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Classification of Unintended Events in Radiotherapy

Modalities: Photons, electrons, protons, brachytherapy, and superficial radiotherapy

Scope: From referral to final treatment fraction

Step	Area	Proces
0	Facilities and Equipment	A. Bunker/facility, Equipment, Dosimetry, Modelling
1	External Referral and Triage (Non-oncology setting)	A. Patient identification B. Missing/incorrect documentation C. Communication (internal/external) D. Incorrect referral E. Missing documentation of prior treatment F. MRI contraindication screening G. Other
2	Internal Referral and Triage (Oncology setting)	A. Patient identification B. Missing/incorrect documentation C. Communication (internal/external) D. Diagnosis E. Treatment site (including laterality) F. Dose/fractionation G. Contraindications (previous treatment, pregnancy, pacemaker, implants, etc.) H. Other
3	Medical Consultation	A. Patient identification B. Missing/incorrect documentation C. Communication (internal/external) D. Patient communication E. Medication dispensing F. Consent G. Protocol information H. MRI contraindication screening I. Other
4	Booking of Radiotherapy Course	A. Patient identification B. Missing/incorrect documentation C. Communication (internal/external) D. Scheduling (appointments, dates, attendance) E. Patient communication F. Treatment postponement G. Other
5	Positioning and Immobilisation	A. Patient identification B. Missing/incorrect documentation C. Communication (internal/external) D. Positioning E. Immobilisation devices

		<p>F. Markings on immobilisation devices</p> <p>G. Bolus</p> <p>H. Patient markings</p> <p>I. Other</p>
6	Imaging (incl gating and 4D)	<p>A. Patient identification</p> <p>B. Missing/incorrect documentation</p> <p>C. Communication (internal/external)</p> <p>D. Patient communication</p> <p>E. Imaging protocol</p> <p>F. Image quality (artefacts)</p> <p>G. Contrast</p> <p>H. MRI contraindications</p> <p>I. Reconstruction</p> <p>J. Scan length/FoV</p> <p>K. 4D/gating/breath hold</p> <p>L. Bladder filling</p> <p>M. Rectum/bowel filling</p> <p>N. Ventricular filling</p> <p>O. Other</p>
7	Image Handling	<p>A. Patient identification</p> <p>B. Missing/incorrect documentation</p> <p>C. Communication (internal/external)</p> <p>D. Correct scan selection</p> <p>E. Registration/fusion (current scans)</p> <p>F. Registration/fusion (previous scans and dose)</p> <p>G. 4D/gating handling</p> <p>H. Other</p>
8	Contouring (incl OOI, targets, AI, etc)	<p>A. Patient identification</p> <p>B. Missing/incorrect documentation</p> <p>C. Communication (internal/external)</p> <p>D. Correct scan selection</p> <p>E. Target volumes</p> <p>F. Organs of interest (OOI)</p> <p>G. Artificial intelligence</p> <p>H. Bolus</p> <p>I. Naming</p> <p>J. Margins (including 4D)</p> <p>K. Previous treatment considerations</p> <p>L. Documentation (compromises)</p> <p>M. Other</p>
9	Treatment Planning	<p>A. Patient identification</p> <p>B. Missing/incorrect documentation</p> <p>C. Communication (internal/external)</p> <p>D. Immobilisation considerations</p> <p>E. Positioning considerations</p> <p>F. Previous treatment considerations</p> <p>G. Artificial intelligence</p> <p>H. Fractionation</p>

		<p>I. Dose to target J. Dose to OOI K. Modality/energy L. Bolus M. Technique/algorithm selection N. Software errors/bugs/issues O. Documentation (compromises, plan selection) P. Other</p>
10	Independent Verification (incl measurements)	<p>A. Patient identification B. Missing/incorrect documentation C. Communication (internal/external) D. Independent dose calculation E. Independent plan check F. Not performed G. Other</p>
11	Medication and Concomitant Treatment	<p>A. Patient identification B. Missing/incorrect documentation C. Communication (internal/external) D. RTT check before treatment E. Positioning F. Immobilisation devices G. Markings on devices H. Bolus I. Patient markings J. 4D/gating/breath hold K. Image import L. Image acquisition (CBCT, MV, kV) M. Image matching – target (online) N. Image matching – OOI (online) O. Anatomical changes (online) P. Collision Q. Equipment failure R. Image matching – target (offline) S. Image matching – OOI (offline) T. Anatomical changes (offline) U. Adaptation (offline) V. Adaptation (online) W. Patient communication X. Shielding/blocking Y. Other</p>
12	Medication and Concomitant Treatment	<p>A. Patient identification B. Missing/incorrect documentation C. Communication (internal/external) D. Other</p>
13	Management of Side Effects	<p>A. Patient identification B. Missing/incorrect documentation</p>

		C. Communication (internal/external) D. Other
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Comments

One code should be selected per unintended event (e.g., “11S”). Independent events for the same patient should be recorded separately.