

Radiotherapy Physics Staffing Calculator

Introduction

The 2024 Radiotherapy Physics Staffing Calculator has been built upon the [Recommendations for a Physics Service to Radiotherapy 2017](#) by experts within the Radiotherapy Physics field. An automatically calculating excel version of the calculator is available on our website for members to use.

Recommended staffing requirements are based on the quantity of equipment, quantity of treatments performed, training demands and departmental factors such as providing radiation protection advice and clinical trials.

The calculator will give you a recommended whole time equivalent (WTE) figure for Clinical Scientists, Clinical Technologists (Physics) and Clinical Technologists (Engineering), along with a minimum number of Medical Physics Experts (MPE) required.

Using the calculator

1. Start by picking your level of service contract from the table below. If you don't feel these accurately reflect your service, you can edit to more represent the department's particular service arrangements.
2. Work out your "Unit" number for each factor and use the formula on the same row, replacing the X with your unit number to give you the number of Clinical Scientists and Technologists required
3. Total up each WTE column to give you the total WTE for Clinical Scientists and Technologists
4. At the bottom of the table gives you the formulas to calculate the number of MPEs the service is recommended to have

| Level of Service Contact | Scaling Factor |
|--------------------------|----------------|
| None | 1 |
| First line | 0.8 |
| Full service contract | 0.6 |
| MES contract | 0.3 |

Calculator Table

| ITEM | DESCRIPTION | UNIT | WTE Clinical Scientists | WTE Technologists | |
|------------------------------------|--|------|-------------------------|-------------------|---|
| | | | | Physics | Eng |
| Equipment Dependent Factors | | | | | |
| Multi-mode accelerator | Linac with multiple energies (photons, FFF, electrons) | | =1*X | =0.5*X | =1.5*X*[Service Level Contract Scaling Factor] |
| Single mode accelerator | Single energy C arm, tomotherapy, cyberknife, Halcyon, Gamma Knife | | =0.5*X | =0.5*X | =1*X*[Service Level Contract Scaling Factor] |
| Online adaptive capability | Ethos, MR Linac, Radexact | | =1*X | =1*X | =0.8*X*[Service Level Contract Scaling Factor] |
| Major item | HDR / PDR brachytherapy | | =0.2*X | =0.2*X | =0.2*X*[Service Level Contract Scaling Factor] |
| | Dedicated CT simulator | | =0.2*X | =0.2*X | =0.2*X*[Service Level Contract Scaling Factor] |
| | Dedicated MR | | =0.2*X | =0.2*X | =0.2*X*[Service Level Contract Scaling Factor] |
| | Treatment planning system | | =0.5*X | =0.3*X | =0.2*X*[Service Level Contract Scaling Factor] |
| Minor item | Brachytherapy seed service | | =0.1*X | =0.1*X | =0.1*X*[Service Level Contract Scaling Factor] |
| | Orthovoltage / superficial treatment unit | | =0.1*X | =0.1*X | =0.1*X*[Service Level Contract Scaling Factor] |
| | 6 degrees of freedom couch | | =0.05*X | | =0.05*X*[Service Level Contract Scaling Factor] |
| | Additional in-room imaging (ExacTrac) | | =0.1*X | =0.1*X | =0.1*X*[Service Level Contract Scaling Factor] |
| | In vivo dosimetry system | | =0.1*X | | |
| | Stereotactic RT equipment (micro MLC) | | | | =0.05*X*[Service Level Contract Scaling Factor] |
| | Independent MU / pre-treatment calculation verification | | =0.1*X | | |
| | TLD reader | | =0.05*X | | |
| | Secondary standard | | =0.05*X | | |
| | EPID dosimetry system | | =0.1*X | | |
| | SGRT | | =0.2*X | | =0.1*X*[Service Level Contract Scaling Factor] |
| | AI autocontouring | | =0.05*X | =0.05*X | |

| Patient Dependent Factors | | | | | |
|---|--|------------------|-----------------------|-----------------------|-----------------|
| New courses / episodes treated per annum EBRT | | | $=0.2 \times X / 100$ | $=0.3 \times X / 100$ | |
| New "Complex" courses / episodes treated per annum, to include SABR, SRS, SRT, TBI, TSE (not included in the above) | | | $=0.4 \times X / 100$ | $=0.4 \times X / 100$ | |
| Fractions per annum Brachytherapy (= planning sessions) | | | $=0.1 \times X / 20$ | $=0.1 \times X / 20$ | |
| Departmental Factors | | | | | |
| Radiation protection | | Select Yes or No | If Yes add 0.1 | | |
| Accredited quality system | | Select Yes or No | If Yes add 0.1 | If Yes add 0.1 | If Yes add 0.1 |
| Clinical trials support per trial | | | $=0.2 \times X$ | $=0.1 \times X$ | |
| Dosimetry equipment maintenance and calibration | | Select Yes or No | If Yes add 0.1 | | If Yes add 0.1 |
| Oncology Management System | | Select Yes or No | If Yes add 1 | | If Yes add 0.1 |
| Formal Training | | | | | |
| STP, Route 2, HSST specialising in RT Physics | | | $=0.2 \times X$ | | |
| PTP / technologist apprentices, PTP trainees | | | | $=0.2 \times X$ | |
| Engineering apprentices, trainees | | | | | $=0.2 \times X$ |

| | |
|---|---|
| Minimum Number of MPEs | $=[\text{Total WTE of Clinical Scientists}] \times 0.6$ |
| Minimum Number of MPEs if brachytherapy is available | If you have less than 100 [Fractions per annum Brachytherapy (= planning sessions)] then add 1 to the [Minimum Number of MPEs] If you have more than 100 [Fractions per annum Brachytherapy (= planning sessions)] then divide the [Fractions per annum Brachytherapy (= planning sessions)] by 100 and add the [Minimum Number of MPEs] |