

Radiological Protection Institute of Ireland

An Institiúid Éireannach um Chosaint Raideolaíoch

EPRAN Surveys

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Annual ERPAN Meeting

21st June 2013

CYBERKNIFE (MAY 2012)



An Institiúid Éireannach um Chosaint Raideolaíoch

Cyberknife

- First cyberknife in Ireland private hospital
- Retrofit of existing CT Simulator room
- American design team
 – interaction with Irish RPA (QE)
- Primary shielding not required for all 4 walls in US
 - IDR not a concern





Sweden

- No Cyberknife facilities
- Radiation Therapy Regulations require:
 - Shielding to ensure member of public will not receive >0.1 mSv
 - Valid for Cyberknife
 - Although dose constraint for exposed workers 100 mSv/5 years room must be designed for criteria of general public



Czech Republic

- One Cyberknife facility
- Shielding Criteria:
 - I mSv/year for exposed workers
 - Primary shielding for all 4 walls
 - Facility designed for 6 patients/day
 - Concrete walls 1 metre thick (density 3.300 kg/m³)



Germany

- Use DIN 6847 2 (2008) for medical electron accelerators
 - Does not include Cyberknife but with some restrictions can be used for Cyberknife
- One Cyberknife facility
 - All walls have primary shielding
 - with exception of small part of ceiling which cannot be reached by beam
 - First unit in country initial approach cautious
 - With experience believe shielding can be reduced in new facilities
 - Based on useful beam not hitting every point of shielding at one time



- Slovenia– no cyberknife facilities
- Norway no cyberknife facilities
- UK few facilities, but no inspections yet (no licence required in UK)



RPII design requirements

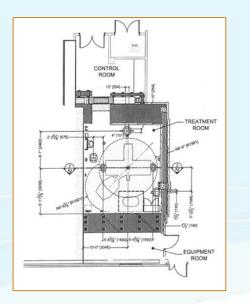
- **Dose constraints (developed for linacs)**
 - 1.0 mSv/yr exposed workers
 - 0.3 mSv/yr members of the public
 - Instantaneous Dose Rates (IDR)
 - 20 µSv/hr exposed workers
 - 7.5 µSv/hr members of the public

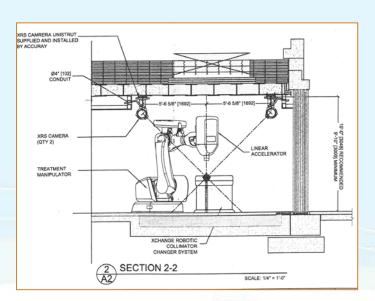




Floor Space

	Room dimension (m)
Recommended	6.4 x 6.7
Minimum	5.5 x 5.8
Absolute minimum	4.88 x 5.8

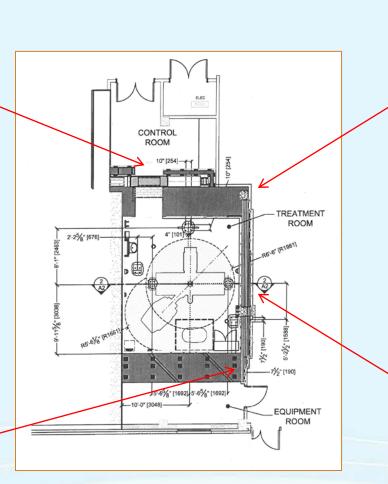
















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