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# Radiotherapy in Australia 2018-19

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## Citation

### AIHW

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### Latest edition

In 2018-19, 74,200 courses of radiotherapy were delivered in Australia. Half of all radiotherapy patients started treatment within 10 days of being assessed as ready for care, and 90% within 27 days. For those who needed emergency treatment (1.5% of courses), 96% began treatment within the recommended timeframe—on the same or the next day.

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### **Findings from this report:**

- 50% of all radiotherapy patients received treatment within 10 days and 90% received treatment within 27 days
- For those who needed emergency radiotherapy (1.5% of courses), 96% began treatment on the same or next day

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## Introduction

This report presents radiotherapy activity and waiting times data for 2018-19, from the [Radiotherapy Waiting Times National Minimum Data Set](#) Collection. In addition, data are presented for the previous collection years (covering the reference periods 2013-14 to 2018-19).

Interactive data are presented by collection year, on the:

- number of courses
- number of days patients waited at the 50th and 90th percentiles
- proportion of courses where emergency radiotherapy treatment began either on the same or the next day.

Course and waiting times data are disaggregated by sex, and by:

- age group
- intent of treatment
- principal diagnosis
- socioeconomic area
- remoteness of residence of the person, and
- state/territory and sector.

Note that as this report is for 2018-19 it does not cover the period which may have been affected by COVID. This time period will be covered in the next report and the effects of COVID on service provision will be explored.

### What is radiotherapy?

Radiotherapy uses radiation directed at a localised area to kill or damage cancer cells. It is a well-established, effective and safe way to treat cancer and a small number of other conditions. There are several types of radiotherapy. This report focuses on megavoltage external beam radiotherapy delivered by linear accelerator machines.

Radiotherapy is a highly specialised treatment that radiation therapists deliver, supervised by a radiation oncologist (in consultation with a multidisciplinary team including other medical and allied health practitioners), and requiring specialised equipment. Radiotherapy may be used on its own or in conjunction with other treatments such as surgery or chemotherapy. About half of all patients with cancer could benefit from external beam radiotherapy (RANZCR 2015).

Radiotherapy is usually given as one outpatient treatment or a series of outpatient treatments over a defined period, though under some circumstances patients may be treated as admitted patients.

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## Radiotherapy courses

74,200 courses of radiotherapy were delivered in 2018-19

This has grown faster each year from 60,600 courses in the first year of complete data collection in 2015-16 (see [Radiotherapy activity and collection participation](#)).

In 2018-19, public providers delivered around 64% of courses (47,300). Private providers delivered the remaining 36% of courses reported (26,900). Data for courses delivered in the private sector are not presented by state and territory to protect the privacy of individual service providers.

### What is a course of radiotherapy in this report?

In this report, [a course of radiotherapy](#) is defined as follows:

- A course of radiotherapy is a series of one or more external beam radiotherapy treatments prescribed by a radiation oncologist.
- A course of radiotherapy should have an associated ready-for-care date and, when treatment starts, a radiotherapy start date.
- A patient can receive more than one course of radiotherapy at the same time (courses that are simultaneous or overlap). These courses may have the same or different ready-for-care dates and the same or different radiotherapy start dates.
- Only a radiation oncologist can prescribe a course of radiotherapy. A prescription is not necessarily equal to a course of radiotherapy. A prescription may be for one or more courses of radiotherapy. A prescription outlines the anatomical region/sites to be treated and is for a prescribed dose at a defined volume (fractionation) over a defined period.
- One course of radiotherapy may cover multiple phases and multiple treatment plans.

Interactive figure 1, below, presents data for 2013-14 to 2018-19, by sex and by:

- age group
- top 10 principal diagnoses
- intent of treatment
- state/territory and sector
- remoteness of residence, and
- socioeconomic area of the person.

### Key points for radiotherapy courses started in 2018-19

- Just over half (52%) of all courses of radiotherapy were provided to males, and 48% to females.
- Up until about 60 years of age, females make up the greater portion of radiotherapy courses, but as people move into their early 60s this pattern reverses.
- 89% of courses were delivered to people aged 50 and over, and 1.4% were delivered to people aged 30 or under.
- 59% of radiotherapy courses were intended to cure disease, 40% were palliative, and 0.3% were prophylactic.
- 1.5% of courses were clinically assessed as emergency treatment (that is, radiation treatment should begin within 24 hours), with 98% of these cases being palliative.

Data visualisation Interactive1: Number of radiotherapy courses, 2013-14 to 2018-19. Interactive figure 1 presents activity data for 2013-14 to 2018-19, by sex and by age group, top 10 principal diagnoses, intent of treatment, state/territory and sector, remoteness of residence, and socioeconomic area of the person. Details can be found in the supplementary tables

Visualisation not available for printing

### Indigenous status

Excluding the relatively high number of cases where Indigenous status was not stated (34%), the proportion of radiotherapy courses provided to Indigenous Australians in 2018-19 was 1.6%; Indigenous Australians comprised 3.3% of the Australian population in 2016. For more detail see [Profile of Indigenous Australians](#).

### Intention of treatment

Radiotherapy can be provided to patients with the aim of preventing or curing disease, or as palliative care. The intention of treatment is categorised as:

- curative—when treatment is given with the intention of curing disease
- palliative—primarily for the purpose of pain or other symptom control. Consequent benefits of the treatment are considered secondary contributions to quality of life

- prophylactic—to prevent the occurrence of disease at a site that exhibits no sign of active disease but is considered to be at risk.

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## Radiotherapy waiting times

A waiting time was calculated for every record with a valid ready-for-care date and radiotherapy course start date (99.4% of all courses of radiotherapy that began in Australia in 2018-19; almost 73,800 records). See Box: [Calculation of waiting time from ready-for-care date](#) below, for more information. See [Technical notes](#) for details of data exclusions for waiting times calculations.

Waiting times for all patients are presented as the number of days a patient waited at the 50th and 90th percentiles:

- The 50th percentile (the median waiting time, or the middle value in a group of data arranged from lowest to highest for the number of days waited) represents the number of days within which 50% of patients began radiotherapy treatment.
- The 90th percentile data represent the number of days within which 90% of patients began treatment.

**50% of all patients** received treatment within **10 days** of being assessed as ready for care

**90% of all patients** received treatment within **27 days** of being assessed as ready for care

Waiting times are presented by state and territory for public providers, nationally for private providers, and in total. While the data are presented separately for public and private providers in this report, comparisons should be made with caution because some data recording practices may differ across individual sites, states and territories, and [sectors](#), particularly in the way ready-for-care dates are set, which affects the calculation of waiting times. These differences may also reflect varying service provision arrangements between the public and private sectors (and in both sectors across jurisdictions).

Comparison of waiting times between 2013-14 and 2014-15, and subsequent years should be undertaken with caution due to differences in participation rates by private radiotherapy providers which generally report shorter waiting times. There were more submissions of data on radiotherapy courses with valid waiting times by private providers in 2015-16, 2016-17, 2017-18 and 2018-19 collections than in previous years.

Interactive figure 2 presents data for 2013-14 to 2018-19, by sex and by:

- age group
- top 10 principal diagnoses
- intent of treatment
- state/territory and sector
- remoteness of residence, and
- socioeconomic area of the person.

### Key points for radiotherapy courses started in 2018-19

- Overall, waiting times were the same for males and females (50% treated within 10 days and 90% within 27 days).
- Waiting times (by intention of treatment) were shortest for patients receiving palliative radiotherapy (50% treated within 7 days), and were longest for patients receiving curative radiotherapy (50% within 14 days).
- 50% of people receiving non-emergency treatment were treated within 10 days, 90% within 27 days.
- For male patients with prostate cancer (25% of men), 50% started treatment within 12 days, and 90% within 34 days.
- For female patients with breast cancer (42% of females), 50% started treatment within 11 days, and 90% within 28 days.

### Emergency radiotherapy

An emergency course of radiotherapy is defined as treatment required within 24 hours of the patient being determined to be ready for care, in the opinion of the treating clinician. However, as only the date the patient was ready for care and the date they started the course of radiotherapy are collected (and information about the time of day is not available), this indicator is reported as the proportion of patients who were treated either on the same day or the day after they were ready for care.

There were 1,101 emergency courses in 2018-19 (1.5% of courses); 1,093 of these had valid waiting times.

**96% of patients** who were clinically assessed as emergency patients began treatment on the same or the next day

### Socioeconomic and remoteness areas

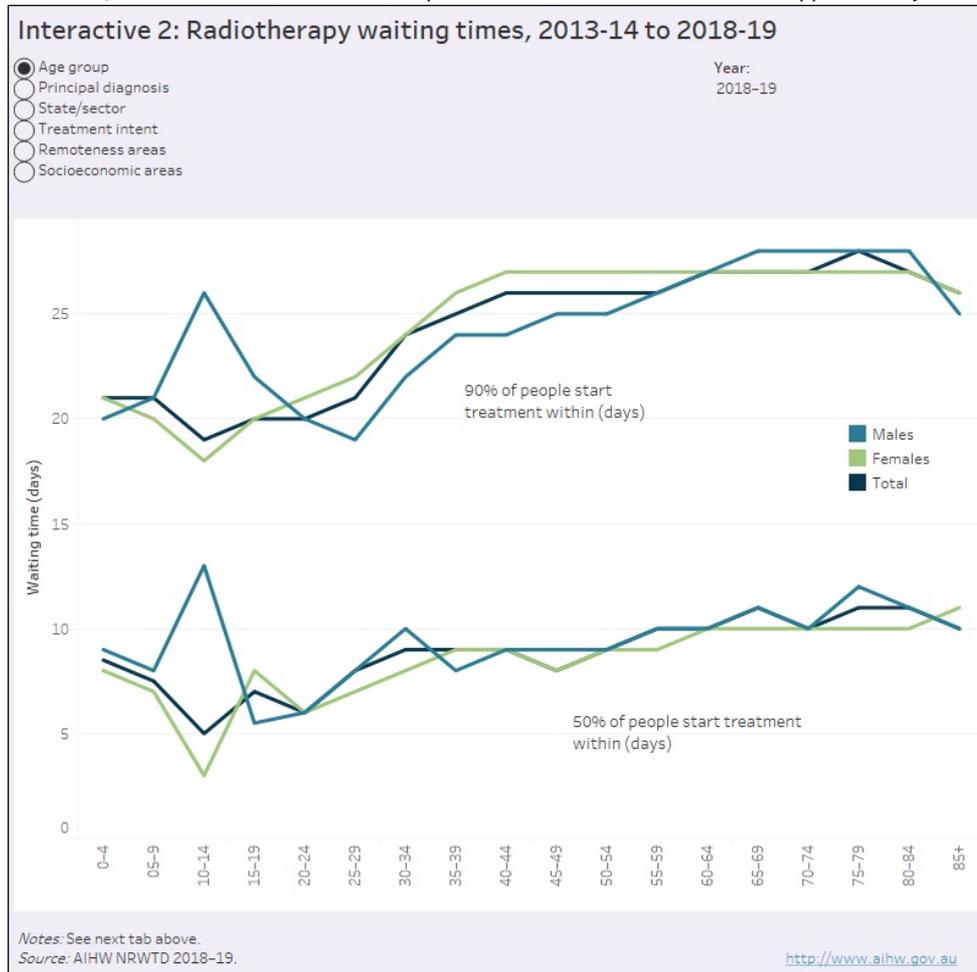
Area-of-usual-residence data can be used to calculate remoteness and socioeconomic of the area where a patient usually resides. The population living in the 20% of areas with the greatest overall level of disadvantage is described as the 'lowest socioeconomic areas'. The 20% at the other end of the scale—the top fifth—is described as the 'highest socioeconomic areas'.

Waiting times were shortest for those patients living in the highest socioeconomic areas – 50% of patients began treatment within 8 days.

Compared with those living in the lowest socioeconomic areas – 50% began treatment within 12 days.

While waiting times by remoteness were similar to each other, this may reflect the fact that waiting times are only measured from when a patient is ready for care, so any delays in accessing care due to the need to travel to providers are not captured in this dataset.

Data visualisation Interactive 2: Radiotherapy waiting times, 2013-14 to 2018-19. Interactive figure 1 presents waiting times data for 2013-14 to 2018-19, by sex and by age group, top 10 principal diagnoses, intent of treatment, state/territory and sector, remoteness of residence, and socioeconomic area of the person. Details can be found in the supplementary tables



### Calculation of waiting time from ready-for-care date

The **waiting time** is the number of days from when the patient is ready to be treated with radiotherapy in the opinion of the treating clinician ('ready for care') until the day the patient first receives radiotherapy treatment—that is, the number of days between the Ready-for-care date and the Radiotherapy start date. Reported waiting times include non-working days (such as weekends or public holidays) and other days on which a service was not able to provide services (such as when key staff are unavailable or where there has been equipment failure).

Other waiting periods—such as the time between when a person contacts their general practitioner and their first appointment with a medical oncologist, and the time between receipt of the patient's first referral to a radiation oncologist to the date of that patient's first consultation with a radiation oncologist—are not collected in this data set.

The **ready-for-care date** is set by the treating clinician and takes into account things such as the need for prior treatment or post-operative healing. If the patient is not ready for care on this date for personal reasons, the ready-for-care date will be set at a later time, when the patient states they are ready.

Service bottlenecks or peak periods of demand that may affect ease of access to radiotherapy services should not influence clinical decisions around the setting of ready-for-care dates. Treatment may be delayed due to waiting times in pre-treatment imaging or testing, treatment service availability, staff shortages, equipment breakdown, or even a lack of available accommodation for a patient travelling for treatment. Factors that are, and are not, expected to influence the ready-for-care date are described in the metadata for 'Ready-for-care date' available in METeOR (METeOR identifier: 448141).

## References

RANZCR (Royal Australian and New Zealand College of Radiologists) 2015. [What is radiation therapy?](#) Sydney: RANZCR. Viewed 19 August 2020.

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## Radiotherapy activity and collection participation

Changes in data reported over the 6 years of the collection have been influenced by:

- improved participation by service providers (particularly by the private sector)
- improvement in the number of reported courses that include waiting times data (particularly in the private sector).

### Facility participation in the collection

**93 facilities** were providing megavoltage external beam radiotherapy in Australia during 2018-19, **all participated in this collection**

Table 1 shows how participation has improved over the 6 years of collection. Interactive 3 displays radiotherapy sites by state and sector and participation status for all 6 years of the collection. A number of new facilities (or sites) have opened in most jurisdictions since the beginning of the collection.

Table 1: Participating facilities

	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Number of public radiotherapy sites participating in the data collection	37 <sup>(a)</sup>	40 <sup>(a)</sup>	44	44	47	47
Number of private radiotherapy sites participating in the data collection	16 <sup>(a)</sup>	26	33	35	42	46
Per cent of radiotherapy sites in Australia participating in the collection	73%	89%	100% <sup>(b)</sup>	100%	97%	100%

(a) In 2013-14, 36 public and 5 private facilities provided waiting times data. In 2014-15, 37 public facilities provided waiting times data.

(b) Effectively 100%—one public site that began operating 11 days before the end of 2015-16 did not provide data.

### Waiting times data availability

Not all providers were able to supply waiting times data for every course of radiotherapy reported. The provision of waiting times data has improved over time (Table 2).

Table 2: Radiotherapy courses with waiting times data

	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Total number of courses reported	47,657	56,376	60,580	63,531	67,773	74,199
Per cent of courses reported that included waiting times data	81%	93%	97%	100% <sup>(a)</sup>	99%	99%

(a) Rounded to 100%, 0.4% of records (250 records) were missing waiting times data.

Data visualisation Interactive 3: Radiotherapy provider sites contributing data. Interactive figure 1 presents the sites for radiotherapy providers in Australia, contributing to the Radiotherapy waiting times national collection from 2013-14 to 2018-19 by sector.

### Interactive 3: Radiotherapy provider sites in Australia

State/Territory  
All

Location  
All

Private  
 Public

Site	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Sector	
Alan Walker Cancer Care Centre, Darwin	Yes	Yes	Yes	Yes	Yes	Yes	Public	.
Andrew Love Cancer Centre, Geelong	Yes	Yes	Yes	Yes	Yes	Yes	Public	.
Austin Radiation Oncology Centre, Melbourne	Yes	Yes	Yes	Yes	Yes	Yes	Public	.
Ballarat Austin Radiation Oncology Centre, Ballarat	Yes	Yes	Yes	Yes	Yes	Yes	Public	.
Blacktown Cancer and Haematology Centre, Blacktown	—	—	Yes	Yes	Yes	Yes	Public	Note
Bunbury Hospital, Bunbury	—	—	Yes	Yes	Yes	Yes	Public	.
Cairns Base Hospital, Cairns	—	—	Yes	Yes	Yes	Yes	Public	Note
Calvary Mater Newcastle, Newcastle	Yes	Yes	Yes	Yes	Yes	Yes	Public	.
Central Coast Cancer Centre, Gosford	Yes	Yes	Yes	Yes	Yes	Yes	Public	.
Central West Cancer Service, Orange	Yes	Yes	Yes	Yes	Yes	Yes	Public	.
Chris O'Brien Lifehouse, Sydney	Yes	Yes	Yes	Yes	Yes	Yes	Private	Note
Crown Princess Mary Cancer Centre, Sydney	Yes	Yes	Yes	Yes	Yes	Yes	Public	.
Fiona Stanley Hospital, Perth	—	—	Yes	Yes	Yes	Yes	Public	.
Genesis CancerCare Hurstville, Hurstville	—	Yes	Yes	Yes	Yes	Yes	Private	.
Genesis CancerCare, Macquarie University Hospital, Sydney	—	Yes	Yes	Yes	Yes	Yes	Private	.
Genesis CancerCare, Newcastle, Newcastle	—	Yes	Yes	Yes	Yes	Yes	Private	.

**Notes:**

1. Facilities (or sites) are the location of treatment, i.e. location of linear accelerators.
2. Cells with a dash indicate years in which that site either did not operate or did not provide data to the collection.
3. See Sector in Glossary for an explanation of public or private status.

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## Technical notes

### Data exclusion and suppression for analysis of waiting times

In 2018-19, 431 records had missing or negative waiting times (where the ready-for-care date was after the radiotherapy start date). All negative or missing waiting times have been excluded from all waiting times calculations for this report.

In this report, waiting times are suppressed for all calculations where the number of contributing courses of radiotherapy was less than 20—that is, for the 50th and 90th percentile, and the proportion of emergency patients' calculations. This is because the waiting times reported are likely to be highly volatile when the number of courses of radiotherapy is small.

In some cases, table cells have been suppressed to protect confidentiality where the presentation of the data could identify a patient or a service provider, or where the data supplier has made this request. From 2013-14 to 2015-16 the Northern Territory required suppression of all cells where the number of records was fewer than five. In some instances, this resulted in the need for consequential suppression of other data (including for other jurisdictions).

### Glossary

[Radiotherapy glossary](#)

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## Notes

### Data quality statement

[National Radiotherapy Waiting Times Database, 2018-19, Quality Statement](#)

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## Data

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Data tables: [Radiotherapy in Australia 2018-19](#)

supplementary Excel tables

Download Data tables: [Radiotherapy in Australia 2018-19](#). Format: [XLSX 144Kb](#) [XLSX 144Kb](#)

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## Report editions

### This release

Radiotherapy in Australia 2018-19 | 07 Oct 2020

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### Previous releases

- Radiotherapy in Australia 2017-18 | 05 Aug 2019
- Radiotherapy in Australia 2016-17 | 16 Jul 2018
- Radiotherapy in Australia 2015-16 | 02 Aug 2017
- Radiotherapy in Australia: report on the second year of a pilot collection 2014-15 | 27 Oct 2016
- Radiotherapy in Australia: report on a pilot data collection 2013-14 | 11 Nov 2015

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## Related material

### Glossary

[Radiotherapy glossary](#)

### Related topics

- [Hospitals](#)
  - [Cancer](#)
- 

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