2mm local, with a 20% of max thresholds: Both criteria ≥ 95 % Pass Both criteria ≥ 90 % needs improvement Either criteria < 90 % Fail	**STRONGLY RECOMMENDED**
QUALITY SYSTEM	Procedures and Protocols	• For linac platform QA, AAPM Task Group 142 SRS/SBRT or similar tolerance levels should be followed. • There is a written procedure for plan checking • There is a written procedure for treatment for the main disease indications available • There is a written procedure for Quality Assurance checks • A log of all system services, failures, errors, changes, and upgrades is maintained • There is a written list of dose tolerances • There is a written schedule of QA checks • Procedures are reviewed on a yearly basis	**STRONGLY RECOMMENDED**
	Quality and event reporting	• The centre has an established Quality Program (policies and procedures) • There is a Quality Management Team that has regular documented meetings • There is a culture of open communication. Events are reported and remedial action is taken when needed • Clinical peer review is performed • Quality management meetings are regularly held • Audits are routinely performed to improve departmental processes	**STRONGLY RECOMMENDED**

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