



Australian Institute of Radiography

The national professional organisation representing radiographers, radiation therapists and sonographers.
ABN 26 924 779 836

Radiation Therapy Staffing Model 2014

Radiation Therapy Advisory Panel

September 2014



About the model

The working model of the Radiation Therapy Staffing Model 2014 is published here on the Australian Institute of Radiography (AIR) website so that the model can be used by stakeholders according to their purposes. Included here are instructions on how to apply the model and use the Excel spread sheets that operate the model. The model is intended to be flexible to accommodate differing circumstances across radiation oncology centres.

The 2014 model has been developed by the Radiation Therapy Advisory Panel (RTAP) of the AIR and endorsed by the AIR's Board. Importantly, the data collection process undertaken across twenty four radiation oncology facilities has been independently validated by consultants engaged by the AIR for that purpose. RTAP had no role in the data analysis or validation process.

It is acknowledged that funding received by the AIR from the Australian Department of Health under the Better Access to Radiation Oncology program enabled development of the 2014 model, based upon a review and refresh of the previously published staffing model published in 2001. The new model does however incorporate a number of features not included in the 2001 model.

What the model covers

The basic staffing model set outs a methodology for determining staffing numbers based on validated data for the core service common to all radiation oncology facilities, that being megavoltage external beam treatment (MVT) planning and treatment delivery. The elements of the model to which this data relates are:

- MVT Simulation
- MVT Planning
- MVT Treatment

The basic staffing model also includes suggested staffing numbers for the other roles that support this core service and may exist in facilities to differing degrees. It should be noted that staff numbers in this section of the model are only suggestions and may be substituted according to an individual facilities circumstances. These roles are:

- Management
- System and information management
- Education
- Research and development
- Quality assurance and audit

Lastly, the model also incorporates a suggested method for modelling RT staffing numbers for treatment modalities other than MVT. The data shown in the tables are indicative only for the purposes of illustrating how the model works and are not based on any validated data. These modalities, whilst relatively common, may not be undertaken at all facilities and are:

- Kilovoltage planning and treatment
- Brachytherapy planning and treatment



How to use the model

The model can be used in two ways for different purposes. The first is to use the model to assist in workforce planning purposes generally. Secondly, the model can be used by individual radiation oncology organisations to plan their radiation therapy staffing needs according to their specific organisational and operating environments and contexts.

There are six tables in Excel format attached which will be referred to below in the instructions on how to apply the model. These tables are:

- Table 1 – MVT simulation
- Table 2 – MVT planning
- Table 3 – MVT treatment
- Table 4 – Basic staffing model
- Table 5 – KVT planning and treatment model
- Table 6 – Brachytherapy planning and treatment

Using the model for workforce planning purposes

It is recommended that workforce planning be based upon the data contained in Table 4 – Basic staffing model. In particular, the planning parameter of RTs per linac (linear accelerator) operating hour (RT/hour) in the bottom line of the table is the significant planning parameter. The core data that underpins these parameters for MVT simulation, planning and treatment has been collected over twenty four facilities and validated independently and as such should be considered reasonably representative and robust for planning purposes. The numbers included for the supportive roles of management, system and information management, research and development and quality assurance and audit, critical as they are to a safe and high quality service, should be considered as conservative.

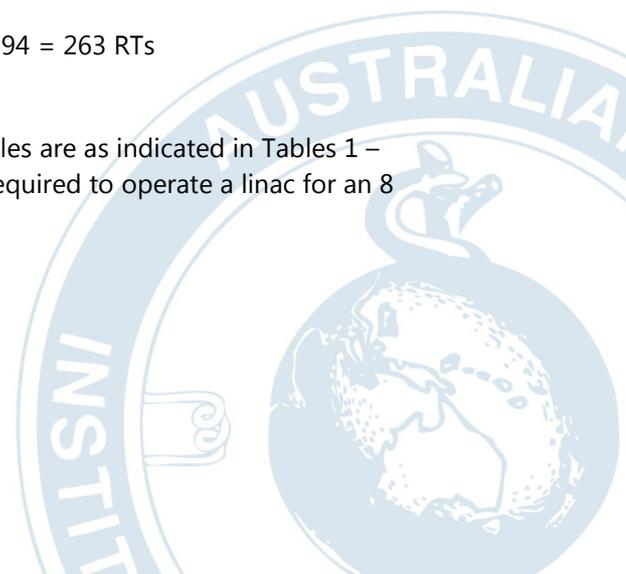
The model provides the flexibility to plan for workforce very broadly by using the RT/hour parameter of 1.25 for an average size facility of nominally 3 linacs for a region or jurisdiction with 15 such facilities all operating a standard 8 hour day, on average. The staffing calculation would therefore be:

$$15 \times 3 \times 8 \times 1.25 = 450 \text{ RTs}$$

If a region encompassed 5 facilities each with 3 linacs, operating 9 hours on average and 2 facilities each with 5 linacs, operating 8 hours on average, then the staffing calculation would be:

$$(5 \times 3 \times 9 \times 1.25) + (2 \times 5 \times 8 \times 1.17) = 169 + 94 = 263 \text{ RTs}$$

The assumptions that apply to the modelling are that case mix profiles are as indicated in Tables 1 – MVT simulation and Table 2 – MVT planning, i.e. that 3.42 RTs are required to operate a linac for an 8 hour day and a linac case load is 420 cases per annum.



Using the model at an organisational or facility level

It is generally recommended that an organisation or facility only use the model differently to that described above where any one of the following operational conditions can be shown to be significantly different to those used in in Tables 1 – MVT simulation and Table 2 – MVT planning. These operating conditions are:

- Where the case profile in terms of the percentage of cases being simulated (Table 1) and planned (Table 2) for each MBS code is deemed to be significantly different to that used in the tables, this being validated data from the twenty four facilities
- and/or where the number of cases a linac(s) treats per annum is significantly different from 420
- where any or all of the supportive functions of management, system and information management, research and development, quality assurance and audit are deemed not relevant, differently structured, organised or provided to that in Table 4 – Basic staffing model. For example, an organisation or facility may have differing management structures, differing levels of research involvement or have other/additional disciplines that perform some of these functions.

Instructions on how to modify the modelling according to a particular organisation's or facility's specific circumstances are contained in the Excel spread sheets attached.

Trouble shooting

Should you have any queries or difficulties using the model you may contact the following people for help:

- Min Ku at the AIR Secretariat, phone 3 9419 3336, email: min.ku@air.asn.au
- Leigh Smith, 3 9076 3522, email: leigh.smith@wbrc.org.au

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