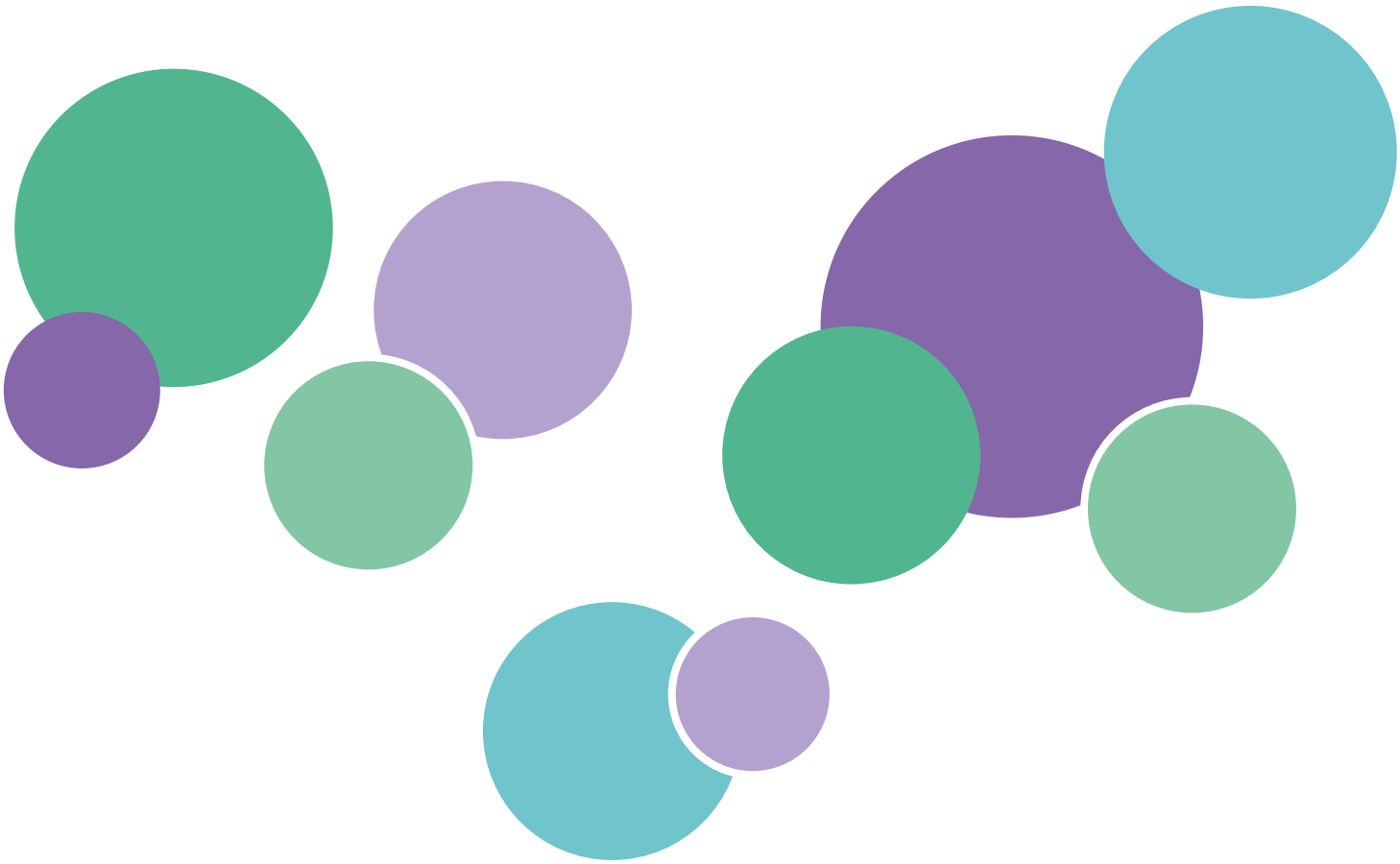
ANZCTR
Australian New Zealand Clinical Trials Registry

LATEST UPDATE OF THE CLINICAL TRIALS LANDSCAPE IN AUSTRALIA (2006–2020)



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We acknowledge the tradition of custodianship and law of the Country on which the University of Sydney campuses stand. We pay our respects to those who have cared and continue to care for Country.

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FOREWORD

Clinical trials play a critical role in improving the health and welfare of individuals and society. They initiate progress by evaluating the risks and benefits of new and existing interventions, to inform and assist in decision-making in health care. The current pandemic has accentuated their value with many clinical trials having determined the safety and benefit of preventive measures and treatment options.

In the original report on the *Clinical trials landscape in Australia (2006-2015)*, the report mapped the characteristics and trends of Australian clinical trials. The findings of the report were well referenced by the medical, scientific and public health community, industry and funders alike. This is the main impetus for updating the report.

This latest report includes 15 years' worth of trial information. A longitudinal view of Australian trials provides an opportunity to reflect on the direction of trials research in Australia and whether or not it meets the needs of the health care system and public.

Behind this report lies two key actions – trial sponsors reporting their trial and the collection of these data in a standardised format by the Australian New Zealand Clinical Trials Registry (ANZCTR). It is through this combined effort that it is possible to provide a detailed account of Australian trials over time. The updated report also re-emphasises the value in high-quality data collection processes and the ANZCTR's key role in promoting research transparency in both Australia and internationally.

As per the original report, I hope that this updated report helps to inform the health research agenda in government and industry.

Professor Judith Whitworth AC
Advisory Committee Chair
Australian New Zealand Clinical Trials Registry

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ABOUT THE AUSTRALIAN NEW ZEALAND CLINICAL TRIALS REGISTRY (ANZCTR)

The Australian New Zealand Clinical Trials Registry (ANZCTR) manages an online register of clinical trials being undertaken in Australia, New Zealand and elsewhere in the world. It includes trials across the full spectrum of therapeutic areas of pharmaceuticals, surgical procedures, devices, public health interventions, preventive measures, lifestyle, rehabilitation strategies and complementary therapies. Importantly, it enables researchers to fulfil their scientific, ethical and moral responsibilities to register their work and helps ensure that summarised information about all clinical trials is publicly accessible.

The ANZCTR was established in mid-2005 and is housed at the National Health and Medical Research Council (NHMRC) Clinical Trials Centre, University of Sydney. It was one of the first trial registries to be endorsed by the International Committee of Medical Journal Editors (ICMJE) and in 2007 by the World Health Organization International Clinical Trials Registry Platform (WHO ICTRP) as a primary registry. The WHO ICTRP sets the requirements for trial registration and recognises registries as primary registries if they fulfil certain criteria with respect to data content, quality and validity, accessibility, unique identification, technical capacity and administration. Together with the 16 other primary registries and the US-based ClinicalTrials.gov, trials registered on the ANZCTR feed into the WHO ICTRP.

These registries are committed to the global initiative of making sure that all clinical trials being conducted are made public. This initiative is critical in order to improve research transparency, facilitate trial participation, and avoid duplication of research and promote collaboration. The role of trial registries continues to evolve and recently, registries have extended their function by recording summarised trial results for completed trials. In 2017 and 2018, the ICMJE and WHO ICTRP outlined trials must include a data sharing plan at the time of registration and should provide summary results in the trial registry record within 12 months of trial completion.

Trials can be registered on the ANZCTR at any time: before or after ethics approval, or enrolment of the first participant. Since 2014, trial registration has been a mandatory condition of ethics approval for all health and medical trials undertaken in Australia. Most trials in Australia are registered on the ANZCTR, but some may be registered on ClinicalTrials.gov. Trials registered on ClinicalTrials.gov and recruiting in Australia are automatically fed to the ANZCTR. Clinical trial research funded by national government must complete registration well before the first participant is enrolled. Updates to a trial registration record can be made at any time, and the audit trail of updates is publicly accessible. Researchers are reminded annually to keep their trial's registration record up to date.

For trials that have been registered, the ANZCTR (including its ClinicalTrials.gov data feed) captures over 95% of studies recruiting in Australia. As such, data from the ANZCTR represents the most complete picture of national clinical trials activity available in Australia.

About this report

This latest report summarises the landscape of clinical trial activity in Australia by analysing data from 18,453 Australian trials registered on the ANZCTR and ClinicalTrials.gov. From 2006 to 2020, the ANZCTR has facilitated the registration of over 12,000 Australian trials and included around 6,400 Australian trials registered on ClinicalTrials.gov.

Acknowledgements

Since 2006, the ANZCTR has been funded by multiple entities including grants from the Australian NHMRC, the New Zealand Health Research Council, the Australian Government Department of Health, and the Australian Government's National Collaborative Research Infrastructure Strategy program which is administered via Therapeutic Innovation Australia.

In addition to its past and current funders, the ANZCTR wishes to acknowledge the members of its external Advisory Committee for their ongoing strategic advice and Professor Lisa Askie for developing the original clinical trials landscape in Australia report 2006 – 2015[1], promoting the role of registries nationally and internationally, and managing the ANZCTR for 15 years. The ANZCTR is grateful for the contributions in preparing the updated report received from Peta Skeers and Ava Tan-Koay. Acknowledgements extend to senior editor Sherilyn Goldstone at the NHMRC Clinical Trials Centre and Melissa Mylchreest of King Street Press for their attention to detail and care in finalising this report.

OVERVIEW AND COMMENTARY

We are pleased to present the *Latest update of the clinical trials landscape in Australia (2006 – 2020)*, which uses trial registration data to gain an understanding of the clinical trials occurring in Australia. This report is an update of the original report covering 2006-2015[1] and includes new data from 2016 to 2020. These data are sourced from the Australian New Zealand Clinical Trials Registry (ANZCTR) and US-based ClinicalTrials.gov registry.

The purpose of this report is to provide a comprehensive outline of the key characteristics of clinical trials over time. Reporting on clinical trial activity is a crucial step in understanding where improvements may be needed in the clinical trials sector. This report can be used as a reference point when promoting Australian clinical trial activity at national or international forums. It is intended to be used by all those working in or with clinical trials including clinical trial investigators, researchers, funders, industry, policymakers, trial participants and the public.

Previous reports analysing trial activity in Australia have helped to identify research gaps and prioritise funding schemes[1,2,3] and to inform the design of new national infrastructure that facilitates clinical trial data sharing[4]. We hope this updated report will be of similar use.

Below, we describe the overall findings and trends over time, and the potential impact of COVID-19 on trial activity and future direction of Australian clinical trials.

Panoramic view of Australian clinical trials

Clinical trials play an increasingly significant role in Australia's healthcare system. Over the 15-year period (from 2006 to 2020), around 18,000 trials have started in Australia with over 40% in the last five years. The exact number of Australian participants cannot be determined because trials can be based in Australia or incorporated in multinational trials. Consequently, a very rough estimate of around 8.7 million people (representing participants in Australia and internationally) planned to participate in these trials.

Compared to other countries, clinical trial activity in Australia is higher than France, Germany, the UK and USA, though lower than Belgium, Denmark and the Netherlands. Overall, Australia compares favourably to other OECD countries in terms of clinical trial activity, yet, further improvements are still possible. Internationally, the practice of integrating clinical trial research into routine health care is gaining momentum[5,6]. This enables evidence to be generated in a timely manner within routine care, which assists the translation from research to practice thus improving patient care and treatment options. In Australia, this process is underway with the Australian Government implementing a national framework to help incorporate clinical trials into routine care[7].

Australian trials examine a wide variety of health areas and involve both people who have been diagnosed with a health condition and healthy participants who may be at risk of developing a condition in the future. From 2006 to 2020, the three most researched areas were cancer, mental health and cardiovascular conditions. These areas represent 20%, 13% and 10% of all trials and 16%, 7% and 18% of people planned to be enrolled into these trials. In terms of those health areas with the greatest national disease burden, cancer and mental health trials seem to be well represented based on the number of trials while cardiovascular conditions may have fewer but larger trials. Musculoskeletal conditions appear to be under-investigated when compared to the national burden of these diseases. Neurological conditions (including dementia) have been researched in a high number of small studies. As there have been considerable changes in the methods used to estimate burden of disease, including the addition of new categories of health conditions since the original report[1], direct comparisons with the earlier report are not possible regarding these measures.

The majority of interventions employed in Australian trials cover treatment strategies (75%) followed by preventive measures (15%). A diverse range of interventions are used across trials including medicines (45%), a melange of other treatment interventions such as exercise, physiotherapy, cognitive therapy and special diets (20%), behavioural strategies (12%), medical devices (10%) and surgery (4%). When looking at the phase of medicine trials, comparative phase 3 are most common (35%), followed by phase 2 (28%) and a surge in recent years of small phase 1 trials (23%) which assess the safety and appropriate dose of new drugs.

Clinical trials are widely recognised as one area of research needing better representation of minority participants to help reduce health disparities. To date, there has been little detail on the inclusion of Aboriginal and/or Torres Strait Islander peoples in clinical trials. Based on information available in trial registration records, 0.8% of trials appear to exclusively focus on the health of Aboriginal and/or Torres Strait Islander peoples and communities over the 15-year period (2006 to 2020). Over this period, the number of trials has remained low (ranging from 0.3% to 1% of all trials). Of note, these numbers do not capture the overall participation of Aboriginal and/or Torres Strait Islander peoples and communities in clinical trials, only those trials where the involvement of Aboriginal and Torres Strait Islander peoples have been explicitly reported as the main population targeted. Separate analysis indicate that these trials are more likely to cover the health areas of ear conditions, public health and infections compared to other trials occurring in Australia[8].

While the evidence generated from clinical trials is critical in directly informing medical and public health decision-making, there is also important value in sharing and re-using clinical trials data to inform practice, policy and future research especially through systematic reviews. In Australia, at the time of receiving approval to start a clinical trial, 23% of researchers state their commitment to share individual participant data upon trial completion. This low rate of commitment at time of trial registration is replicated internationally where 23% of trials plan to share data as recorded in trials listed in the World Health Organization (WHO) International Clinical Trials Registry Platform[9]. An Australian-based survey found that researchers indicated strong in-principle support for data sharing but there are reservations to commit to data sharing for their own trials well in advance[4]. The survey identified that facilitators, e.g. the development of processes and best practice to support data sharing at institutes, and safeguards, e.g. clear agreements to limit misuse of data, are needed to increase rates of shared data[4]. In Australia, the national Health Studies National Data Asset (HeSANDA) program, co-ordinated by the Australian Data Research Commons[10], is one significant initiative that acknowledges the value in sharing trial data and is helping to develop infrastructure for this to occur effectively and safely.

Changing features in Australian clinical trials over time

A number of trends in clinical trials have surfaced in recent years. In the last five years alone an average of 1,500 trials started each year, while in the preceding ten years an average of 1,000 trials started per year[1]. This growth in the number of trials is not mirrored in the number of people who plan to be recruited by trials with at least one site in Australia. The reason for this mismatch between a rise in number of trials but not in number of participants is a decrease in median sample size of contributing trials (i.e. from 128 participants per trial in 2006 to 80 in 2020). This trend of diminishing sample sizes has also been observed in trials outside of Australia listed in the largest clinical trials database in the USA (ClinicalTrials.gov)[11,12].

Several factors are likely contributing to the observed drop in sample size per trial. First, there is a shift in activity towards earlier phase drug trials. From 2006 to 2020, the number of early phase studies being conducted in Australia has more than tripled and in the last five years, the proportion of early phase studies has increased from 27% in 2016 to 40% in 2020. It is difficult to state with certainty whether this trend is replicated in other countries. For example, in the USA-based registry, ClinicalTrials.gov, most trials are phase 1 or 2, however there is an increasing number of trials that are not specifying trial phase[11].

Other factors driving the shift towards smaller registered trials in Australia could include more trials exploring targeted therapeutic interventions in biomarker-defined subgroups of patients, greater use of composite outcomes and a greater proportion of smaller trials now being registered compared to earlier years. An in-depth investigation into the factors behind the declining sample size is currently underway.

In the last 15 years, there appears to be stronger growth in the number of trials with non-commercial involvement compared to commercial involvement, leading to non-commercial trials proportionally overtaking commercial trials. Yet, this development seems to have slowed down in the last 9 years, where the proportion of non-commercial trials has stabilised (65% between 2011 and 2020). This plateau may be a real growth in non-commercial trials or may reflect the more complete capture of non-commercially sponsored trials in recent years in trial registries.

Overview of COVID-19 studies

During the pandemic, 108 COVID-19 related studies were listed on the ANZCTR from March to December 2020. Although the focus of this report is not on COVID-19 studies, some high-level observations have been provided in this commentary. Overall, two-thirds of COVID-19 studies listed on the ANZCTR were clinical trials, the remainder were observational studies. Trials predominately focused on the treatment of COVID-19 (62%) followed by prevention (28%). An in-depth analysis of COVID-19 trials in Australia has been published elsewhere[3]. The analysis showed a rapid emergence of COVID-19 trials in Australia in the early phase of the pandemic, but many of these studies were small in sample size and unlikely to detect differences in clinically important outcomes[3]. The analysis concluded that better coordination and collaboration in clinical trials research, supported by funding schemes and fit-for-purpose national infrastructure (including trial registries), would help make sure trial activity resulted in maximum knowledge gain.

The impact of COVID-19 on Australian clinical trials activity has yet to be fully explored. We have seen a decline in the number of new clinical trials being registered in 2020 (17% less than 2019) and this trend has also been observed for Australian trials started in other countries (such as the USA – 13% less than 2019). An assessment of the impact of COVID-19 over subsequent years on Australian trials including whether there were changes in the completion or abandonment of studies will soon be examined.

The future direction of Australian clinical trials

Clinical trials help to facilitate the approval of and access to effective and safe treatments, and inform the public on measures to prevent or reduce health issues. The economic investment in Australian clinical trials is substantial with an estimated $1.4 billion of public and private funding spent in 2019 alone[13]. Notably, there is also an unquantifiable investment of time by participants who take part in these trials. Despite these investments, it is widely recognised that more value could be derived from trials by improving their design, speed of set-up and reporting.

It is well established that trial evidence combined with other forms of evidence helps inform best practice and policy. The shortcomings of trials are, however, often reported including for example trials being designed that poorly align to the needs of patients and clinicians[14,15], the non-reporting of trial results[16], and the slow access to evidence for decision-makers[17]. To address some of these issues, significant initiatives are taking shape both nationally and internationally.

Internationally, this includes forthcoming specific guidance on the reporting of trial results within 12 months of study completion in trial registries from the World Health Organization and a new resolution from the World Health Assembly to improve the quality and co-ordination of clinical trials in preparation for future health emergencies[18]. These actions will not only help increase disclosure of trial results but aim to increase participant confidence in clinical trials. Trial registries such as the ANZCTR have a critical role to play – to help study investigators and funders find relevant planned or ongoing trials[19], which facilitate coordination and collaboration in frameworks such as prospective meta-analyses, and enable reporting of unpublished results.

Nationally, consultations are underway with the clinical trials community and trial participants to help improve the establishment, governance, and reporting of trials, and access to trial information. To implement these improvements, two new platforms have been proposed - the National One Stop Shop and National Clinical Trials Front Door[20]. The One Stop Shop is intended to streamline health-related research, including clinical trial workflows by integrating the ethics, governance, regulatory, and trial registration approval processes. The scope of "reporting" in the One Stop Shop will be informed through consultation however a public-facing facility to report trial results, as currently available in the ANZCTR, is worthy of consideration given the high rate of trials that never report or selectively report results[21,22,23]. The National Clinical Trials Front Door website is expected to help people find and participate in clinical trials and allow study investigators to search for similar clinical trials in the field and collaborate. Both proposed systems are a positive step in being able to better evaluate patterns in clinical trial activity.

Looking forward, it is exciting to see a more connected approval and reporting system of clinical trials that will better serve the clinical trials community and Australian public.

REPORT DEFINITIONS, METHODS AND DATA CONSIDERATIONS

Report definitions

Clinical trials: research studies that recruit people to test new 'interventions'. These can be drugs, devices, vaccines, surgery, behavioural therapies, preventive care changes, other interventions or combinations of interventions, given to individuals or applied to systems, that are designed to help improve human health. The World Health Organization (WHO) defines a clinical trial as 'any research study that prospectively assigns human participants or groups of humans to one or more health-related interventions to evaluate the effects on health outcomes'.

'Australian' clinical trials: studies with Australia listed as a recruitment country. These trials may be recruiting within Australia at a single site, multiple sites, or be part of a multinational study with multiple recruitment countries in addition to Australia. Data are sourced from the ANZCTR and direct data feeds of Australian recruitment sites from ClinicalTrials.gov.

Year: a trial's year of registration, i.e. the year the study was approved for listing on the ANZCTR or ClinicalTrials.gov. This does not necessarily reflect the year the trial started. See Appendix 1 for the ANZCTR registration process.

Where other terms have particular meanings in the context of this report, they are defined in the relevant section.

Data considerations

All data have been provided by the trial registrant, and the registrant is therefore responsible for their accuracy. The ANZCTR's review of submitted information helps to ensure content is complete and meaningful (as required by the WHO ICTRP) but this process cannot ensure that submitted information is accurate. Trial information can be updated at any in the ANZCTR and as such the findings in this report reflect data in the ANZCTR on 4 February 2021.

The data cover registered trials only and may not necessarily reflect overall trends in clinical trial activity. For example, any growth may be an artefact of increased trial registration, rather than increased trial activity.

The ANZCTR was established in mid-2005; hence the period covered by this report commences from the first full year of operation, i.e. 2006.

The ANZCTR (including its ClinicalTrials.gov data feed) collects most of the registered trial activity in Australia, with only 4% of Australian trials registered on one of the other 16 WHO primary registries (see Appendix 2).

There may be some differences in the data for the period 2006-2015 in the previous and current report. These differences are mainly due to the updating of trial records (including addition of Australian recruitment sites on ClinicalTrials.gov records imported into the ANZCTR), and updating of external data sources (e.g. for the burden of disease analysis). Where possible, data notes have been provided to explain notable differences.

Trials may be registered on more than one register, although the ANZCTR's process aims to avoid this where possible: 253 trials (less than 1.5% of the total) are known to be registered on both the ANZCTR and ClinicalTrials.gov, and therefore may be counted twice in some figures.

Methods

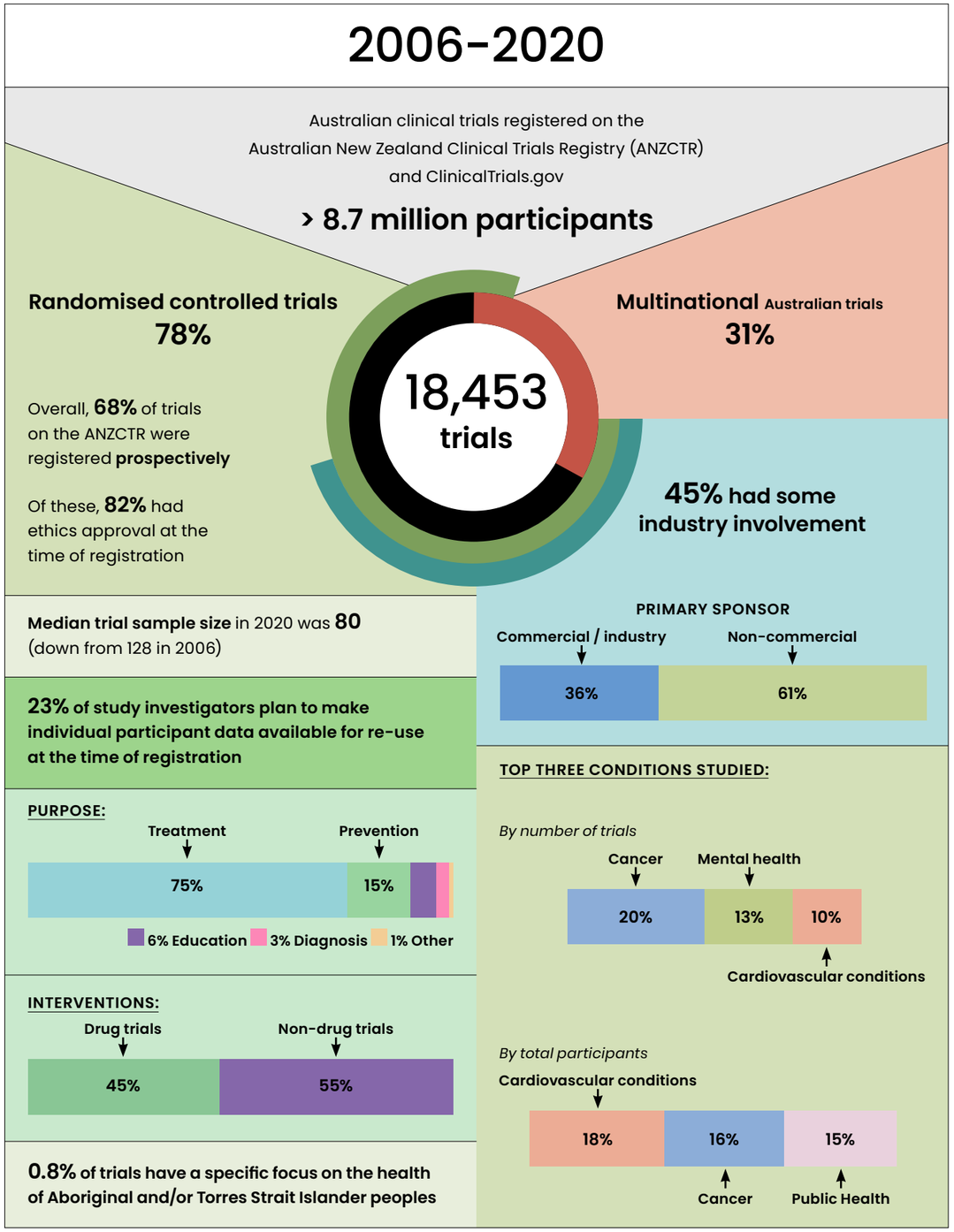
Interventional studies were identified using the 'Study type' field on both registries. Those that selected 'Interventional' for this field were extracted from ANZCTR, and those that selected either 'Interventional' or 'Expanded Access' were extracted from ClinicalTrials.gov.

Studies that did not involve an intervention, but were purely observational in nature, were not included in the report (unless otherwise stated).

All available data fields for interventional studies were extracted from both registries. The data fields collected by ClinicalTrials.gov are slightly different from those collected by ANZCTR (see https://prsinfo.ClinicalTrials.gov/definitions.html). Where possible, ClinicalTrials.gov fields were mapped to match ANZCTR fields, to enable synthesis of data. Details of data mapping can be found in Appendix 3. A list of ANZCTR data fields and their definitions is available in Appendix 4.

All analyses were conducted using the open-source software R and data outputs were cross-checked by a second, independent reviewer. The ANZCTR invested in developing semi-automated code to easily update all analyses and data outputs for future reports.

FAST FACTS


2006–2020
Australian clinical trials registered on the
Australian New Zealand Clinical Trials Registry (ANZCTR)
and ClinicalTrials.gov
> 8.7 million participants
Randomised controlled trials
78%
Multinational Australian trials
31%
18,453
trials
Overall, 68% of trials on the ANZCTR were registered prospectively
Of these, 82% had ethics approval at the time of registration
45% had some industry involvement
PRIMARY SPONSOR
Commercial / industry
Non-commercial
36%
61%
Median trial sample size in 2020 was 80
(down from 128 in 2006)
23% of study investigators plan to make individual participant data available for re-use at the time of registration
TOP THREE CONDITIONS STUDIED:
PURPOSE:
Treatment
Prevention
75%
15%
6% Education
3% Diagnosis
1% Other
By number of trials
Cancer
Mental health
20%
13%
10%
Cardiovascular conditions
INTERVENTIONS:
Drug trials
Non-drug trials
45%
55%
By total participants
Cardiovascular conditions
18%
16%
15%
Cancer
Public Health
0.8% of trials have a specific focus on the health of Aboriginal and/or Torres Strait Islander peoples

PART 1: TRIAL ACTIVITY

An overview of clinical trial activity in Australia. This includes the comparisons to trial activity in other countries, multinational trial activity and types of primary sponsor.

DATA NOTES

This section uses combined ANZCTR and ClinicalTrials.gov data unless otherwise noted.
Data are displayed as per ANZCTR registration form categories while data from ClinicalTrials.gov have been mapped to the closest relevant ANZCTR category. Details of this mapping can be found in Appendix 3.
Only registered Australian clinical trials are included (i.e. interventional studies with at least one recruitment site in Australia) unless otherwise noted.
Multinational trials refer to trials with recruitment sites in Australia and overseas. The total number of participants includes the planned recruitment or, if available, actual number of participants of such trials both in Australia and overseas.
Unless otherwise noted, 'year' refers to year of trial registration. This differs from other clinical trial reports[13] that use the year the trial started and explains small inconsistencies across reports based on ANZCTR data. A sensitivity analysis indicates little difference in findings when trial registration or start date are used to define the year.

1.1 KEY FINDINGS

From 2006 to 2020:

- Clinical trial activity in Australia has been increasing, with the number of new studies registered per year rising from 725 in 2006 to 1,349 in 2020.
- A total of 18,453 Australian trials have been registered with the ANZCTR and ClinicalTrials.gov.
- An estimated 8.7 million people are planned to be recruited or have participated in Australian clinical trials.
- Australia ranks above the international median in terms of studies per capita basis, above Canada and Ireland, for example, and below Norway, Sweden and Switzerland.
- 31% of registered trials are multinational trials, recruiting in Australia and at least one other country.
- Industry or commercial bodies have been responsible for approximately a third of trial registrations overall. Non-commercial sponsors, such as universities, hospitals and individuals, continue to play a key role, with annual registrations rising from 46% in 2006 to 60% in 2020.
- 45% of Australian clinical trials have some degree of industry involvement, either as a funding source, primary sponsor, secondary sponsor and/or other collaborator.

What is new since 2016?

- The number of new trials grew per annum until 2019 and 2020. Although there was no year-on-year growth in trial registrations in 2019 and 2020, the number of new studies registered was still at levels seen in 2016 and 2017.
- In 2020, an appreciable reduction in the number of registered trials, number of participants and types of non-commercial primary sponsors was observed, which may be due primarily to the impact of COVID-19 on research, and investment activities.
- 7,816 Australian trials have been added to the ANZCTR and an estimated 3.6 million participants plan to be involved or have participated in these trials.
- There has been no change overall in Australia's ranking in clinical trial activity on a trial per capita basis compared to other countries.
- There has been a slight increase in trials recruiting only in Australia from 69% in 2015 to 76% in 2020.

1.2 NUMBER OF TRIALS

The number of Australian clinical trials registered on ANZCTR and ClinicalTrials.gov has increased markedly over the last 15 years (2006–2020), from 725 at the end of 2006 to a cumulative total of 18,453 at the end of 2020.

The ANZCTR has continued to see rapid growth since 2008, with 443 new trials registered that year, rising to 1,806 trials in 2018. In 2019 and 2020, there was a slight decline in the number of new trials registered per annum. The recent decline may be related to a lower number of trials submitted for registration and the impact of the pandemic on trial activity. Registrations on ClinicalTrials.gov have grown at a slower rate, from 362 added in 2006 to 541 in 2018 (with a slight decline in 2019 and 2020).

Overall, the ANZCTR accounted for significantly more registered Australian trials (a total of 12,025 or 65%) than ClinicalTrials.gov (6,428 or 35%).

Figure 1: Growth in registered Australian clinical trial activity, 2006–2020

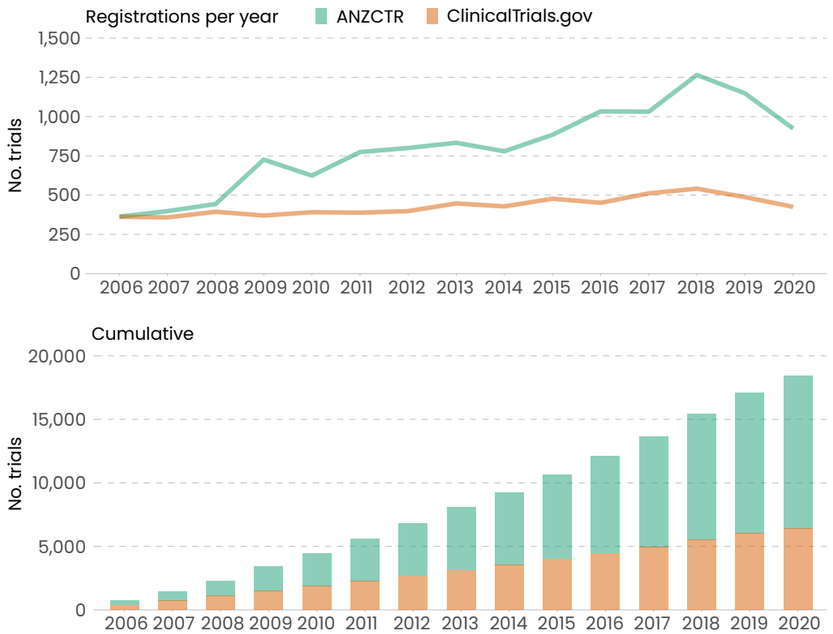


Table 1: Number of Australian clinical trials registered on the ANZCTR and ClinicalTrials.gov, per year and cumulatively, to December 2020

	Number registered per year			Cumulative registrations		
	ANZCTR	ClinicalTrials.gov	Total	ANZCTR	ClinicalTrials.gov	Total
2006	363	362	725	363	362	725
2007	398	358	756	761	720	1,481
2008	443	394	837	1,204	1,114	2,318
2009	726	370	1,096	1,930	1,484	3,414
2010	624	391	1,015	2,554	1,875	4,429
2011	774	388	1,162	3,328	2,263	5,591
2012	800	398	1,198	4,128	2,661	6,789
2013	833	447	1,280	4,961	3,108	8,069
2014	779	428	1,207	5,740	3,536	9,276
2015	884	477	1,361	6,624	4,013	10,637
2016	1,033	451	1,484	7,657	4,464	12,121
2017	1,031	511	1,542	8,688	4,975	13,663
2018	1,265	541	1,806	9,953	5,516	15,469
2019	1,148	487	1,635	11,101	6,003	17,104
2020	924	425	1,349	12,025	6,428	18,453
	Total new registrations 2006 - 2020			Proportion of all registrations 2006 - 2020		
Total	**12,025**	**6,428**	**18,453**	**65%**	**35%**	

Most of the Australian trials registered on ClinicalTrials.gov are multinational (see Section 1.5). They are more likely to be industry-sponsored (Section 1.7) and to have relatively large sample sizes (Section 3.2). Trials registered on the ANZCTR tend to be recruiting only in Australia and are more diverse in terms of the interventions studied and types of sponsor.

1.3 ESTIMATED NUMBER OF PARTICIPANTS

Over the last 15 years (2006–2020), Australian clinical trials recruited or planned to recruit an estimated 8.7 million people. Each year, the estimated total number of participants varies due to the number of registered trials and their anticipated or actual sample sizes.

In the last 5 years alone, Australian clinical trials included an estimated 3.6 million planned participants. Australian clinical trials are defined as trials with at least one recruitment site in Australia and include people planning to be recruited or have been recruited in Australia and overseas in multinational trials. The upturn in 2019 is due to one trial in reproductive health and childbirth with a target sample size of 530,000 participants. In 2020, participation rates declined in parallel with fewer trials being registered on the ANZCTR and ClinicalTrials.gov likely due to a combination of factors including the global pandemic of COVID-19 impacting trial activity.

Figure 2: Trends in the estimated number of participants in Australian clinical trials registered, 2006–2020

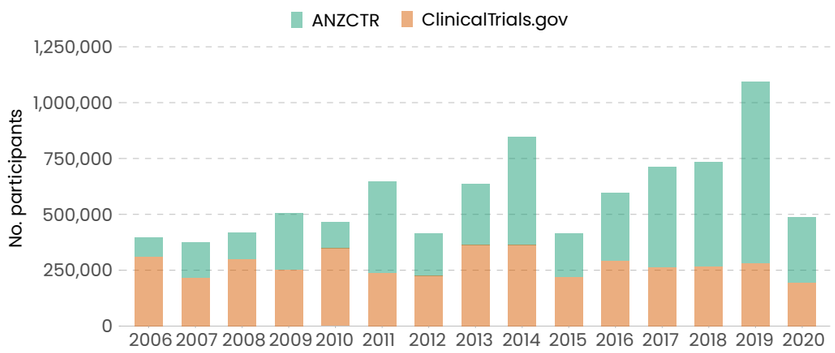


Table 2: Estimated number of participants in Australian clinical trials registered each year on the ANZCTR and ClinicalTrials.gov, 2006–2020

	ANZCTR	ClinicalTrials.gov	All registered trials
2006	86,707	309,722	396,429
2007	156,234	217,124	373,358
2008	117,650	298,713	416,363
2009	251,707	251,804	503,511
2010	119,345	348,350	467,695
2011	410,198	239,011	649,209
2012	190,034	225,435	415,469
2013	272,426	363,370	635,796
2014	484,048	363,751	847,799
2015	195,473	219,702	415,175
2016	303,719	292,613	596,332
2017	448,835	262,107	710,942
2018	466,238	267,132	733,370
2019	810,913*	281,212	1,092,125
2020	292,159	195,742	487,901
Total	**4,605,686 (53%)**	**4,135,788 (47%)**	**8,741,474**

DATA NOTES

Sample size is a mandatory field on both the ANZCTR and ClinicalTrials.gov registration forms. The sample size for every trial each year is summed to estimate the total participant numbers. For multinational trials, the total participant number recruited in Australia and overseas was included, since it was not possible to extract number of participants recruited only in Australia separately. Data are missing for 171 registered trials on ClinicalTrials.gov.

The ANZCTR collects either target or actual sample size or both, depending on the recruitment status at the time of registration and subsequent updates. ClinicalTrials.gov collects a single value for sample size ('Enrolment') along with an 'estimated' or 'actual' label. In this analysis, values obtained are the 'actual' sample size where provided, or the 'target / estimated' if no 'actual' value is available, e.g. for trials with ongoing recruitment.

*Values for participant numbers are inflated in 2019 on the ANZCTR due to a retrospectively registered trial in reproductive health and childbirth with a target sample size of 530,000 participants.

1.4 ACTIVITY IN AUSTRALIA COMPARED TO OTHER COUNTRIES

Australia has a comparable level of trial activity relative to its population size to that of countries such as Norway, Sweden, Switzerland, Ireland and Canada.

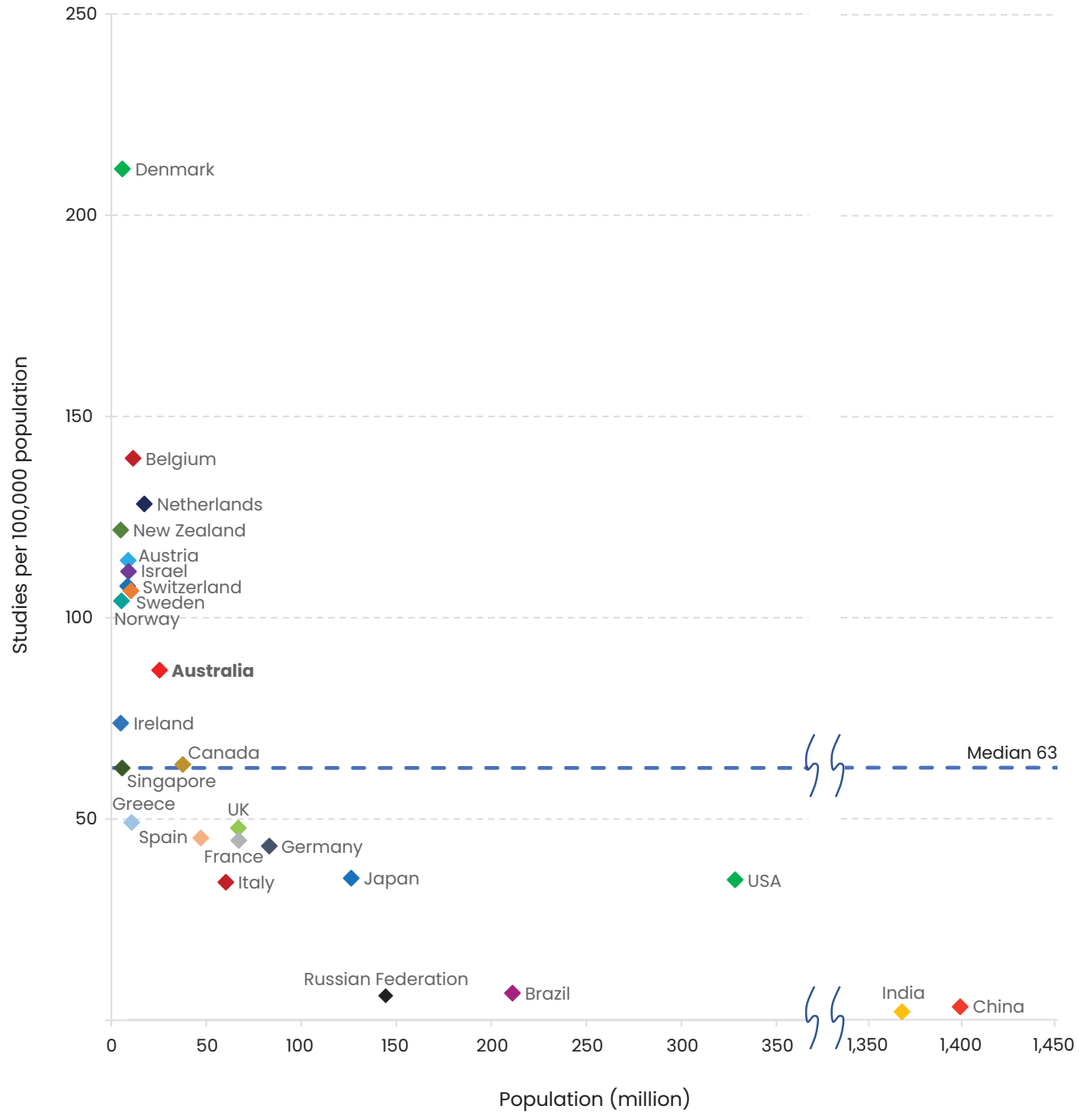
On a per capita basis, the number of studies conducted in Australia since 2006 sits well below Denmark, which ranks at number 1, but above the UK, Germany, France, and the US. With an additional five years of data in this report, Australia has maintained its ranking at number 10 when compared to other countries.

Table 3: Population, number of registered studies (interventional and observational) and studies per capita, for Australia and selected countries

Country	Population 2019	No. studies 2006–2019	Trials per 100,000 people
Denmark	5,819,000	12,307	212
Belgium	11,484,000	16,038	140
Netherlands	17,333,000	22,236	128
New Zealand	4,917,000	5,989	122
Austria	8,877,000	10,144	114
Israel	9,053,000	10,096	112
Switzerland	8,575,000	9,249	108
Sweden	10,285,000	10,975	107
Norway	5,348,000	5,574	104
Australia	**25,364,000**	**22,067**	**87**
Ireland	4,941,000	3,649	74
Canada	37,589,000	23,888	64
Singapore	5,704,000	3,575	63
Greece	10,716,000	5,269	49
United Kingdom	66,834,000	31,917	48
Spain	47,077,000	21,336	45
France	67,060,000	29,977	45
Germany	83,133,000	35,993	43
Japan	126,265,000	44,608	35
United States	328,240,000	114,534	35
Italy	60,297,000	20,695	34
Brazil	211,050,000	14,271	7
Russian Federation	144,374,000	8,804	6
China	1,397,715,000	45,170	3
India	1,366,418,000	27,090	2

DATA NOTES
Sources: Trial activity data derive from the WHO Global Observatory on Health R&D; population data derive from The World Bank.
Data are available until 2019.
For this data set only, 'year' is when recruitment started.
Registered studies includes both interventional and observational studies uploaded to the World Health Organization International Clinical Trials Registry Platform (WHO ICTRP). Both study types were included because it was not possible to segregate the number of interventional and observational studies listed in the WHO ICTRP for each selected country. This analysis relies on external data, and includes observational studies and interventional clinical trials (with the former comprising an estimated 7% of the total number of studies).
There may be a bias toward smaller countries having a higher overall activity, since these countries often have a relatively larger proportion of multinational trials (even if the multinational trials only recruit a small proportion of their participants in those countries). Multinational trials may disproportionally inflate activity estimates.

Figure 3: Registered study activity 2006–2019 (interventional and observational), plotted against 2019 population for selected countries



DATA NOTES
The line of median shows 63 studies per 100,000 population.

1.5 MULTINATIONAL CLINICAL TRIALS IN AUSTRALIA

Clinical trials recruiting in multiple countries account for 31% of Australian trials registered between 2006 and 2020, or a total of 5,678 studies. This includes 923 trials recruiting in only one country in addition to Australia (see Table 5).

Multinational activity in Australia is relatively steady with on average 400 new multinational trials registered annually over the last five years. The majority (87%; 4,922 trials) of multinational trials recruiting in Australia are registered on ClinicalTrials.gov.

The increasing number of Australia-only trials registered each year closely follows the overall growth in ANZCTR registrations.

Figure 4: Proportion of Australian clinical trials registered 2006–2020 with multinational recruitment

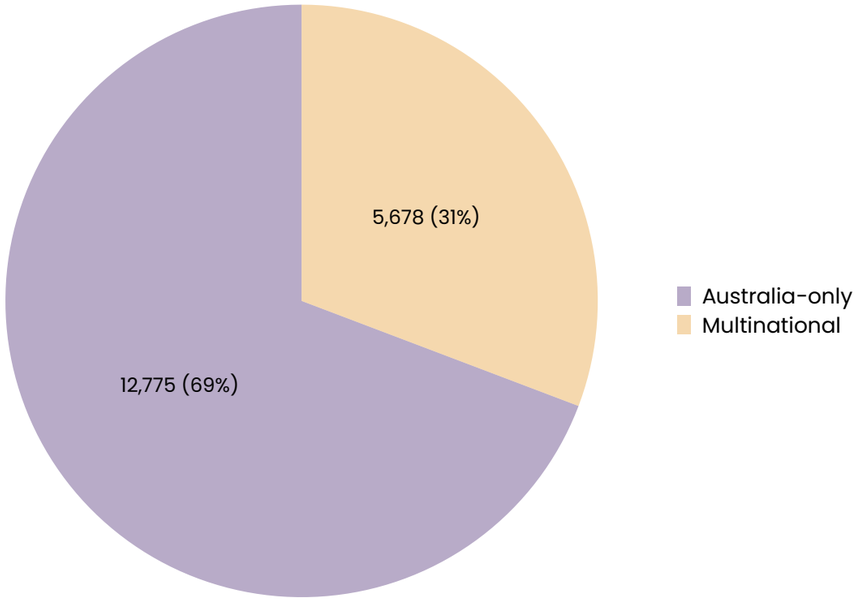


Figure 5: Trends in the number of registered Australian clinical trials with multinational recruitment compared to Australia-only trials 2006–2020

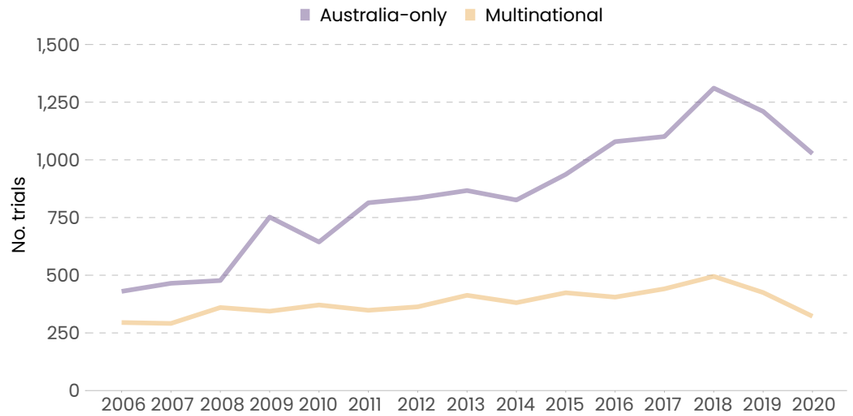


Table 4: Number of clinical trials registered in Australia each year 2006–2020, by recruitment location - Australia-only and multinational

	Australia-only recruitment		Multinational recruitment including Australia	
	No. trials	**Proportion**	**No. trials**	**Proportion**
2006	430	59%	295	41%
2007	465	62%	291	38%
2008	477	57%	360	43%
2009	752	69%	344	31%
2010	644	63%	371	37%
2011	814	70%	348	30%
2012	835	70%	363	30%
2013	867	68%	413	32%
2014	826	68%	381	32%
2015	937	69%	424	31%
2016	1,079	73%	405	27%
2017	1,101	71%	441	29%
2018	1,311	73%	495	27%
2019	1,210	74%	425	26%
2020	1,027	76%	322	24%
Total	**12,775**	**69%**	**5,678**	**31%**

DATA NOTES
Listing at least one country of recruitment is mandatory for registration on ANZCTR and ClinicalTrials.gov. For this report, 'multinational' trials refer to trials recruiting in at least two countries including Australia.

1.5.1 MULTINATIONAL CLINICAL TRIALS BY COUNTRY OF RECRUITMENT

Most multinational clinical trials (84%) in Australia have recruited in more than one other country, with 60% recruiting in more than five other countries, and 26% in more than 15 (see Table 5). In the last five years, there has been no noticeable change in the number of countries part of multinational clinical trials. The largest number of recruitment countries listed by one trial is 28 on the ANZCTR and 59 on ClinicalTrials.gov, not counting Australia.

Overall, the USA is the most cited additional country of recruitment for multinational clinical trials in Australia, with 4,021 studies, followed by Canada (2,938) and Germany (2,818). Where a trial reports recruiting in only one other country, this is usually New Zealand (313 trials) followed by the USA (252 trials).

Figure 6: Number of recruitment countries per trial in addition to Australia, for multinational clinical trials registered, 2006–2020

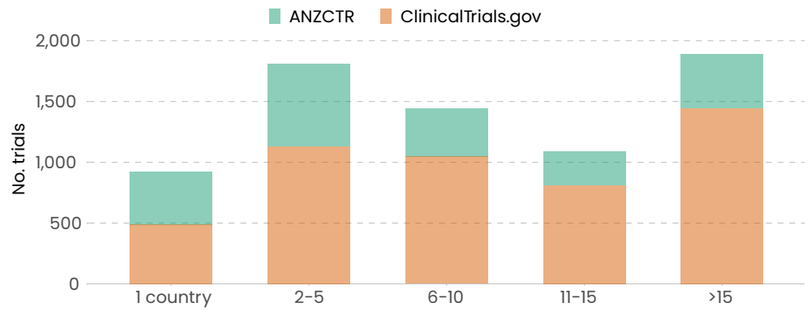


Table 5: Number of recruitment countries per trial in addition to Australia, for multinational clinical trials registered 2006–2020

	Recruitment countries per trial (in addition to Australia)				
	1 country	**2–5**	**6–10**	**11–15**	**>15**
ANZCTR	434	224	53	22	23
ClinicalTrials.gov	489	1,130	1,047	812	1,444
Total	**923** (16%)	**1,354** (24%)	**1,100** (19%)	**834** (15%)	**1,467** (26%)

Table 6: For multinational clinical trials recruiting in Australia registered 2006–2020, top 10 other recruitment countries by number of trials

Rank	Country	ANZCTR	ClinicalTrials.gov	Total
1	USA	170	3,851	4,021
2	Canada	126	2,812	2,938
3	Germany	87	2,731	2,818
4	Spain	62	2,704	2,766
5	United Kingdom	196	2,550	2,746
6	France	75	2,525	2,600
7	Italy	62	2,353	2,415
8	Poland	47	1,981	2,028
9	Belgium	52	1,939	1,991
10	New Zealand	448	1,183	1,631

1.6 PRIMARY SPONSOR

'Primary sponsor' is defined by the National Health and Medical Research Council (NHMRC) and Therapeutic Goods Administration (TGA) as the 'individual, company, institution or organisation that takes responsibility for the initiation, management and/or financing of a clinical trial'. This includes ensuring that the design and conduct of the study, as well as arrangements for reporting, meet appropriate standards.

For the period 2006–2020, sponsorship by the commercial / industry sector has remained relatively stable since 2009, accounting for around 450 trials registered each year. Non-commercial sponsors have played an increasing role, accounting for 64% of trial registrations overall. Specifically, growth has continued to occur in non-commercial sponsors other than government, with annual registrations in this category rising from 337 (46%) in 2006 to 1027 (62%) in 2019. Other non-commercial sponsors include universities, charities and foundations, hospitals, collaborative groups and individuals. See Section 1.6.1 for more details.

Over the last five years alone, primary sponsorship by the commercial / industry sector has hovered between 29 to 36% while non-commercial entities have sponsored between 60 to 67% of trials.

Figure 7: Trends in commercial and non-commercial primary sponsor type for registered Australian clinical trials, 2006–2020

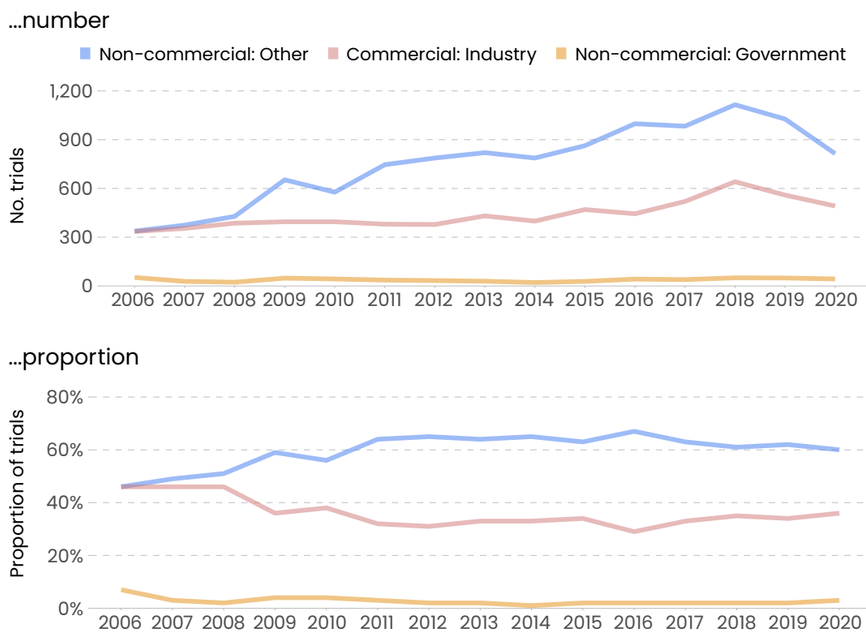


Table 7: Number and proportion of Australian clinical trials registered each year 2006–2020, by commercial and non-commercial primary sponsor

	Commercial: Industry		Non-commercial: Government		Non-commercial: Other	
	No. trials	**Proportion**	**No. trials**	**Proportion**	**No. trials**	**Proportion**
2006	335	46%	52	7%	337	46%
2007	354	46%	28	3%	374	49%
2008	386	46%	23	2%	428	51%
2009	395	36%	48	4%	653	59%
2010	395	38%	43	4%	577	56%
2011	380	32%	36	3%	746	64%
2012	378	31%	33	2%	787	65%
2013	431	33%	29	2%	820	64%
2014	399	33%	21	1%	787	65%
2015	470	34%	28	2%	863	63%
2016	444	29%	42	2%	998	67%
2017	520	33%	39	2%	983	63%
2018	641	35%	50	2%	1,115	61%
2019	559	34%	49	2%	1,027	62%
2020	492	36%	43	3%	814	60%
Total	**6,579**	**36%**	**564**	**3%**	**11,309**	**61%**

DATA NOTES
Type of primary sponsor is mandatory for registration on ANZCTR. Data are missing for 1 trial on the ANZCTR. ClinicalTrials.gov uses fewer categories for sponsor type than ANZCTR, and these have been mapped to ANZCTR options where possible (see Appendix 3 for more details).
'Non-commercial: Other' includes universities, charities and foundations, hospitals, collaborative groups and individuals.
N = 18,452. One trial did not provide data on their primary sponsor in the ANZCTR.

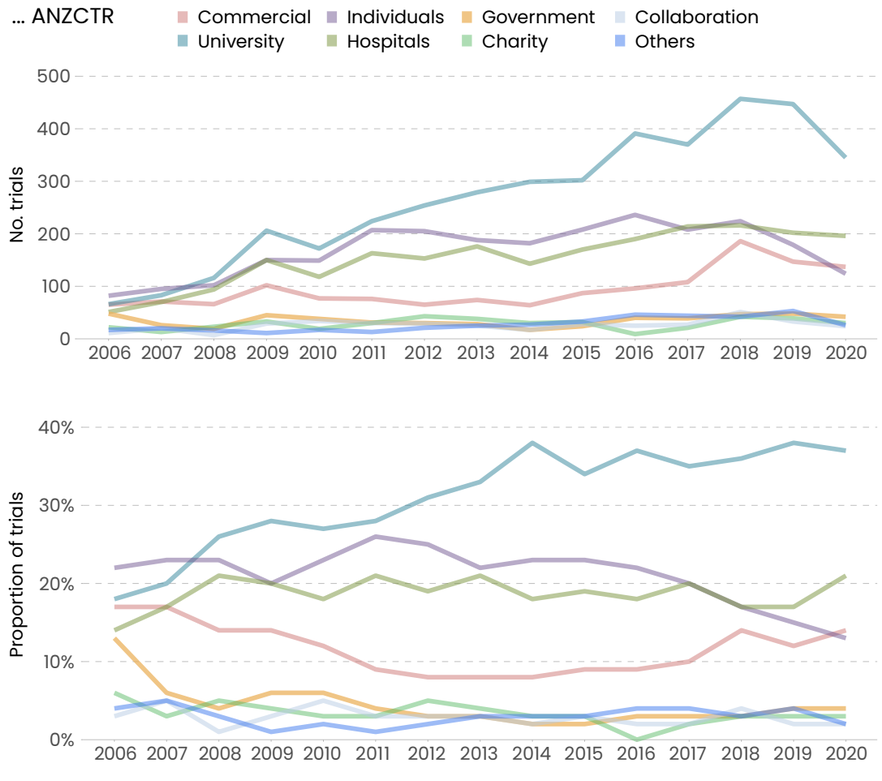
1.6.1 TYPES OF PRIMARY SPONSORS

Non-commercial sponsors are more typical for the diverse trials registered on the ANZCTR than for ClinicalTrials.gov. On ClinicalTrials.gov, no breakdown is available beyond 'government body' and 'other' when registering a trial.

Overall, for trials registered on the ANZCTR, universities, individuals and hospitals have the largest share of primary sponsorship. Universities are the primary sponsor of 4,011 trials, followed by individuals with 2,539 trials and hospitals with 2,306 trials. Individuals can refer to, as an example, academic leads acting as sponsor for a trial with multiple stakeholders and/or the chief investigator of the funding source. In the last five years alone, there has been a rebound in the number of trials sponsored by industry while university sponsorship has stabilised and individuals as sponsors have declined.

In contrast, most trials registered on ClinicalTrials.gov are sponsored by the commercial sector / industry.

Figure 8: Trends in primary sponsor type for Australian clinical trials 2006–2020, registered on the ANZCTR and ClinicalTrials.gov



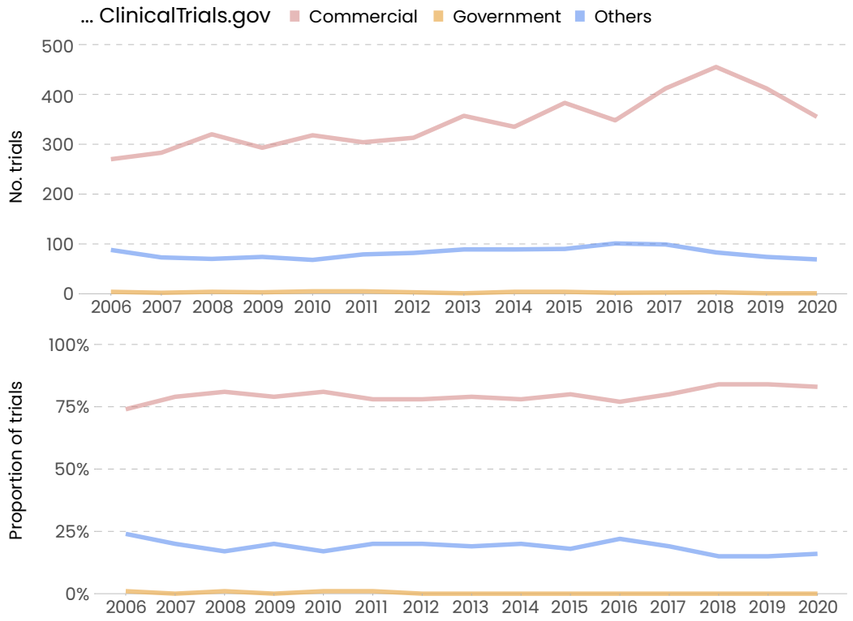


Table 8: Number of Australian clinical trials registered each year 2006–2020 by primary sponsor type, on the ANZCTR and ClinicalTrials.gov

	ANZCTR								ClinicalTrials.gov		
	Commercial	University	Individuals	Hospitals	Government	Charity	Collaboration	Others	Commercial	Government	Others
2006	65	66	82	51	48	22	11	17	270	4	88
2007	71	83	95	70	26	13	20	20	283	2	73
2008	66	116	102	94	19	23	7	16	320	4	70
2009	102	206	150	150	45	33	29	11	293	3	74
2010	77	172	149	118	38	19	34	17	318	5	68
2011	76	224	207	163	31	30	30	13	304	5	79
2012	65	254	205	153	30	43	29	21	313	3	82
2013	74	279	188	176	28	38	25	25	357	1	89
2014	64	299	182	143	17	30	17	27	335	4	89
2015	87	302	208	170	24	32	28	33	383	4	90
2016	96	391	236	190	40	9	25	46	348	2	101
2017	108	370	208	214	39	21	27	44	412	0	99
2018	186	457	224	216	47	42	51	42	455	3	83
2019	147	447	179	202	48	39	33	53	412	1	74
2020	137	345	124	196	42	30	24	26	355	1	69
Total	**1,421**	**4,011**	**2,539**	**2,306**	**522**	**424**	**390**	**411**	**5,158**	**42**	**1,228**

DATA NOTES
Type of primary sponsor is mandatory for registration on ANZCTR. Data are missing for 1 trial on the ANZCTR. ClinicalTrials.gov uses fewer categories for sponsor type than ANZCTR. US government body refers to the US National Institutes of Health (NIH) or a different US federal agency.
'Other' on ClinicalTrials.gov refers to individuals, universities, organisations and non-US government bodies.

1.7 INDUSTRY INVOLVEMENT

Forty-five per cent of the Australian clinical trials registered 2006–2020 have some kind of industry involvement, either as a funding source, primary sponsor, secondary sponsor, other collaborator, or a combination of any of those. Industry involvement usually entails some level of industry funding[24]. Trials registered on ClinicalTrials.gov are much more likely to have industry involvement (84%) than those registered on the ANZCTR (24%).

The increase in number of trials without industry involvement has been slightly stronger than that of trials without industry involvement. Since 2009, the number of trials without industry involvement has surpassed those with industry involvement. Yet, since then, the proportions have been relatively stable.

Figure 9: Trends in industry involvement of Australian clinical trials registered 2006–2020

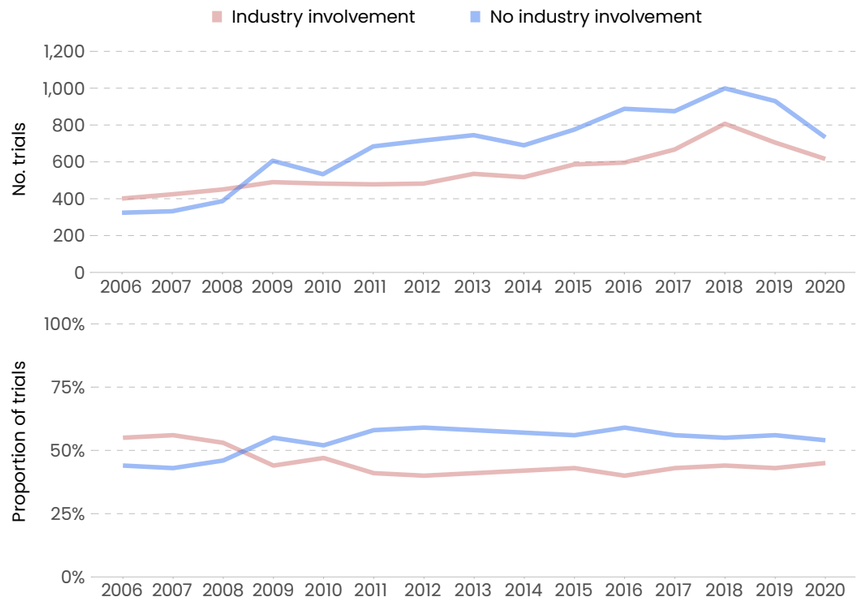


Table 9: Number and proportion of Australian clinical trials registered 2006–2020, with and without industry involvement

	Industry involvement		No industry involvement	
	No. trials	Proportion	No. trials	Proportion
ANZCTR	2,852	24%	9,173	76%
ClinicalTrials.gov	5,384	84%	1,044	16%
Total	**8,236**	**45%**	**10,217**	**55%**

DATA NOTES
Trials can choose more than one funding source, secondary sponsor or collaborator.
'Any industry involvement' derived by selecting 'Commercial sector / Industry' for funding source or primary sponsor or secondary sponsor or other collaborator in the ANZCTR; 'Commercial sector / Industry' for any sponsor / collaborator in ClinicalTrials.gov.

PART 2: TRIAL FOCUS

Health conditions and interventions studied in Australian clinical trials.

DATA NOTES

This section uses combined ANZCTR and ClinicalTrials.gov data unless otherwise noted.
Data are displayed as per ANZCTR registration form categories while data from ClinicalTrials.gov have been mapped to the closest relevant ANZCTR category. Details of this mapping can be found in Appendix 3.
Only registered Australian clinical trials are included (i.e. interventional studies with at least one recruitment site in Australia).
The number of participants refers to all trials with a recruitment site in Australia. The estimate includes the planned or actual number of participants recruited in Australia or overseas for multinational trials.
Unless otherwise noted, 'year' refers to year of trial registration.

2.1 KEY FINDINGS

From 2006 to 2020:

- Cancer has been the most frequently studied health condition in Australian clinical trials with 3,666 trials (20% of all trials) selecting this category, closely followed by mental health with 2,413 (13%) and cardiovascular conditions with 1,841 (10%).
- In terms of estimated number of trial participants, the most studied condition is cardiovascular disease, involving a total of 1.56 million people. Cancer trials are next, with 1.37 million participants, closely followed by public health trials, with 1.33 million participants.
- Measured against the relative burden of disease outlined by the Australian Institute of Health and Welfare, musculoskeletal and cardiovascular conditions, and injuries have seen fewer trials than would be expected. For mental health and musculoskeletal conditions, the total number of trial participants is lower than would be expected.
- The majority (75%) of clinical trials list as their main purpose to assess the effects of treatments. The investigation of preventive strategies is the second most common purpose (15%).
- Drugs are the single most researched intervention in Australian clinical trials, accounting for 45% of registered trials. However, the share of trial activity on preventive, behavioural and lifestyle interventions, and devices has been growing.
- Among the non-drug trials, trials focusing on 'other treatment' have shown growth, from 73 trials in 2006 (10% of all trials) to 298 trials in 2020 (22%). This category includes interventions such as exercise, physiotherapy, cognitive therapy, special diets, herbal medicines, web-based treatments, motivational classes, music therapy and stem cell interventions.
- Most drug trials have focused on a combination of safety and efficacy endpoints of the intervention, while efficacy has been the most common focus specified for non-drug trials.
- Phase 1 trials have grown substantially as a proportion of trials registered, from 9% in 2006 to 40% in 2020. Phase 3 trials are the most commonly registered trials overall, although the proportion of trials has halved from 50% in 2006 to 26% in 2020.
- Trials explicitly focusing on the health of Aboriginal and/or Torres Strait Islander peoples have increased slightly over time, from two trials in 2006 to 16 trials in 2019. These estimates do not represent the overall participation rate of Aboriginal and/or Torres Strait Islander peoples in trials.

What is new since 2016?

- Cancer and mental health continue to be the two most frequently studied conditions in Australian clinical trials registered from 2016 to 2020, with 1,630 (21%) and 1,107 trials (14%) respectively. Neurological conditions and public health issues rank as the third and fourth most studied conditions with 854 (11%) and 748 trials (10%), marginally surpassing cardiovascular conditions that is now ranked fifth with 693 trials (9%).
- In terms of number of people who participate in trials, public health trials plan to recruit the highest number of people, followed by cancer, cardiovascular and infectious diseases.
- Drug trials represent around 30% of trials registered from 2016 to 2020, this is less than in the previous decade.
- Phase 1 trials have overtaken phase 3 trials and were the most frequent in terms of the number and proportion of trials registered in 2019 and 2020.

2.2 CONDITIONS STUDIED

2.2.1 MOST STUDIED CONDITIONS BY NUMBER OF TRIALS

The top three studied conditions from 2006 to 2020 have been cancer (3,666 trials), followed by mental health (2,413 trials) and cardiovascular conditions (1,841) (Figure 10). In the last five years, the number of trials relating to neurological conditions and public health have marginally surpassed cardiovascular conditions (Figure 11).

As a proportion of Australian clinical trials registered each year, those investigating cancer have remained at 20% since 2015, while trials investigating cardiovascular conditions have hovered between 7–12% over the last 15 years (2006–2020; Figure 12).

Trial activity in mental health has seen an increase over 15 years, from 62 trials in 2006 (9% of trials registered that year) to 192 trials (14%) in 2020. Trial activity has also increased in public health topics (2006: 2%, 2020: 11%), and infectious diseases (2006: 5%; 2020: 10%).

Figure 10: Top 15 health areas by number of trials, for Australian clinical trials registered 2006–2020

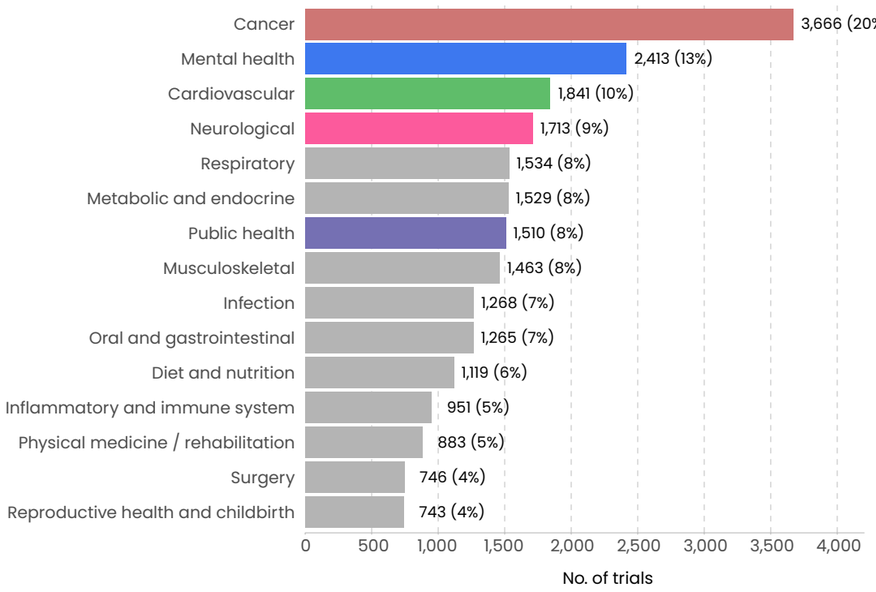


Figure 11: Top 15 health areas by number of trials in the last five years, for Australian clinical trials registered 2016–2020

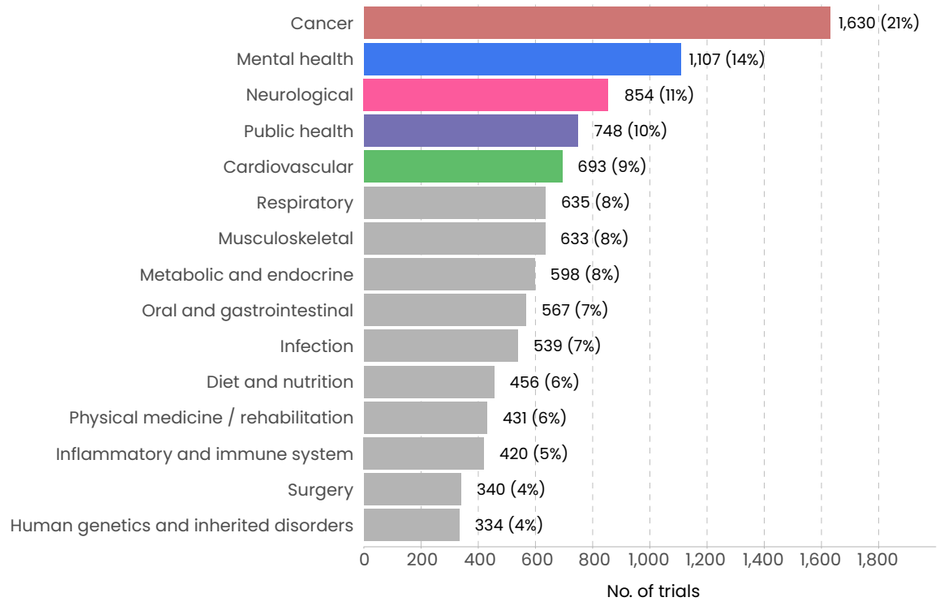


Figure 12: Trends in the top three condition categories by number of trials, for registered Australian clinical trials 2006–2020

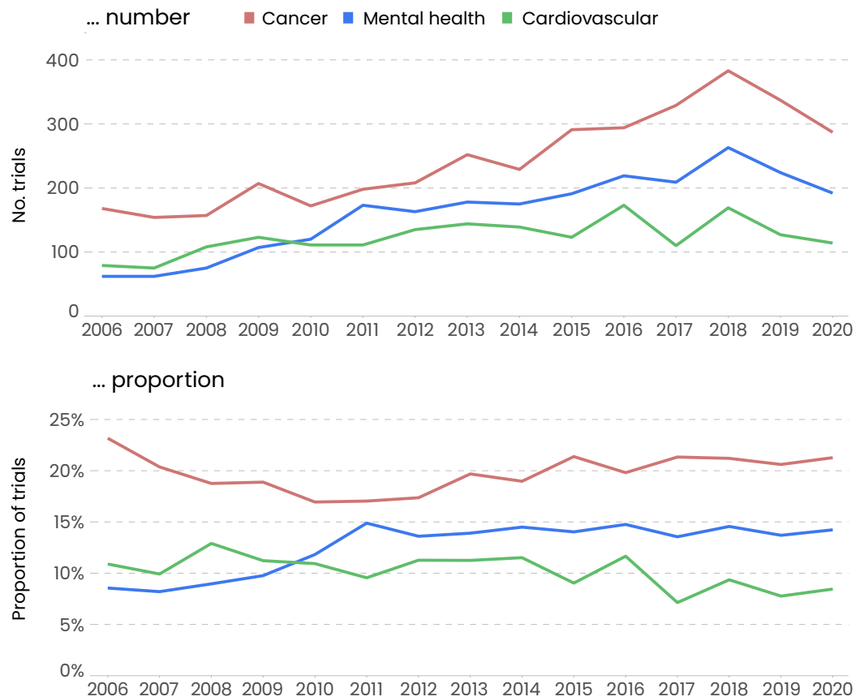


Table 10: Number of Australian clinical trials registered each year 2006–2020, by condition category

Condition	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Cancer	168	154	157	207	172	198	208	252	229	291	294	329	383	337	287	**3,666**
Mental health	62	62	75	107	120	173	163	178	175	191	219	209	263	224	192	**2,413**
Cardiovascular	79	75	108	123	111	111	135	144	139	123	173	110	169	127	114	**1,841**
Neurological	62	67	78	72	71	78	108	104	100	119	147	160	222	182	143	**1,713**
Respiratory	72	83	83	89	83	93	101	103	99	93	122	98	136	115	164	**1,534**
Metabolic and endocrine	60	62	72	88	93	92	118	119	115	112	116	116	132	140	94	**1,529**
Public health	11	20	27	60	67	101	126	116	121	113	139	142	167	149	151	**1,510**
Musculoskeletal	46	57	51	95	82	77	86	95	101	140	118	127	138	155	95	**1,463**
Infection	39	52	58	65	73	80	77	94	74	117	92	98	101	107	141	**1,268**
Oral and gastrointestinal	48	45	38	54	75	89	102	70	74	103	108	114	121	127	97	**1,265**
Diet and nutrition	26	31	30	66	62	89	92	91	86	90	96	89	108	89	74	**1,119**
Inflammatory and immune system	46	31	31	51	44	68	65	61	61	73	80	94	94	96	56	**951**
Physical medicine / rehabilitation	10	12	22	37	24	46	51	71	85	94	109	90	93	80	59	**883**
Surgery	19	20	28	44	31	42	47	58	47	70	55	80	76	59	70	**746**
Reproductive health and childbirth	31	28	29	43	41	48	56	52	53	53	57	60	70	67	55	**743**
Anaesthesiology	9	11	26	43	43	46	46	47	56	63	55	56	53	81	48	**683**
Human genetics and inherited disorders	16	13	25	25	32	29	42	42	42	53	54	62	89	79	50	**653**
Renal and urogenital	26	29	37	41	42	58	33	40	46	26	44	57	53	47	25	**604**
Injuries and accidents	23	23	15	23	35	33	31	32	37	54	60	47	66	69	53	**601**
Skin	7	17	13	26	39	36	36	42	30	37	34	55	93	85	44	**594**
Blood	33	28	21	27	26	35	42	35	42	33	29	36	33	31	33	**484**
Eye	13	15	24	27	27	35	34	26	27	32	15	36	54	47	35	**447**
Alternative and complementary medicine	1	5	17	29	33	30	38	25	15	25	29	25	24	22	23	**341**
Stroke	12	8	12	17	13	17	15	29	22	23	33	34	39	26	27	**327**
Ear	1	2	4	3	4	3	5	7	5	6	10	9	13	16	5	**93**
Emergency medicine	0	2	0	1	0	0	1	0	0	1	1	0	11	20	15	**52**
Other	20	17	18	31	16	20	18	17	15	18	20	14	9	2	4	**239**

DATA NOTES
Condition category is a mandatory field on both the ANZCTR and ClinicalTrials.gov registration forms.
At time of analysis, the ANZCTR form allowed for entry of up to ten condition codes from a pre-specified list (see Appendix 5).
ClinicalTrials.gov registration form allows entry of multiple condition descriptors, which are based on MeSH codes, or free text.
As multiple condition codes can be selected for each trial, the total count of trials selecting each condition is more than the total number of trials registered. Proportions are of number of registered trials each year and in total (N = 18,453).

2.2.2 MOST STUDIED CONDITIONS BY ESTIMATED NUMBER OF TRIAL PARTICIPANTS

Trials focusing on cardiovascular conditions have involved the most participants, with a total of around 1.56 million people participating from 2006 to 2020, followed closely by cancer (1.37 million) and public health (1.33 million). Trials with a focus on mental health sit in sixth place because they tend to have smaller sample sizes per trial.

In the last five years, studies covering public health issues plan to recruit the highest number of participants (680,000), followed by cancer (482,600), cardiovascular (416,600) and infectious conditions (416,600). On an annual basis, the total number of participants has tended to fluctuate; expectedly, in 2020, an upward trend is evident in trials focusing on infectious and respiratory conditions (Table 11).

Figure 13: Top 15 conditions by estimated total number of trial participants, for Australian clinical trials registered 2006–2020

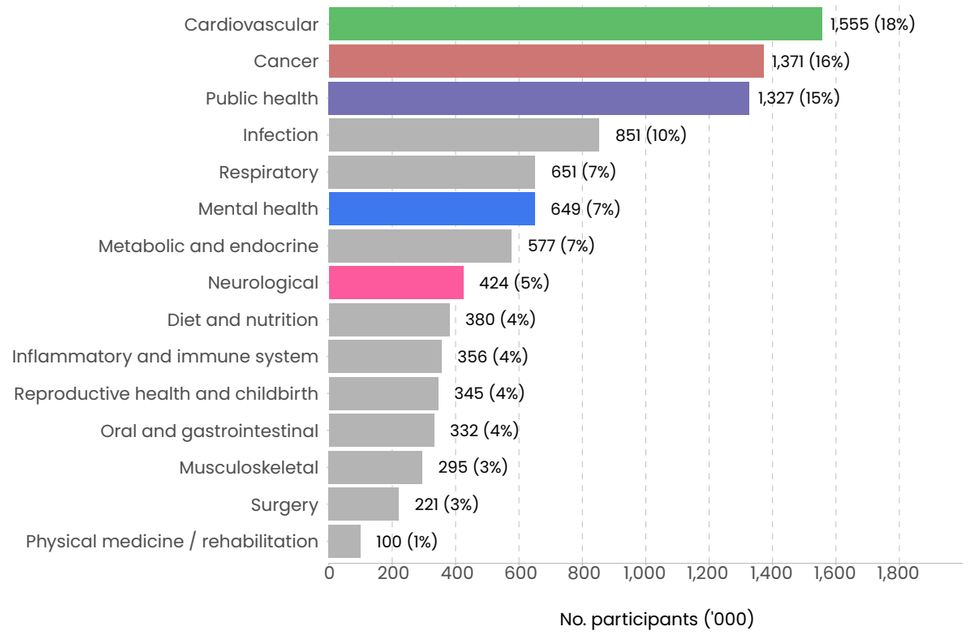


Figure 14: Trends in the top three conditions by estimated total number of trial participants, for registered Australian clinical trials 2006–2020

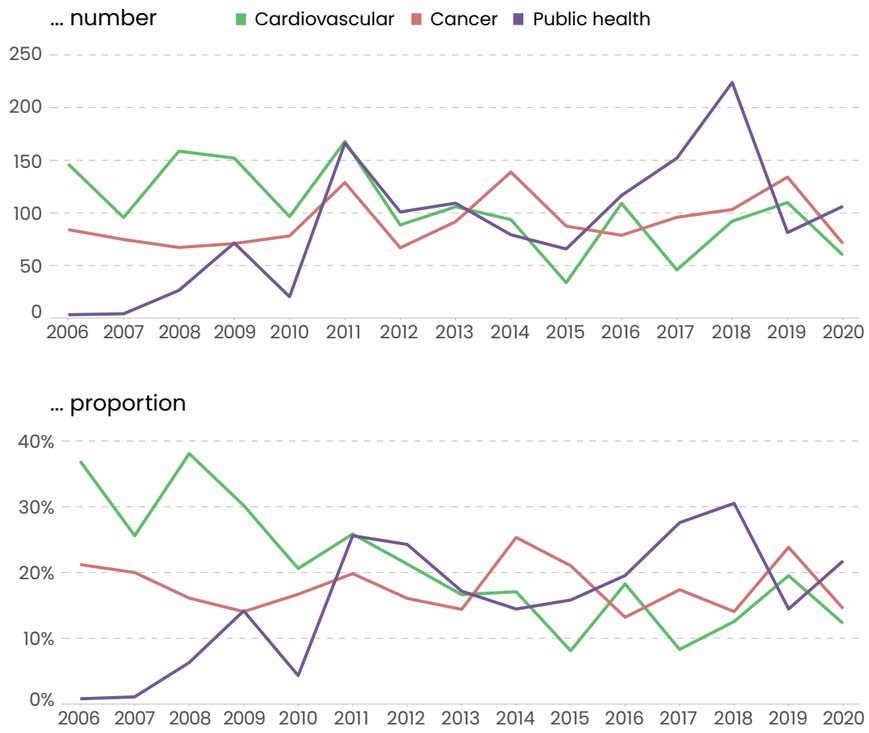


Table 11: Estimated total number of trial participants ('000s) for Australian clinical trials registered each year 2006–2020, by condition

Condition	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Cardiovascular	146.4	95.6	158.6	152.1	96.4	167.9	88.5	105.8	93.6	33.7	109.0	45.8	92.1	109.8	59.9	**1,555.2**
Cancer	84.1	74.7	67.1	70.8	78.1	128.8	66.8	91.6	138.8	87.4	78.7	95.8	103.2	134.0	70.9	**1,370.8**
Public health	3.2	4.1	26.3	71.4	20.3	166.2	100.9	109.2	79.2	65.7	116.6	152.0	223.9	81.3	106.2	**1,326.5**
Infection	31.0	27.6	28.9	50.6	60.8	44.2	20.2	54.8	51.2	65.2	78.7	142.6	41.6	47.3	106.4	**851.1**
Respiratory	26.3	42.8	26.2	42.2	49.1	60.4	23.4	34.0	67.0	54.4	46.1	25.0	35.2	27.2	91.9	**651.2**
Mental health*	15.7	19.3	24.8	16.2	24.6	75.7	31.8	88.7	33.6	34.3	54.0	57.2	70.1	57.0	46.2	**649.2**
Metabolic and endocrine	20.4	12.8	17.4	28.2	80.7	36.8	59.5	101.1	33.0	27.9	32.4	24.3	45.7	25.0	31.6	**576.8**
Neurological	20.8	24.7	27.4	25.9	20.7	14.1	23.0	19.9	34.0	39.2	30.9	25.8	39.5	37.9	40.3	**424.1**
Diet and nutrition	4.0	49.8	5.3	14.3	7.0	16.8	29.5	59.6	12.7	14.0	21.0	16.9	85.0	18.2	25.9	**380.0**
Inflammatory and immune system	42.1	16.7	12.5	14.6	22.7	22.1	20.5	14.4	36.8	31.6	28.1	24.3	32.7	23.4	13.5	**356.0**
Reproductive health and childbirth*	6.8	13.2	19.3	13.8	19.0	28.0	14.8	18.6	92.8	18.5	11.6	24.9	26.2	17.2	20.6	**345.3**
Oral and gastrointestinal	15.0	14.7	17.4	10.4	13.9	24.1	12.9	25.0	19.2	24.3	50.7	39.5	25.3	27.9	11.8	**332.1**
Stroke	26.9	18.2	29.1	8.2	23.7	51.2	1.8	19.4	59.4	7.8	17.6	16.2	21.3	17.9	10.8	**329.5**
Renal and urogenital	5.3	6.7	13.6	7.3	9.1	55.5	4.4	25.7	17.4	18.4	73.9	22.5	16.0	11.6	15.6	**303.0**
Musculoskeletal	18.1	13.5	19.5	19.7	13.4	12.8	34.0	21.1	26.3	24.4	11.7	21.8	26.1	22.1	10.8	**295.3**
Blood	39.5	33.6	41.1	15.8	3.8	4.8	17.7	4.4	14.1	5.3	33.3	7.7	29.5	28.7	5.2	**284.5**
Injuries and accidents	5.3	6.7	5.3	24.2	7.7	45.1	34.8	5.9	14.3	44.1	9.0	27.3	7.6	14.0	7.4	**258.7**
Surgery	4.1	8.8	5.1	7.3	15.1	14.2	6.2	12.6	16.7	12.9	9.7	20.5	44.4	34.5	8.8	**220.9**
Skin	1.1	1.3	11.8	5.9	26.3	11.9	10.5	10.8	9.2	7.6	5.0	21.8	28.5	25.7	9.5	**186.9**
Human genetics and inherited disorders	2.2	2.3	4.4	2.3	14.1	3.6	3.9	15.7	9.2	8.0	6.1	10.3	19.6	38.8	7.6	**148.1**
Anaesthesiology	1.5	2.2	2.7	4.6	4.2	5.3	14.0	6.1	15.3	7.7	7.4	10.9	9.5	45.5	8.9	**145.8**
Physical medicine / rehabilitation	2.5	2.7	3.6	5.0	2.9	4.5	4.5	6.9	14.8	14.6	9.5	6.5	7.5	8.7	5.6	**99.8**
Emergency medicine	0.0	0.4	0.0	7.0	0.0	0.0	4.0	0.0	0.0	0.0	3.6	0.0	8.0	15.3	50.8	**89.1**
Eye	1.9	2.1	5.6	2.6	7.7	4.2	3.3	10.0	5.5	7.0	4.4	4.0	7.0	9.7	8.0	**83.0**
Alternative and complementary medicine	0.2	0.5	2.0	4.1	2.7	4.1	3.4	23.2	1.8	2.3	2.5	1.5	2.2	2.9	2.2	**55.6**
Ear	0.2	0.9	1.1	0.4	0.9	0.3	0.5	1.0	1.9	0.4	0.3	0.7	0.9	4.5	0.6	**14.6**
Other	3.0	1.8	4.4	66.6	2.5	67.4	2.2	4.1	5.1	9.8	7.5	2.7	23.0	0.5	0.6	**201.2**

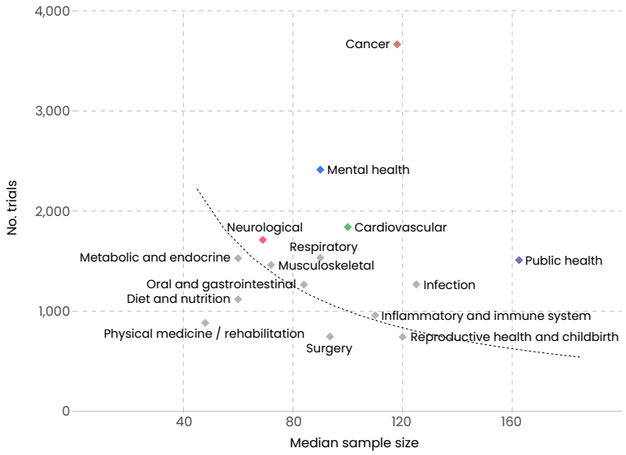
DATA NOTES
Sample size is a mandatory field on both the ANZCTR and ClinicalTrials.gov registration forms. Data are missing for 171 registered trials on ClinicalTrials.gov.
The ANZCTR collects either target or actual sample size or both, depending on the recruitment status at the time of registration and subsequent updates. Values are the 'actual' sample size where provided, or the 'target' if no 'actual' value is available, e.g. for trials with ongoing recruitment. ClinicalTrials.gov collects a single value for sample size ('Enrolment') along with an 'estimated' or 'actual' label. The estimated total number of participants is based on all trials with a recruitment site in Australia and overseas for multinational trials. The estimates may be inflated because it is not possible to separate the number of Australian and overseas participants for multinational trials.
*Three outliers have been removed from the analysis. This includes two studies focusing on reproductive health and childbirth (one with 530,000 and one with 300,000 participants) and one focusing on mental health (160,000 participants).

2.2.3 TRIAL ACTIVITY—NUMBER AND SCALE OF TRIALS—BY CONDITION

Multiplying the number of trials by the median sample size for a particular condition can provide another useful indicator of trial activity—a combination of how common and how large the trials for that condition have tended to be.

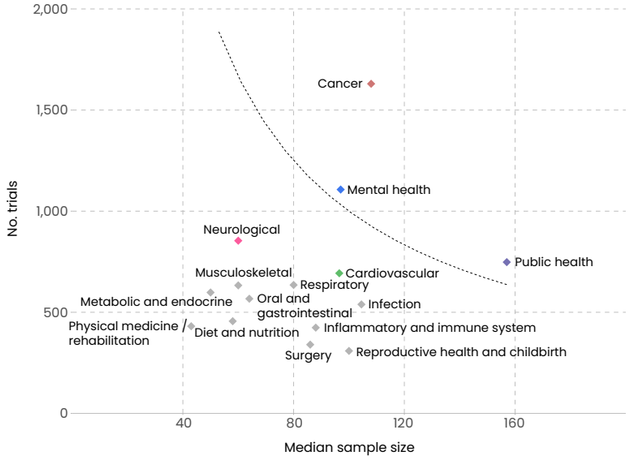
By this measure, cancer has been the number one focus for registered Australian clinical trials over the last 15 years (Figure 15, Table 12). Mental health was the next most actively studied condition category followed closely by public health. In the last five years, a similar pattern in trial activity is evident (Figure 16, Table 13).

Figure 15: Top 15 conditions by number of trials and median sample size for Australian clinical trials registered 2006–2020



The dotted line in the figure represents a trial activity indicator value of 100,000, where trial activity = number of trials selecting a condition category x median sample size for that category.

Figure 16: Top 15 conditions by number of trials and median sample size for Australian clinical trials registered 2016–2020



The dotted line in the figure represents a trial activity indicator value of 100,000, where trial activity = number of trials selecting a condition category x median sample size for that category.

Table 12: Summary of key statistics for health areas studied by Australian clinical trials registered 2006–2020, ranked by trial activity indicator

Condition category	No. trials	Sample size Median	Sample size IQR	Total no. participants	Trial activity indicator*
Cancer	3,666	118	40–376	1,370,852	**432,588**
Public health	1,510	162	65–502	1,326,634	**244,620**
Mental health**	2,412	90	40–200	649,035	**217,080**
Cardiovascular	1,841	100	40–372	1,555,330	**184,100**
Infection	1,268	125	40–438	851,156	**158,500**
Respiratory	1,534	90	30–300	651,305	**138,060**
Neurological	1,713	69	30–202	424,003	**118,197**
Oral and gastrointestinal	1,265	84	33–249	332,138	**106,260**
Inflammatory and immune system	959	110	40–366	355,966	**105,490**
Musculoskeletal	1,463	72	35–154	295,413	**105,336**
Metabolic and endocrine	1,529	60	25–196	576,730	**91,740**
Reproductive health and childbirth**	741	120	52–344	345,347	**88,920**
Surgery	746	94	45–200	221,012	**70,124**
Diet and nutrition	1,119	60	30–145	380,151	**67,140**
Skin	594	102	40–348	186,818	**60,588**
Human genetics and inherited Disorders	654	80	30–187	147,736	**52,320**
Renal and urogenital	604	82	40–256	303,216	**49,528**
Blood	484	100	36–246	284,495	**48,400**
Anaesthesiology	683	70	40–137	145,854	**47,810**
Injuries and accidents	601	79	36–200	258,761	**47,479**
Physical medicine / rehabilitation	883	48	25–100	99,991	**42,384**
Eye	447	60	30–185	83,058	**26,820**
Stroke	328	74	30–311	329,444	**24,272**
Alternative and complementary medicine	341	62	33–120	55,625	**21,142**
Emergency medicine	52	120	58–513	89,249	**6,240**
Ear	93	51	30–179	14,542	**4,743**
Other	239	70	26–200	201,333	**16,730**

DATA NOTES
*Trial activity indicator = number of trials selecting a condition category x median sample size for that category.
**Three outliers have been removed from the analysis. This includes two studies focusing on reproductive health and childbirth (one with 530,000 and one with 300,000 participants) and one focusing on mental health (160,000 participants). Refer to Table 11 for additional data notes.

Table 13: Summary of key statistics for health areas studied by Australian clinical trials registered 2016–2020, ranked by trial activity indicator

Condition category	No. trials	Sample size Median	Sample size IQR	Total no. participants	Trial activity indicator*
Cancer	1,630	108	40–322	482,570	**176,040**
Public health	748	157	67–600	680,015	**117,436**
Mental health**	1,107	97	40–200	444,495	**107,379**
Cardiovascular	693	96	39–300	416,718	**66,528**
Infection	539	104	40–364	416,542	**56,056**
Neurological	854	60	28–150	174,390	**51,240**
Respiratory	635	80	30–240	225,506	**50,800**
Musculoskeletal	633	60	30–120	92,607	**37,980**
Skin	311	121	43–368	90,487	**37,631**
Inflammatory and immune system	424	88	39–300	121,955	**37,312**
Oral and gastrointestinal	567	64	30–190	155,206	**36,288**
Reproductive health and childbirth**	309	100	46–265	630,557	**30,900**
Metabolic and endocrine	598	50	22–122	159,006	**29,900**
Surgery	340	86	45–186	117,912	**29,240**
Human genetics and inherited disorders	335	80	37–193	82,231	**26,800**
Diet and nutrition	456	58	28–135	167,071	**26,448**
Anaesthesiology	293	80	40–154	82,261	**23,440**
Physical medicine / rehabilitation	431	43	24–91	37,878	**18,533**
Injuries and accidents	295	62	30–159	65,405	**18,290**
Renal and urogenital	226	80	37–224	139,625	**18,080**
Blood	162	80	36–219	104,386	**12,960**
Eye	187	60	30–161	32,996	**11,220**
Stroke	159	68	30–300	83,810	**10,812**
Alternative and complementary medicine	123	63	34–110	11,357	**7,749**
Emergency medicine	47	120	57–493	77,840	**5,640**
Ear	53	45	29–100	6,993	**2,385**
Other	49	100	30–300	34,381	**4,900**

DATA NOTES
*Trial activity indicator = number of trials selecting a condition category x median sample size for that category.
**Three outliers have been removed from the analysis. This includes two studies focusing on reproductive health and childbirth (one with 530,000 and one with 300,000 participants) and one focusing on mental health (160,000 participants). Refer to Table 11 for additional data notes.

2.2.4 NUMBER OF TRIALS PER DISEASE GROUP COMPARED TO BURDEN OF DISEASE

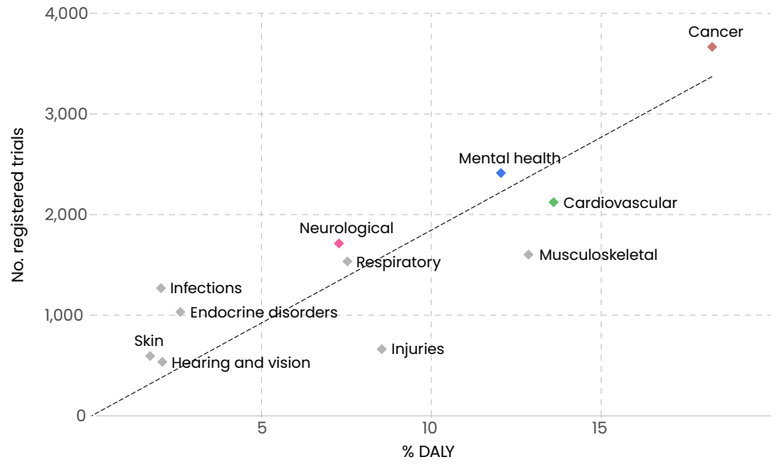
Australian estimates of disability-adjusted life-years (DALYs) have been used to quantify the burden of disease for disease groups listed by the Australian Institute of Health and Welfare (AIHW[25]), following the approach outlined by Lam 2015[2]. The %DALYs have been compared to the amount of Australian clinical trial activity in these disease groups. The analysis uses the number of trials and does not take into account the size of the trials.

The actual number of registered trials focussing on musculoskeletal and cardiovascular conditions, and injuries is lower than what would be expected based on burden of disease findings. Levels of trial activity were higher than what would be expected for neurological conditions, infections, and endocrine disorders. The findings for infections need to be viewed cautiously because the impact of COVID-19 has not yet been incorporated into the burden of disease estimates used in this report. In the case of mental health, cancer, and respiratory conditions, the number of registered trials is close to what would be expected given the relative disease burden each represents.

In the last five years, these results have remained stable (Figure 18).

When considering the planned or actual number of participants recruited to trials, the pattern is generally consistent for most disease groups; see Section 2.2.5. The main exception is for trials focusing on cardiovascular disease where levels of trial activity are higher than what would be expected.

Figure 17: Relationship between number of trials and %DALY for AIHW burden of disease areas studied by Australian clinical trials registered 2006–2020



Diagonal line represents the line of equality where %DALY is equal to the trial number as a percentage of total registered trials. Markers below the line show conditions where trial number falls below the %DALY.

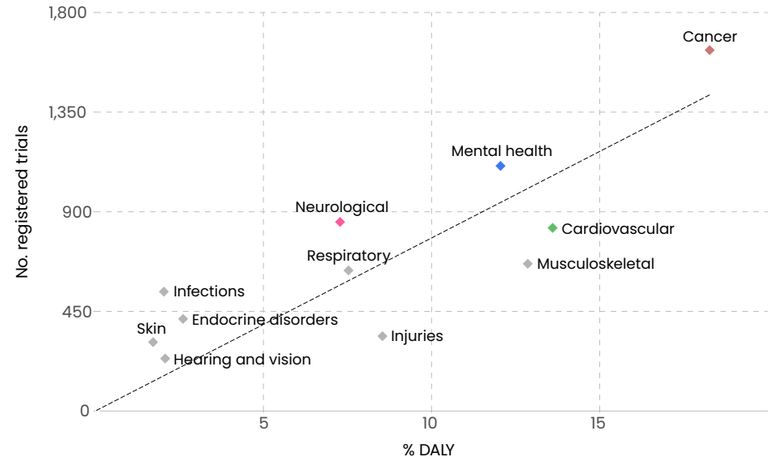
DATA NOTES
The condition categories used in the ANZCTR have been mapped to the main disease groups identified by the AIHW[25] (see Appendix 3). There are two key differences in the analysis of this report and the previous (2006 – 2015) report. These include: (i) disease groups are based on the latest AIHW data (up to 2015) while the previous report[1] used a combination of National Health Priority Areas (1997) and AIHW conditions or risk factors, and (ii) %DALYs are not comparable across reports for multiple reasons including that the AIHW has used new data sources for disease data, revised the conceptual models for some diseases and updated methodological approaches used by global burden of disease studies.

Table 14: Number of registered Australian clinical trials focusing on AIHW burden of disease areas as a percentage of total number of trials, and comparison to the expected number based on %DALY, for trials registered 2006–2020

Disease group	Burden of disease		Number of trials				
	Rank	%DALY	Rank	Observed no.	Proportion observed	Expected no. (based on %DALY)	Proportion observed / expected
Cancer	1	18.3%	**1**	3,666	19.9%	3,371	109%
Cardiovascular diseases (includes stroke)	2	13.6%	**3**	2,123	11.5%	2,510	85%
Musculoskeletal conditions	3	12.9%	**5**	1,602	8.7%	2,373	68%
Mental health and substance abuse disorders	4	12.1%	**2**	2,413	13.1%	2,224	109%
Injuries	5	8.5%	**9**	662	3.6%	1,576	42%
Respiratory (includes asthma)	6	7.5%	**6**	1,534	8.3%	1,390	110%
Neurological (includes dementia)	7	7.3%	**4**	1,713	9.3%	1,343	128%
Endocrine disorders	8	2.6%	**8**	1,032	5.6%	482	214%
Hearing and vision	9	2.1%	**11**	536	2.9%	384	140%
Infections	10	2.0%	**7**	1,268	6.9%	376	337%
Skin	11	1.7%	**10**	594	3.2%	317	187%

DATA NOTES
Source: DALY values are from the AIHW[25].
Trial data for this analysis have been extracted from the ANZCTR and ClinicalTrials.gov and mapped according to disease groups defined by the AIHW (see Appendix 3 for mapping details). As such, disease groups here may not match data for the condition categories elsewhere in the report. Some trials did not match any of those disease groups and have been excluded from this analysis (6 trials in ANZCTR and 218 trials in ClinicalTrials.gov).

Figure 18: Relationship between number of trials and %DALY for AIHW burden of disease areas studied by Australian clinical trials registered 2016–2020



Diagonal line represents the line of equality where %DALY is equal to the trial number as a percentage of total registered trials. Markers below the line show conditions where the variable falls below the %DALY.

Table 15: Number of registered Australian clinical trials focusing on AIHW burden of disease areas as a percentage of total trial activity, and comparison to the expected number based on %DALY, for trials registered 2016–2020

Disease group	Burden of disease		Number of trials				
	Rank	%DALY	Rank	Observed no.	Proportion observed	Expected no. (based on %DALY)	Proportion observed / expected
Cancer	1	18.3%	**1**	1,630	20.9%	1,428	114%
Cardiovascular diseases (includes stroke)	2	13.6%	**4**	827	10.6%	1,063	78%
Musculoskeletal conditions	3	12.9%	**5**	665	8.5%	1,005	66%
Mental health and substance abuse disorders	4	12.1%	**2**	1,107	14.2%	942	118%
Injuries	5	8.5%	**9**	338	4.3%	667	51%
Respiratory (includes asthma)	6	7.5%	**6**	635	8.1%	589	108%
Neurological (includes dementia)	7	7.3%	**3**	854	10.9%	569	150%
Endocrine disorders	8	2.6%	**8**	416	5.3%	204	204%
Hearing and vision	9	2.1%	**11**	237	3.0%	163	146%
Infections	10	2.0%	**7**	539	6.9%	159	338%
Skin	11	1.7%	**10**	311	4.0%	134	231%

DATA NOTES
Source: DALY values are from the AIHW[25]. Refer to Table 14 for additional data notes.

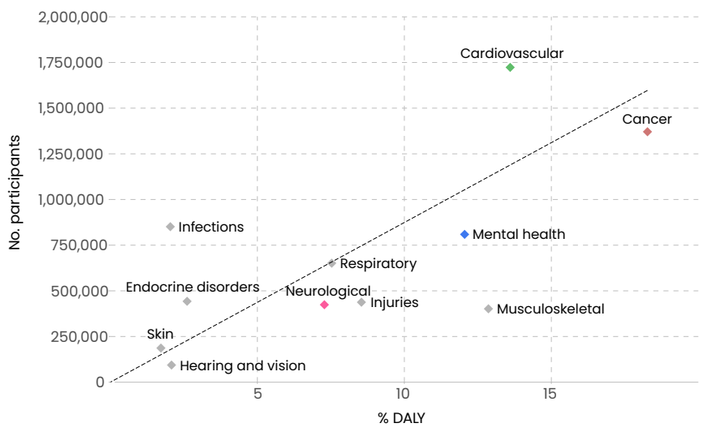
2.2.5 ESTIMATED NUMBER OF TRIAL PARTICIPANTS PER CONDITION COMPARED TO BURDEN OF DISEASE

The burden of disease associated with AIHW disease areas can also be compared with the scale of trial activity in terms of number of participants. This analysis needs to be viewed cautiously as the number of participants includes the planned or actual sample size of trials recruiting in Australia and multinational trials with a recruitment site in Australia.

Trials focusing on mental health, musculoskeletal disease, injuries and neurological conditions may involve fewer participants than would be expected. Participant numbers for, respiratory diseases, cancer, and skin conditions are close to what would be expected given their relative burden of disease. The number of participants in infection studies, endocrine disorders and cardiovascular disease are higher than expected.

In the last five years, a similar pattern is observed except for cancer, where the number of participants is lower than expected, and cardiovascular disease, where the number of participants is close to what would be expected (Figure 20).

Figure 19: Relationship between total number of trial participants and %DALY (as an indicator of relative burden of disease) for AIHW disease areas studied by Australian clinical trials registered 2006–2020



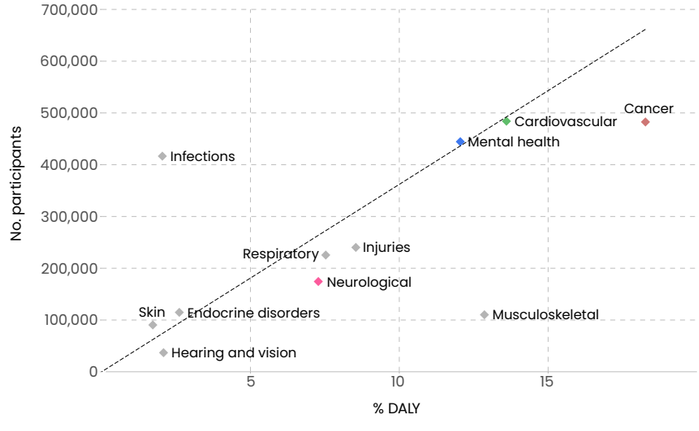
Diagonal line represents the line of equality where %DALY is equal to trial participants for a condition as a percentage of total participants in all registered trials. Markers below the line show conditions where participant numbers fall below the %DALY.

Table 16: Number of participants in registered Australian clinical trials focusing on AIHW disease areas as a percentage of total number of participants, and comparison to the expected number based on %DALY, for trials registered 2006–2020

Disease group	Burden of disease		Number of participants				
	Rank	%DALY	Rank	Observed no.	Proportion observed	Expected no. (based on %DALY)	Proportion observed / expected
Cancer	1	18.3%	**2**	1,370,852	15.7%	1,597,067	86%
Cardiovascular diseases (includes stroke)	2	13.6%	**1**	1,723,194	19.7%	1,188,840	145%
Musculoskeletal conditions	3	12.9%	**9**	401,779	4.6%	1,124,154	36%
Mental health and substance abuse disorders	4	12.1%	**4**	809,035	9.3%	1,053,348	77%
Injuries	5	8.5%	**7**	437,685	5.0%	746,522	59%
Respiratory (includes asthma)	6	7.5%	**5**	651,305	7.5%	658,233	99%
Neurological (includes dementia)	7	7.3%	**8**	424,003	4.9%	636,379	67%
Endocrine disorders	8	2.6%	**6**	442,711	5.1%	228,152	194%
Hearing and vision	9	2.1%	**11**	93,775	1.1%	181,823	52%
Infections	10	2.0%	**3**	851,156	9.7%	178,326	477%
Skin	11	1.7%	**10**	186,818	2.1%	150,353	124%

DATA NOTES
Source: DALY values are from the AIHW[25]. Refer to Table 14 for additional data notes.

Figure 20: Relationship between total number of trial participants and %DALY (as an indicator of relative burden of disease) for AIHW disease areas studied by Australian clinical trials registered 2016–2020



Diagonal line represents the line of equality where %DALY is equal to trial participants for a condition as a percentage of total participants in all registered trials. Markers below the line show conditions where participant numbers fall below the %DALY.

Table 17: Number of participants in registered Australian clinical trials focusing on AIHW burden of disease areas as a percentage of total number of participants, and comparison to the expected number based on %DALY, for trials registered 2016–2020

Disease group	Burden of disease		Number of participants				
	Rank	%DALY	Rank	Observed no.	Proportion observed	Expected no. (based on %DALY)	Proportion observed / expected
Cancer	1	18.3%	**2**	482,570	13.3%	**661,496**	73%
Cardiovascular diseases (includes stroke)	2	13.6%	**1**	484,081	13.4%	**492,411**	98%
Musculoskeletal conditions	3	12.9%	**9**	110,192	3.0%	**465,618**	24%
Mental health and substance abuse disorders	4	12.1%	**3**	444,495	12.3%	**436,291**	102%
Injuries	5	8.5%	**5**	240,245	6.6%	**309,205**	78%
Respiratory (includes asthma)	6	7.5%	**6**	225,506	6.2%	**272,636**	83%
Neurological (includes dementia)	7	7.3%	**7**	174,390	4.8%	**263,585**	66%
Endocrine disorders	8	2.6%	**8**	114,777	3.2%	**94,499**	121%
Hearing and vision	9	2.1%	**11**	36,896	1.0%	**75,310**	49%
Infections	10	2.0%	**4**	416,542	11.5%	**73,862**	564%
Skin	11	1.7%	**10**	90,487	2.5%	**62,276**	145%

DATA NOTES
Source: DALY values are from the AIHW[25]. Refer to Table 14 for additional data notes.

2.3 PURPOSE OF STUDY: PREVENTION, DIAGNOSIS, EDUCATION, AND TREATMENT

'Purpose of study' has been analysed according to the four categories available on the ANZCTR registration form. Data on ClinicalTrials.gov have been mapped to ANZCTR categories (see Appendix 3).

Overall, of the 18,453 Australian clinical trials registered from 2006 to 2020 that specify a purpose, 75% cite 'treatment', 15% 'prevention', 6% 'educational / counselling / training' and 3% 'diagnosis'.

As a proportion of registrations each year, the purpose of studies has remained relatively stable over 15 years (Figure 22).

Figure 21: Purpose of study for Australian clinical trials registered 2006–2020

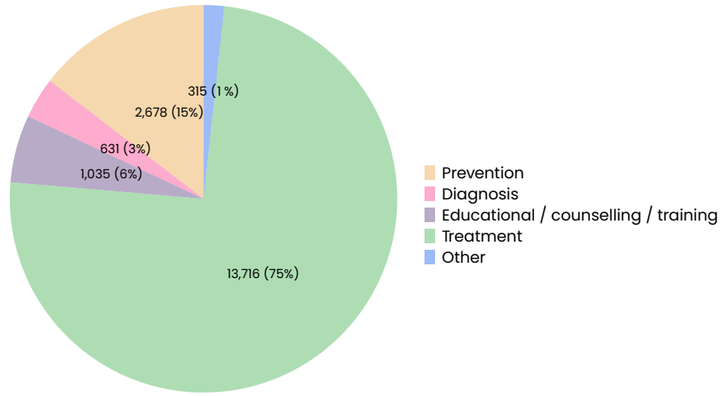


Figure 22: Trends in purpose of study for registered Australian clinical trials, 2006–2020

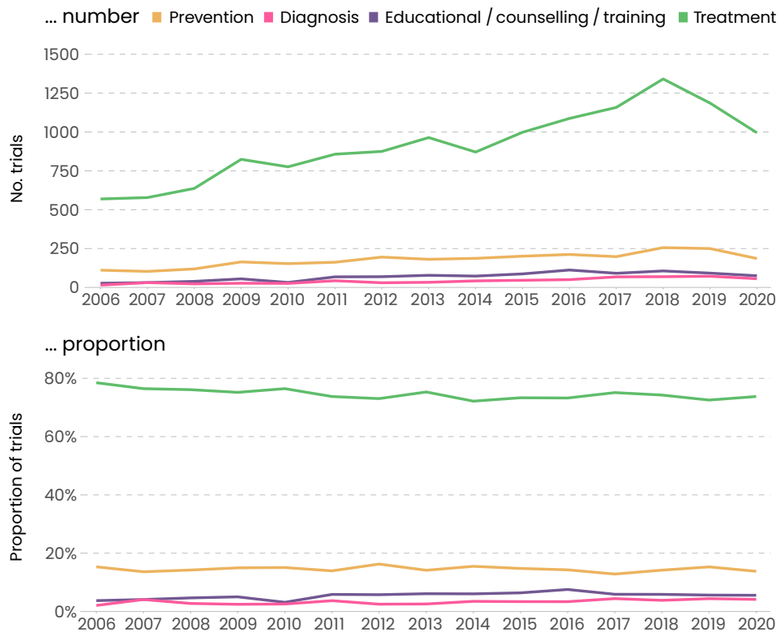


Table 18: Number of Australian clinical trials registered each year 2006–2020, by purpose of study

	Prevention	Diagnosis	Educational / counselling / training	Treatment	Other	Total with purpose listed
2006	111	15	27	569	0	722
2007	103	31	31	578	10	753
2008	119	23	39	637	14	832
2009	164	27	55	824	20	1,090
2010	153	26	32	776	12	999
2011	162	43	68	857	23	1,153
2012	195	30	69	875	18	1,187
2013	181	33	78	964	17	1,273
2014	187	42	73	871	28	1,201
2015	201	46	87	998	24	1,356
2016	212	50	112	1,087	22	1,483
2017	198	68	91	1,158	26	1,541
2018	256	69	106	1,341	32	1,804
2019	250	72	92	1,186	33	1,633
2020	186	56	75	995	36	1,348
Total	**2,678 (15%)**	**631 (3%)**	**1,035 (6%)**	**13,716 (75%)**	**315 (1%)**	**18,375**

DATA NOTES
This is a mandatory field on both the ANZCTR and ClinicalTrials.gov with only one selection allowed. However, 78 trials registered on ClinicalTrials.gov have no purpose listed and are not included in this analysis. For this analysis the proportion of trials with 'Purpose: Other' has been rounded down.
Categories for study purpose differ slightly between the ANZCTR and ClinicalTrials.gov forms (see Appendix 3 for mapping).
Proportions are of total trials where purpose is listed (N=18,375).

2.4 TYPE OF INTERVENTIONS

Drugs are the most researched intervention in Australian clinical trials, studied by 45% of trials registered between 2006 and 2020. Although the number of drug trials has remained relatively stable in the last five years at around 600 to 750 trials each year, the proportion of drug trials has declined from 55% in 2006 to 33% in 2020. At the same time, the number of trials of preventive interventions, devices, behaviour, lifestyle and treatments other than drugs, devices or surgery, has been growing.

In particular, trials focusing on the 'other treatment' category has increased, from just 73 in 2006 (10% of trials) to 298 in 2020 (22%). This category includes a range of other interventions such as exercise, physiotherapy, cognitive therapy, special diets, herbal medicines, web-based treatments, motivational classes, music therapy and stem cell interventions.

Figure 23: Type of interventions studied by Australian clinical trials registered 2006–2020

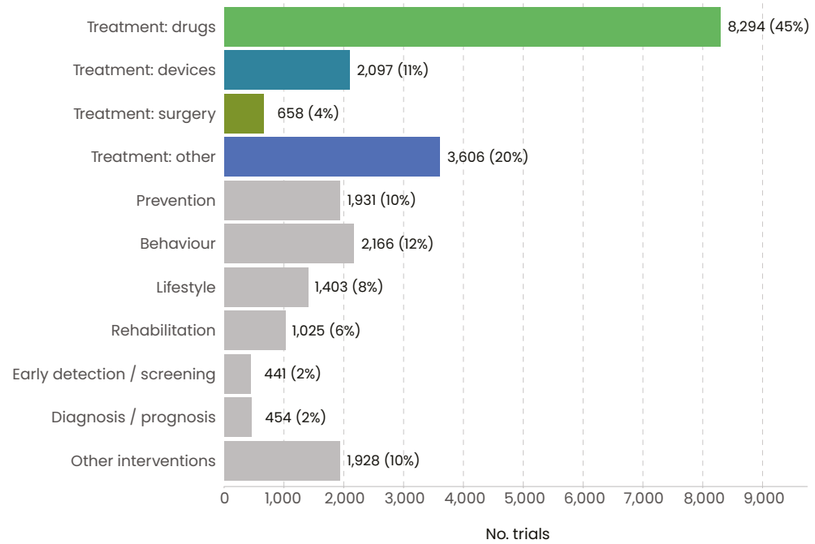


Figure 24: Trends in treatment interventions studied by registered Australian clinical trials, 2006–2020

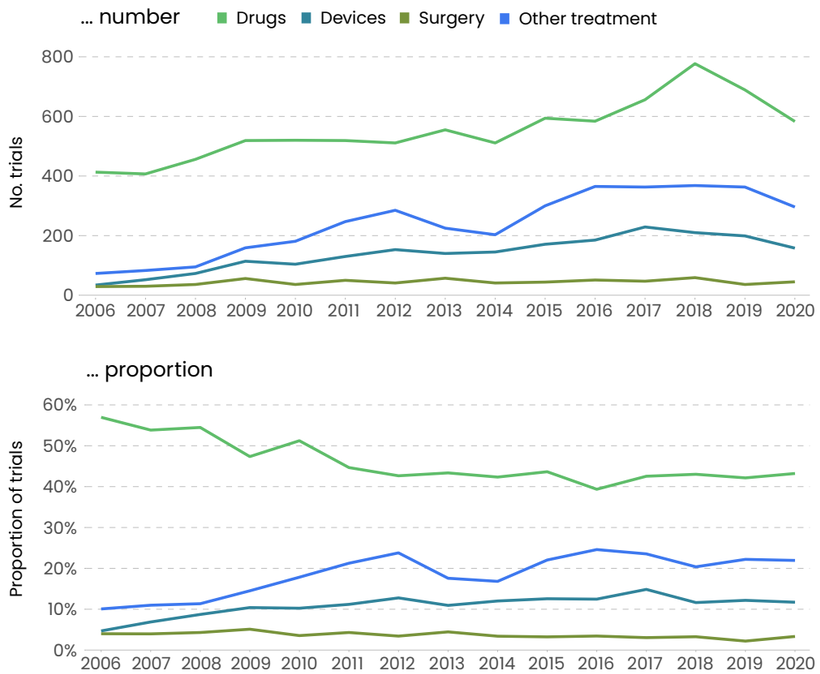


Table 19: Number of Australian clinical trials registered each year 2006–2020, by intervention type

Intervention type	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Treatment: drugs	413	407	456	519	520	519	511	555	511	594	584	656	777	689	583	**8,294**
Treatment: devices	34	52	73	114	104	130	153	140	145	171	185	229	210	199	158	**2,097**
Treatment: other	73	83	95	159	181	247	285	225	203	300	365	363	368	363	296	**3,606**
Prevention	43	58	69	96	124	137	177	129	130	165	166	163	168	179	127	**1,931**
Behaviour	17	34	46	71	82	156	158	174	181	175	211	219	239	226	177	**2,166**
Lifestyle	26	17	39	68	67	97	113	86	99	114	150	124	153	137	113	**1,403**
Rehabilitation	24	30	40	57	41	55	65	79	88	83	99	92	110	89	73	**1,025**
Early detection / screening	3	5	14	16	20	39	38	36	32	32	36	44	38	49	39	**441**
Diagnosis / prognosis	7	15	9	17	21	28	17	23	24	30	36	56	64	58	49	**454**
Other interventions	86	87	97	125	145	104	122	142	139	147	149	141	186	144	114	**1,928**
Total	**755**	**818**	**974**	**1,298**	**1,341**	**1,562**	**1,680**	**1,646**	**1,593**	**1,855**	**2,032**	**2,134**	**2,372**	**2,169**	**1,774**	**24,003**

DATA NOTES
Intervention type is a mandatory field on the ANZCTR and ClinicalTrials.gov registration forms.
ANZCTR allows a maximum of three intervention codes from a specified list for each trial. ClinicalTrials.gov allows entry of any number of intervention codes from a specified list, with the same code able to be entered more than once (where, for example, more than one drug comprises an intervention). As multiple intervention codes can be selected for each trial, the total count of trials selecting each intervention code is more than the total number of trials registered. Four trials from ANZCTR have not stipulated type of treatment.

2.5 INTERVENTION ENDPOINT: SAFETY, EFFICACY, OTHER OUTCOMES

The 'endpoint' is what a trial aims to establish about an intervention. This may be, according to ANZCTR field definitions:

- Efficacy: to measure an intervention's influence on a health condition
- Safety: whether the intervention is safe under the conditions of the proposed protocol / use
- Pharmacokinetics: what happens to a drug in the body over time, including the process of absorption, distribution and localisation in tissue, biotransformation and excretion (i.e. what the body does to the drug)
- Pharmacodynamics: the action of a drug in living systems (i.e. what the drug does to the body)
- Bio-equivalence: a scientific basis for comparing generic and brand name drugs
- Bio-availability: the rate and extent to which a drug is absorbed or otherwise available to the treatment site in the body.

For drug and non-drug trials, data presented from 2016 onwards are impacted by the removal of the intervention endpoint field from ClinicalTrials.gov. Therefore, as an example, the decline in efficacy and safety as an endpoint for drug trials from 44% in 2015 to 14% in 2020 is a consequence of data collection changes by ClinicalTrials.gov.

For drug trials, the most common focus has been a combination of the safety and efficacy of the intervention, accounting for 52% of drug trials specifying an endpoint. An additional 29% specified efficacy alone and 12% safety alone. 440 trials (7%) cited assessment of the other endpoint categories, looking at specific aspects of drug actions and effects.

Efficacy remains the most frequently specified focus for non-drug trials, accounting for 71% of trials, with an additional 24% citing a combination of efficacy and safety. Only 4% of non-drug trials looked at safety alone.

Figure 25: Trends in type of intervention endpoints for registered Australian clinical trials, 2006–2020

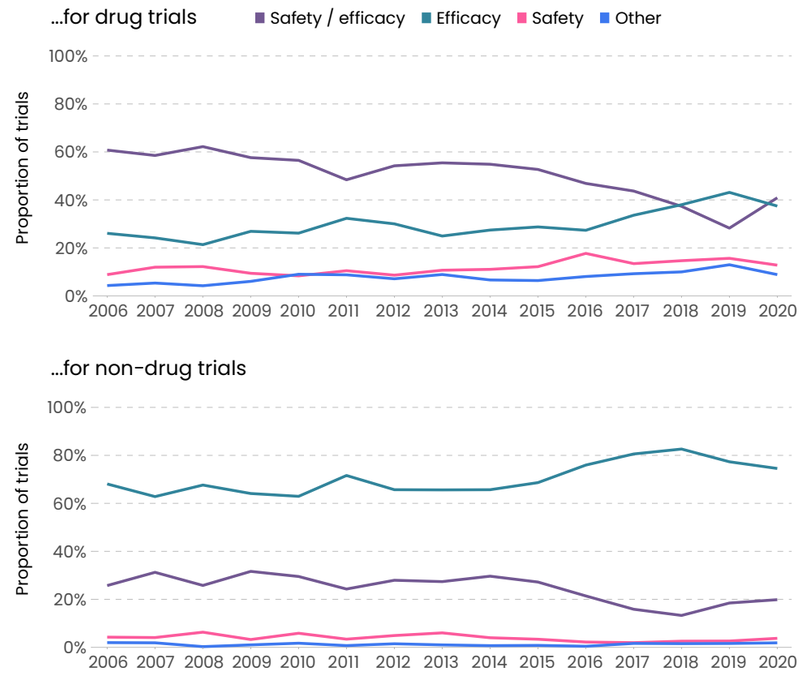


Table 20: Types of intervention endpoint for Australian clinical trials registered 2006–2020

a. Drug trials

	Safety / efficacy	Efficacy	Safety	Pharmaco-kinetics	Pharmaco-kinetics / pharmaco-dynamics	Pharmaco-dynamics	Bio-availability	Bio-equivalence	Not specified
2006	240	103	35	6	2	8	0	1	17
2007	230	95	47	7	4	9	0	1	14
2008	265	91	52	4	3	9	1	1	28
2009	257	120	42	10	6	9	2	0	73
2010	257	119	38	21	4	12	2	2	64
2011	226	151	49	18	7	9	6	1	52
2012	251	139	40	13	8	8	3	1	48
2013	280	126	54	21	9	9	4	2	50
2014	248	124	50	14	5	7	3	1	59
2015	264	144	61	17	3	7	2	3	93
2016	180	105	68	7	6	9	8	1	200
2017	104	80	32	7	7	7	1	0	418
2018	112	114	44	13	3	10	4	0	477
2019	74	113	41	18	7	2	1	6	427
2020	83	76	26	10	5	1	2	0	380
Total	**3,071 (52%)**	**1,700 (29%)**	**679 (12%)**	**186 (3%)**	**79 (1%)**	**116 (2%)**	**39 (1%)**	**20 (<1%)**	**2,400**

b. Non-drug trials

	Safety / efficacy	Efficacy	Safety	Other	Not specified
2012	171	402	30	9	75
2013	164	393	36	6	126
2014	171	379	23	4	119
2015	170	429	21	5	142
2016	146	518	15	3	217
2017	98	498	12	10	267
2018	104	647	20	12	246
2019	127	532	18	11	258
2020	106	398	20	10	232
Total	**1,939 (24%)**	**5,817 (71%)**	**302 (4%)**	**99 (1%)**	**2,002**

DATA NOTES
Drug trials are defined as any trial selecting intervention code 'Treatment: drugs'.
Endpoint is not a mandatory field on the ANZCTR or ClinicalTrials.gov. ClinicalTrials.gov removed the field in 2016 and the increase in trials classed as 'Not specified' from 2016 onwards is directly attributable to the removal of the field. A total of 2,400 drug trials and 2,002 non-drug trials did not specify an endpoint. All proportions are of trials where endpoint has been specified (a total of 5,890 drug trials and 8,157 non-drug trials).

2.6 PHASE OF INVESTIGATION FOR DRUG TRIALS

Phase of investigation refers to the research steps used to investigate new interventions, most commonly new drugs, with each phase designed to address a specific question. The findings below are for drug trials where phase has been specified (7,727 out of a total of 8,292 registered Australian drug trials), and the phase descriptions reflect ANZCTR field definitions.

- Phase 0 trials are exploratory, first-in-human trials, also known as human micro-dosing studies, which carry no therapeutic intent. There have been 39 registered Phase 0 drug trials over the 15 years to 2020, and of these all but one have been registered since 2011.
- Phase 1 trials evaluate the metabolism and pharmacological action of drugs, and monitor side effects. They may also aim to gain early evidence of effectiveness. Overall, 1,796 Phase 1 drug trials have been registered between 2006 and 2020 (including 398 combined Phase 1 / 2 trials), accounting for 23% of drug trials specifying a phase. On an annual basis, the proportion of Phase 1 trials has grown substantially, and has more than tripled since 2006. In the last five years, the proportion of phase 1 trials has increased from 27% in 2016 to 40% in 2020.
- Phase 2 trials are single arm or controlled studies designed to evaluate the efficacy of new drugs in patients with the disease or condition being studied and to determine common short-term side effects and risks. This is the second most common stage of research for Australian drug trials, with 2,195 Phase 2 trials registered, accounting for 28% of drug trials overall. This level of activity, which includes 242 combined Phase 2 / 3 trials, has been relatively stable over 15 years.
- Phase 3 trials are undertaken after preliminary evidence suggesting effectiveness of the drug has been obtained, to gather additional information on benefits and risk, including possible adverse reactions. A total of 2,766 Phase 3 studies have been registered (including 105 combined Phase 3 / 4 trials), accounting for 35% of registered drug trials overall. This makes Phase 3 the most common stage of research among Australian drug trials, although its proportion has nearly halved over 15 years from 50% in 2006 to 26% in 2020.
- Phase 4 trials are undertaken to gain additional information after a drug has been marketed, monitoring aspects such as toxicity, risks, utility, benefits and optimal use. A total of 931 Phase 4 studies have been registered between 2006 and 2020, accounting for 12% of drug trials overall between 2006 and 2020.

Figure 26: Trends in phase of study for registered Australian drug trials, 2006–2020

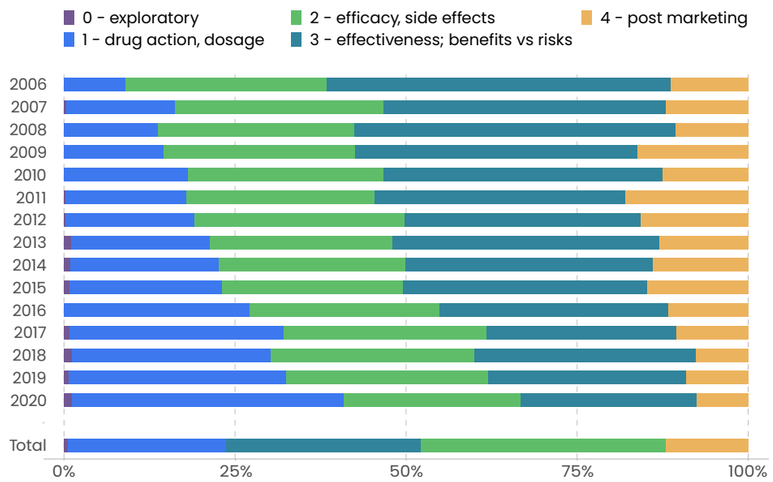


Table 21: Number of registered Australian clinical drug trials registered each year 2006–2020, by phase of study

	Phase 0- exploratory	1- Drug action, dosage	Phase 1 / 2	2- Efficacy, side effects	Phase 2 / 3	3- Effectiveness; benefits vs risk	Phase 3 / 4	4- Post-marketing
2006	0	27	8	98	17	192	4	44
2007	1	48	12	109	5	148	7	45
2008	0	39	19	102	19	191	7	45
2009	0	54	15	116	17	181	15	77
2010	0	67	20	124	13	186	9	60
2011	1	73	11	120	10	163	11	85
2012	1	74	15	129	16	158	5	74
2013	5	84	21	121	17	192	9	67
2014	4	79	24	117	12	167	4	66
2015	4	93	32	129	18	194	5	82
2016	0	121	30	134	20	180	6	65
2017	5	139	54	163	20	166	4	65
2018	8	168	41	191	23	225	7	55
2019	4	160	46	172	19	180	7	59
2020	6	172	50	128	16	138	5	42
Total	**39 (<1%)**	**1,398 (18%)**	**398 (5%)**	**1,953 (25%)**	**242 (3%)**	**2,661 (34%)**	**105 (1%)**	**931 (12%)**

DATA NOTES
Drug trials have been defined as any trial selecting intervention code 'Treatment: drugs'.
Since 2019, trial phase is a mandatory field on the ANZCTR and ClinicalTrials.gov registration forms when 'Interventional' is selected for the field 'Study type'. Only one selection is possible on the ANZCTR and ClinicalTrials.gov. 'Not applicable' is possible on both the ANZCTR and ClinicalTrials.gov registration forms. The ANZCTR requests that a study phase is selected for drug trials but permits 'Not applicable' if the registrant believes that study phase is not relevant for their trial (e.g. where drugs may be administered as part of the intervention but this is not the main focus of the trial) or trials registered before 2019 are being updated. Overall, 356 drug trials selected 'Not applicable' for the study phase field, and 189 drug studies on the ANZCTR and 20 drug studies on ClinicalTrials.gov with no selection in the study phase field. All proportions are of drug trials where phase has been specified (N=7,727).

2.7 TRIALS FOCUSING ON THE HEALTH OF ABORIGINAL AND/OR TORRES STRAIT ISLANDER PEOPLES

ANZCTR data can be used to identify trials specifically targeting the health of Aboriginal and Torres Strait Islander peoples.

This analysis includes trials only recruiting in Australia (excluding multinational trials), that were registered on ANZCTR or ClinicalTrials.gov. Trials that specifically mention a focus on Aboriginal and/or Torres Strait Islander peoples in the study title, description of the study or subgroup analyses are included in the analysis. Therefore, this section does not represent the overall participation of Aboriginal and/or Torres Strait Islander peoples in trials conducted in Australia since they may also participate in other trials recruiting in Australia. Instead, this section examines trials with a specific, explicit focus on Aboriginal and/or Torres Strait Islander peoples. A more detailed analysis of these trials relative to health conditions and burden of disease has been published elsewhere[8].

The number of trials specifically focusing on Aboriginal and/or Torres Strait Islander peoples has increased over time (Figure 27), from two in 2006 to 16 in 2019. There was slight decrease in 2020, which may be due to the COVID-19 pandemic.

The proportion of trials has slightly increased from 0.3% in 2006 to 1.0% in 2019. In 2020, the number and proportion of trials specifically relating to the health of Aboriginal and/or Torres Strait Islander peoples slightly decreased, which may be due to the COVID-19 pandemic.

Figure 27: Number of trials focusing on Aboriginal and/or Torres Strait Islander peoples each year, 2006–2020

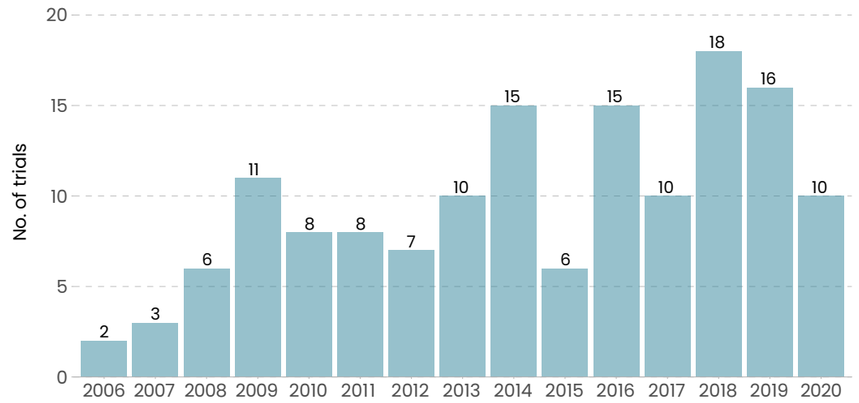


Figure 28: Proportion of trials focusing on Aboriginal and/or Torres Strait Islander peoples each year, 2006–2020

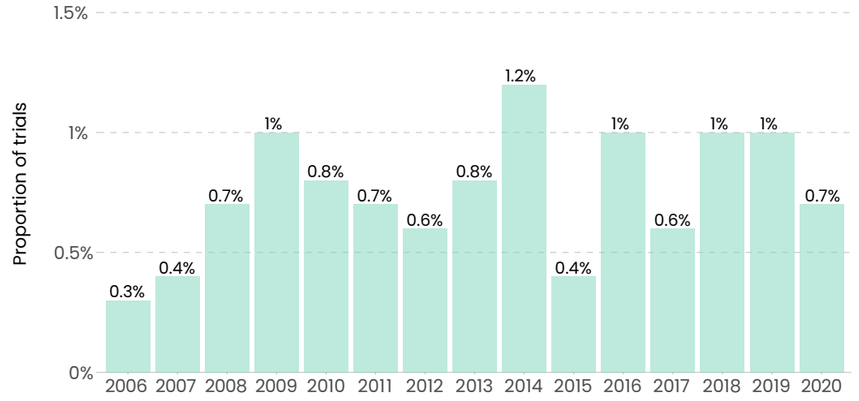


Table 22: Number and proportion of Australian clinical trials registered with an explicit focus on the health of Aboriginal and/or Torres Strait Islander peoples 2006–2020

Year	Number of trials with a focus on the health of Aboriginal and/or Torres Strait Islander peoples	Proportion of trials with a focus on the health of Aboriginal and/or Torres Strait Islander peoples
2006	2	0.3%
2007	3	0.4%
2008	6	0.7%
2009	11	1.0%
2010	8	0.8%
2011	8	0.7%
2012	7	0.6%
2013	10	0.8%
2014	15	1.2%
2015	6	0.4%
2016	15	1.0%
2017	10	0.6%
2018	18	1.0%
2019	16	1.0%
2020	10	0.7%
Total	**145**	**0.8%**

DATA NOTES
Trials with a focus on Aboriginal and/or Torres Strait Islander peoples were identified by searching titles, eligibility criteria, study summary, intervention description and ethics committee name for relevant terms such as ‘Indigenous’, ‘Aboriginal’ and ‘Torres Strait Islander’.

PART 3: TRIAL DESIGN

Design aspects of Australian clinical trials.

DATA NOTES
This section uses combined ANZCTR and ClinicalTrials.gov data unless otherwise noted.
Data are displayed using ANZCTR categorisation while data from ClinicalTrials.gov have been mapped to the closest relevant ANZCTR category. Details of this mapping can be found in Appendix 3.
Only registered Australian clinical trials are included (i.e. interventional studies with at least one recruitment site in Australia).
Unless otherwise noted, 'year' refers to year of trial registration.

3.1 KEY FINDINGS

From 2006 to 2020:

- The median sample size for Australian clinical trials has dropped from 128 in 2006 to 80 in 2020.
- The number of participants in drug and non-drug trials has become more similar over time. Drug trials have reduced in median sample size over time, with the median falling by over 50% between 2006 and 2020, from 200 to 90. Non-drug trials have seen a 20% reduction in median sample size for the same period (100 in 2006 vs 80 in 2020).
- Trials with a public health focus have tended to use larger sample sizes than other trials as they often involve prevention or screening for disease in healthy populations. The overall median for public health trials was 163 participants compared to 118 for cancer trials and 100 for cardiovascular trials.
- 88% of registered Australian clinical trials have recruited both male and female participants. The proportion of trials registered each year recruiting only females have fallen slightly, from around 10% in 2006–2009 to 6% in recent years.
- The proportion of trials that used random allocation has declined from 81% in 2006 to 69% in 2020. Overall, there is little difference in the proportion of drug and non-drug trials using random allocation.
- The parallel assignment method in trials has slightly decreased from 71% in 2006 to 57% in 2020 while still being the most frequently used method. The proportion of trials using crossover and factorial assignment methods have remained steady.

What is new since 2016?

- The median sample size for all Australian clinical trials steadily sits at 80 participants.
- Trials with a public health focus continue to use larger sample sizes than other trials with a median sample size of 171 participants compared to 122 for cancer trials and 100 for cardiovascular trials.
- The proportion of trials using random allocation tends to be similar for drug and non-drug trials (drug trials: 79% vs non-drug trials: 71%).
- There has been a slight increase in trials using novel assignment methods (for example, stepped wedge design), rising to 8–10% in recent years.

3.2 SAMPLE SIZES

The median sample size for all registered Australian clinical trials has declined from 128 in 2006 to 81 in 2014, and has since been relatively stable since with a median sample size of around 80. Trials registered from 2006 to 2008 were characterised by higher medians of 128–132 (Table 23), with this period coinciding with the start-up of several significant cardiovascular trials recruiting more than 500 participants.

Generally, trials registered on ClinicalTrials.gov tend to have larger sample sizes than those registered on the ANZCTR, reflecting the higher proportion of multinational drug trials registered on ClinicalTrials.gov (see Section 1.5).

At the time of this report, most trials listed as 'completed' were registered before or in 2015. A comparison of sample sizes at the time of trial registration and completion indicated that a slightly higher proportion of large studies (>500 participants) achieved their recruitment target. Conversely, for small studies (<100 participants), there is a lower proportion of studies that appeared to meet their target size at trial completion. This finding needs to be viewed cautiously as larger studies may be more likely to update their registration records with their actual sample size, while small studies may never update their record albeit having finished, and thus may have been omitted from this analysis.

Table 23: Median sample size (actual or anticipated) and interquartile range (IQR) for Australian clinical trials registered on the ANZCTR and on ClinicalTrials.gov, 2006–2020

	ANZCTR			ClinicalTrials.gov			Combined		
	No. trials	Median sample size	IQR	No. trials	Median sample size	IQR	No. trials	Median sample size	IQR
2006	363	78	35-180	362	302	100-634	725	128	50-420
2007	398	90	32-248	358	228	60-594	756	127	43-382
2008	443	100	40-206	394	247	70-681	837	132	50-389
2009	726	71	32-160	370	188	61-600	1,096	100	40-280
2010	624	62	32-150	391	246	65-605	1,015	90	40-300
2011	774	70	32-180	388	160	48-495	1,162	89	37-247
2012	800	60	30-146	398	173	52-500	1,198	80	32-209
2013	833	60	30-150	447	232	56-582	1,280	90	31-280
2014	779	60	29-149	428	193	61-613	1,207	81	32-272
2015	884	60	27-143	477	192	65-500	1,361	87	34-235
2016	1,033	60	30-154	451	189	51-499	1,484	82	32-249
2017	1,031	60	30-141	511	166	56-441	1,542	80	34-219
2018	1,265	60	30-150	541	187	64-492	1,806	84	32-227
2019	1,148	60	30-150	487	170	55-500	1,635	80	32-222
2020	924	72	30-157	425	150	51-423	1,349	80	36-217
Total	**12,025**	**63**	**30-154**	**6,428**	**196**	**60-538**	**18,453**	**90**	**36-260**

DATA NOTES
Sample size is a mandatory field on both the ANZCTR and ClinicalTrials.gov registration forms. Data are missing for 171 trials registered on ClinicalTrials.gov.
The ANZCTR collects either target or actual sample size or both, depending on the recruitment status at the time of registration and subsequent updates. Values obtained are the 'actual' sample size where provided, or the 'target' if no 'actual' value is available, e.g. for trials with ongoing recruitment. ClinicalTrials.gov collects a single value for sample size ('Enrolment') along with an 'estimated' or 'actual' label.
Data differences across the current and previous report are likely due to the updating and addition of Australia as a recruitment country in ClinicalTrials.gov records imported into the ANZCTR.

Table 24: Proportion of trials with status marked as complete (and with available actual sample size) over time

	Number of completed trials	Proportion of completed trials
2006	452	62%
2007	466	62%
2008	523	62%
2009	657	60%
2010	623	61%
2011	648	56%
2012	618	52%
2013	665	52%
2014	613	51%
2015	649	48%
2016	606	41%
2017	561	37%
2018	444	25%
2019	233	14%
2020	82	6%
Total	**7,840**	**42%**

Figure 29: Trends in sample size (anticipated or actual) for registered Australian clinical trials, 2006–2020

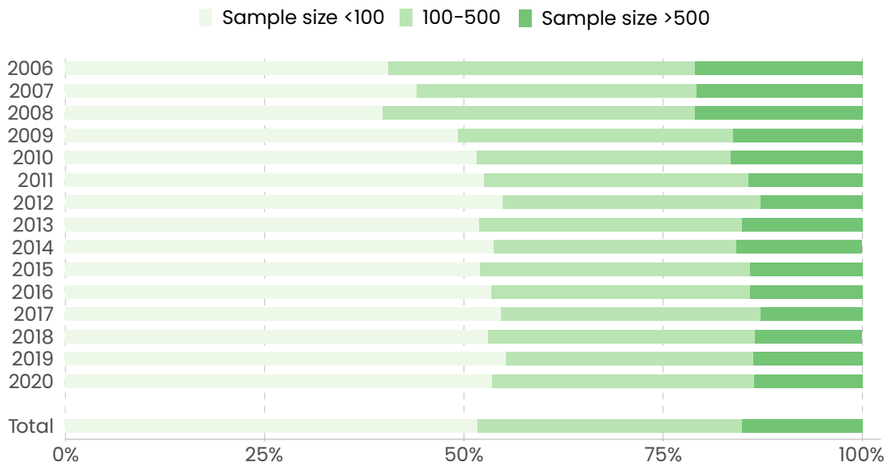


Figure 30: Trends in actual median sample size for completed Australian clinical trials, 2006–2015

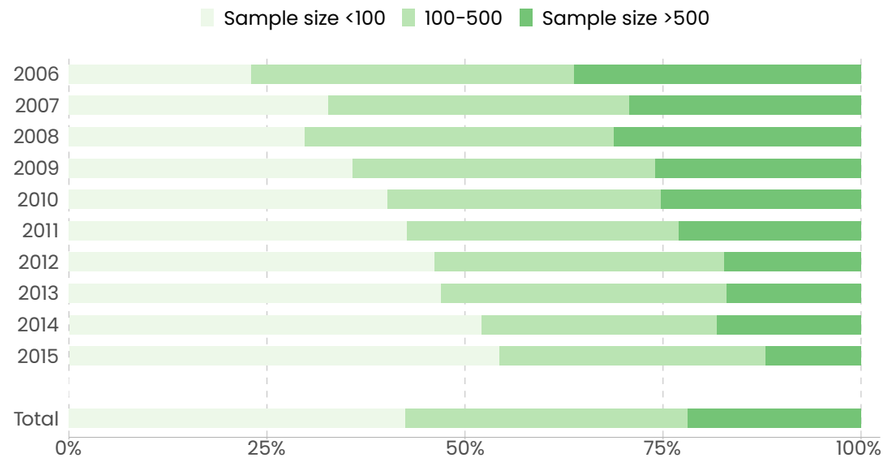


Figure 31: Trends in median sample size (actual or anticipated) and interquartile range (IQR) for registered Australian clinical trials, 2006–2020

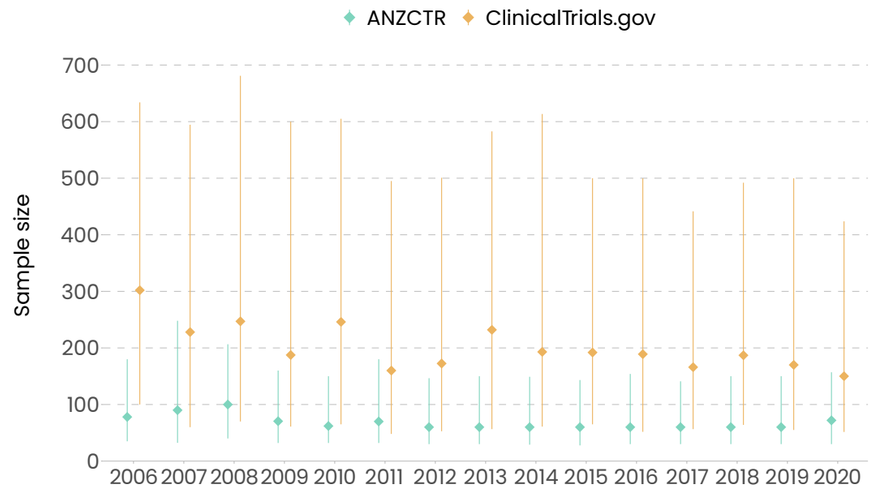
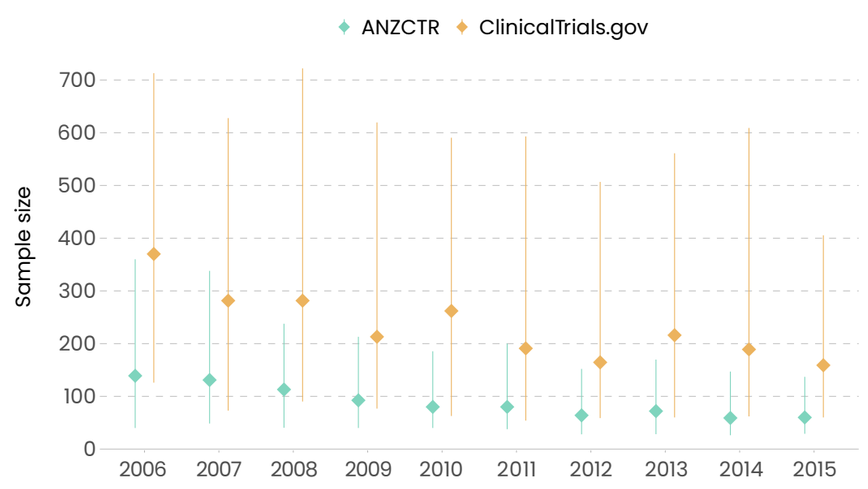


Figure 32: Trends in actual median sample size and IQR for completed Australian clinical trials, 2006–2015



3.2.1 DRUG TRIALS VERSUS NON-DRUG TRIALS

Overall, drug trials registered each year have tended to involve more participants than non-drug trials, but this difference has been decreasing over time. There is now a trend toward a similar number of people participating in drug and non-drug trials. (Table 25).

Since 2006 the median sample size for drug trials has reduced by 55%, from a median sample size of 200 in 2006 to 90 in 2020. Over the same period, non-drug trials have seen a small reduction in median sample size, with 100 participants in 2006 compared to 70–80 participants since 2009 (Table 25).

Figure 33: Trends in median sample size (actual and anticipated) and IQR for Australian clinical trials, 2006–2020

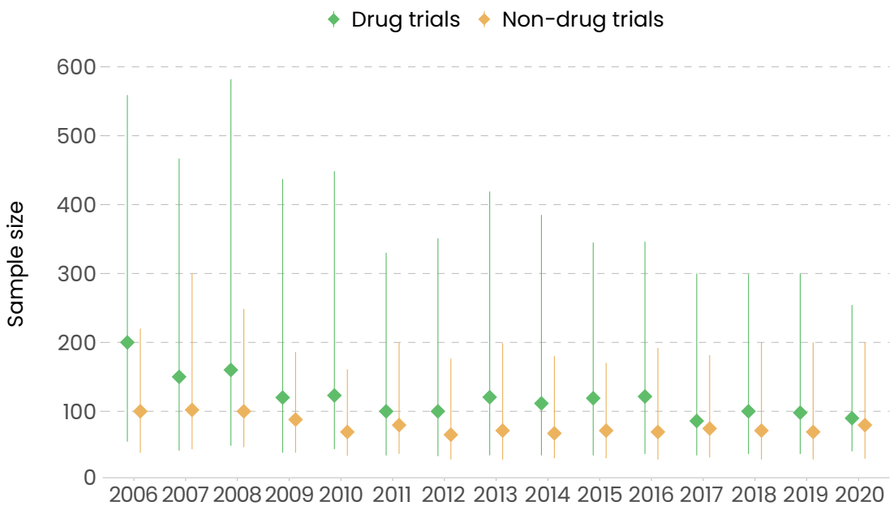


Table 25: Median sample size (actual and anticipated) and IQR for registered Australian drug and non-drug clinical trials, 2006–2020

	Drug trials			Non-drug trials		
	No. trials	Median sample size	IQR	No. trials	Median sample size	IQR
2006	412	200	56–562	311	100	40–220
2007	407	150	43–467	349	102	45–300
2008	454	160	50–581	383	100	48–248
2009	519	120	40–437	577	88	40–186
2010	519	124	45–448	496	70	35–161
2011	519	100	36–330	643	80	38–200
2012	511	100	35–351	687	66	30–176
2013	555	121	36–419	725	72	30–199
2014	511	112	36–385	696	68	32–180
2015	594	119	36–345	767	72	32–170
2016	584	122	38–346	899	70	30–192
2017	656	86	36–300	885	75	33–181
2018	777	100	38–299	1,029	72	30–200
2019	689	98	38–300	946	70	30–200
2020	583	90	42–254	766	80	31–200
Total	**8,290**	**110**	**40–378**	**10,159**	**77**	**33–200**

DATA NOTES
Trials have been defined as ‘Drug trials’ or ‘Non-drug trials’ based on whether or not ‘Treatment: Drugs’ was selected as an intervention code. Four trials have not stipulated treatment intervention and are unable to be classed as drug or non-drug trials. Refer to Table 23 for additional data notes.

3.2.2 SAMPLE SIZE BY CONDITION

Trials with a public health focus have tended to be larger than other trials as they often involve prevention or screening for disease in otherwise healthy populations. The overall median for public health trials is 163 participants, followed by trials involving infection (125 participants), emergency medicine (121 participants) and reproductive health and childbirth (120 participants).

Of the four most frequently studied conditions, cancer trials have an overall median sample size of 118 participants and cardiovascular trials 100 participants, while mental health and neurological conditions are characterised by smaller sample sizes, with medians of 90 and 69 participants respectively.

In the last 5 years, public health trials sustained their large sample sizes with a median of 171 participants, followed by eye conditions (162 participants), cancer (122 participants) and inflammatory and immune system conditions (120 participants). For the most frequently studied conditions, the median number of participants remained relatively steady.

Figure 34: Trends in median sample size and IQR for Australian clinical trials 2006–2020

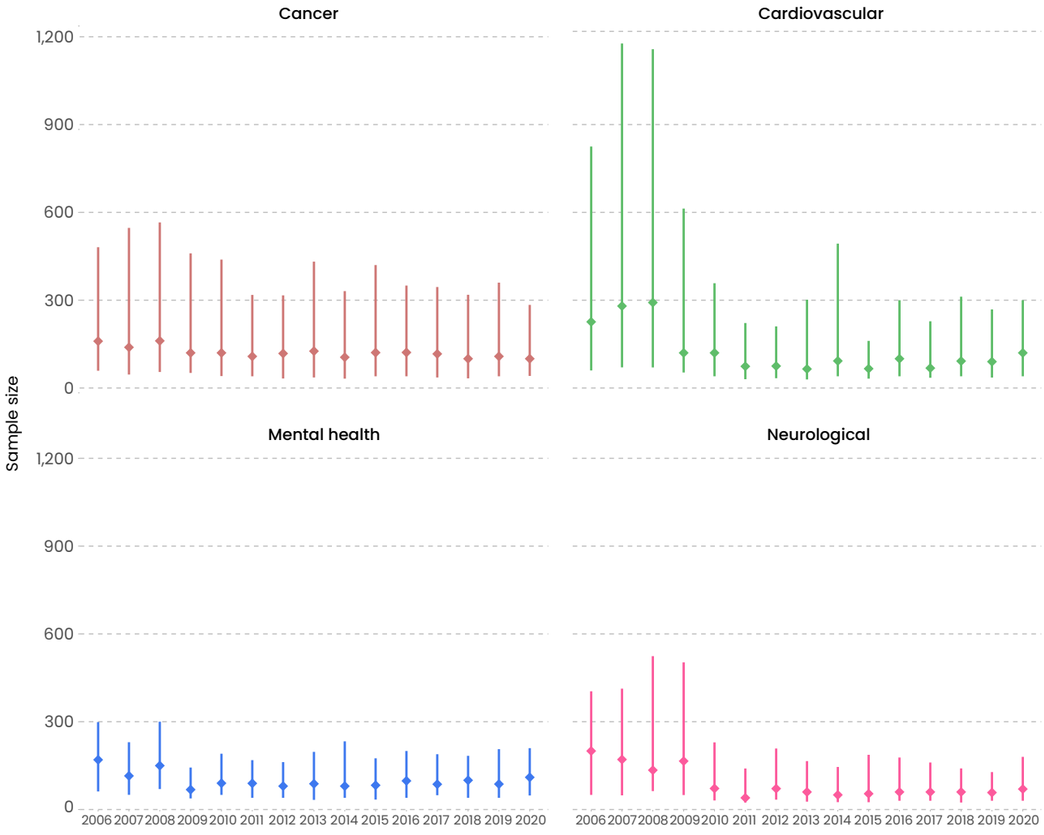


Table 26: Median sample size and IQR for Australian clinical trials registered each year, 2006–2020, for the four types of condition most frequently studied

	Cancer			Cardiovascular			Mental health			Neurological		
	No. trials	Median sample size	IQR	No. trials	Median sample size	IQR	No. trials	Median sample size	IQR	No. trials	Median sample size	IQR
2006	168	160	59–481	79	226	60–825	62	170	61–298	62	200	50–404
2007	154	139	46–547	75	280	70–1177	62	115	50–230	67	171	48–413
2008	157	161	54–565	108	292	70–1157	75	150	70–300	78	135	63–524
2009	207	120	51–460	123	120	53–613	107	68	38–143	72	166	49–502
2010	172	120	40–438	111	120	40–358	120	90	50–190	71	72	31–229
2011	198	108	40–318	111	74	30–222	173	90	40–168	78	40	24–140
2012	208	118	32–316	135	75	33–210	163	80	40–162	108	72	33–208
2013	252	126	36–431	144	65	29–301	178	88	33–197	104	60	27–165
2014	229	105	32–331	139	93	40–493	175	80	40–233	100	50	25–145
2015	291	121	40–420	123	66	32–161	191	83	34–175	119	54	25–187
2016	294	122	40–350	173	100	40–300	219	98	40–200	147	60	30–177
2017	329	117	36–345	110	68	35–228	209	87	49–189	160	60	30–160
2018	383	100	33–318	169	92	40–312	263	100	40–183	222	60	24–140
2019	337	108	40–360	127	90	35–268	224	87	40–206	182	58	30–128
2020	287	100	41–284	114	120	40–300	192	110	48–209	143	70	30–180
Total	**3,666**	**118**	**40–376**	**1,841**	**100**	**40–372**	**2,413**	**90**	**40–200**	**1,713**	**69**	**30–202**

DATA NOTES
Sample size is a mandatory field on both the ANZCTR and ClinicalTrials.gov registration forms. Data are missing for 99 trials registered on ClinicalTrials.gov from 2016 to 2020. Refer to Table 23 for additional data notes.

Table 27: Median sample size for Australian clinical trials registered each year 2006–2020, by condition

Condition	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Public health	113	147	278	167	122	200	168	176	161	160	171	199	120	180	120	**163**
Infection	417	147	129	200	197	168	92	125	154	122	115	74	92	125	128	**125**
Emergency medicine	0	193	0	7,000*	0	0	4,000*	0	0	23*	3,622*	0	78	183	100	**121**
Reproductive health and childbirth	115	280	217	122	82	207	124	121	100	172	80	78	120	88	150	**120**
Cancer	160	139	161	120	120	108	118	126	105	121	122	117	100	108	100	**118**
Inflammatory and immune system	164	382	150	104	250	68	104	94	128	165	120	74	104	82	80	**110**
Skin	99	36	258	98	73	57	75	66	108	131	89	150	131	152	76	**103**
Blood	153	122	143	166	80	76	87	100	115	109	66	70	80	68	108	**100**
Cardiovascular	226	280	292	120	120	74	75	65	93	66	100	68	92	90	120	**100**
Surgery	121	196	142	100	80	98	80	85	101	90	79	115	90	98	80	**94**
Mental health	170	115	150	68	90	90	80	88	80	83	98	87	100	87	110	**90**
Respiratory	105	108	108	100	119	74	96	80	100	105	80	72	73	80	94	**90**
Oral and gastrointestinal	105	146	350	100	72	191	60	102	101	103	86	72	73	54	59	**84**
Renal and urogenital	150	172	110	100	120	61	50	124	73	63	58	90	89	60	120	**82**
Human genetics and inherited disorders	40	56	118	52	110	37	50	94	105	135	50	94	120	98	60	**80**
Injuries and accidents	139	120	104	70	90	90	80	80	66	83	66	80	53	80	60	**79**
Stroke	311	278	176	45	156	160	50	60	115	80	75	63	72	42	80	**74**
Musculoskeletal	114	90	90	91	90	64	80	90	80	73	58	82	60	60	60	**72**
Anaesthesiology	100	160	66	60	60	72	60	60	55	66	82	62	54	100	80	**70**
Neurological	200	171	135	1,665	72	40	72	60	50	54	60	60	60	58	70	**69**
Alternative and complementary medicine	174*	40	120	60	53	69	60	60	60	60	60	40	72	6	82	**62**
Diet and nutrition	60	110	85	57	51	69	49	70	60	60	58	66	48	42	70	**60**
Eye	198	60	70	50	40	54	40	119	60	100	162	63	45	70	55	**60**
Metabolic and endocrine	80	111	150	67	80	77	77	90	50	40	40	50	50	48	51	**60**
Ear	210*	429	264	48	248	80	80	60	200	59	36	40	33	100	70	**51**
Physical medicine / rehabilitation	45	40	130	70	87	56	61	46	48	46	48	51	45	40	40	**48**
Other	85	65	90	100	60	63	28	60	60	54	139	63	228	250	88	**70**

DATA NOTES
Where only 1 trial was observed, values have been noted with an asterisk (*).
'Other' refers to conditions of unknown or disputed aetiology, or research that does not fit into any of the health conditions listed.
Refer to Table 23 for additional data notes.

Table 28: Median sample size for Australian clinical trials registered each year, 2016–2020 by condition

Condition	2016 No. trials	2016 Median sample size	2016 IQR	2017 No. trials	2017 Median sample size	2017 IQR	2018 No. trials	2018 Median sample size	2018 IQR	2019 No. trials	2019 Median sample size	2019 IQR	2020 No. trials	2020 Median sample size	2020 IQR	Total
Public health	138	171	80–614	142	199	100–672	167	120	60–544	149	180	64–600	151	120	58–755	**171**
Eye	15	162	51–524	36	63	40–119	53	45	20–124	44	70	29–204	34	55	30–273	**162**
Cancer	288	122	40–350	324	117	36–345	372	100	33–318	329	108	40–360	282	100	41–284	**122**
Inflammatory and immune system	81	120	38–331	94	74	30–191	94	104	48–431	96	82	35–250	56	80	29–261	**120**
Infection	90	115	25–550	95	74	40–317	101	92	42–292	103	125	40–392	139	128	43–377	**115**
Cardiovascular	169	100	40–300	109	68	35–228	165	92	40–312	124	90	35–268	111	120	40–300	**100**
Mental health	217	98	40–200	208	87	49–189	259	100	40–183	224	87	40–206	192	110	48–209	**98**
Skin	34	89	32–162	55	150	46–592	91	131	48–427	85	152	45–304	44	76	46–200	**89**
Oral and gastrointestinal	105	86	32–240	110	72	33–208	117	73	30–200	125	54	28–150	96	59	23–110	**86**
Anaesthesiology	55	82	38–130	55	62	38–135	53	54	30–136	80	100	54–249	48	80	40–137	**82**
Reproductive health and childbirth	57	80	45–188	60	78	40–201	70	120	63–449	66	88	39–150	55	150	60–357	**80**
Respiratory	122	80	30–242	96	72	30–200	135	73	30–286	111	80	30–196	162	94	30–240	**80**
Surgery	54	79	40–139	80	115	50–240	75	90	41–197	58	98	46–200	70	80	40–124	**79**
Stroke	33	75	36–586	34	63	25–166	39	72	31–277	26	42	25–152	27	80	35–339	**75**
Blood	29	66	45–1,752	35	70	30–199	33	80	40–160	30	68	37–174	33	108	50–200	**66**
Injuries and accidents	59	66	36–139	47	80	30–175	66	53	21–112	69	80	34–270	53	60	25–100	**66**
Alternative and complementary medicine	29	60	35–138	25	40	20–86	24	72	39–122	22	62	41–97	23	82	42–111	**60**
Neurological	146	60	30–177	160	60	30–160	219	60	24–140	181	58	30–128	141	70	30–180	**60**
Diet and nutrition	96	58	26–120	89	66	32–156	108	48	27–135	89	42	22–120	74	70	40–166	**58**
Musculoskeletal	117	58	30–101	126	82	38–160	137	60	30–121	153	60	30–116	95	60	30–109	**58**
Renal and urogenital	43	58	30–186	57	90	33–176	53	89	47–280	47	60	30–260	25	120	62–320	**58**
Human genetics and inherited disorders	53	50	30–128	60	94	49–181	88	120	47–300	75	98	38–251	50	60	28–123	**50**
Physical medicine / rehabilitation	109	48	20–82	90	51	30–100	93	45	23–100	80	40	24–81	59	40	24–80	**48**
Metabolic and endocrine	113	40	22–92	116	50	22–136	132	50	25–150	139	40	20–120	94	51	20–120	**40**
Ear	10	36	22–43	9	40	25–48	13	33	30–60	16	100	27–129	5	70	70–200	**36**
Other	20	139	35–289	14	63	22–182	9	228	80–1,000	2	250	225–275	4	87	23–225	**139**
Not available				2	48	31-63										

DATA NOTES
One study covering the condition Emergency Medicine, involving 3,600 participants, was excluded from the analysis because a median value was not possible.
'Other' refers to conditions of unknown or disputed aetiology, or research that does not fit into any of the health conditions listed.
Refer to Table 23 for additional data notes.

3.3 PARTICIPANT RECRUITMENT BY SEX

The majority (88%) of registered Australian clinical trials have recruited both male and female participants. Trials recruiting only women have fallen slightly as a proportion registered each year, from around 10% in 2006–2009, to around 6% since 2018. Trials recruiting only men have marginally increased from 3% in 2006 to 5% in 2020, as have trials recruiting both women and men (from 86% to 89%). It should be noted that these data only describe participant eligibility and are not representative of the actual participation rate for each gender.

Figure 35: Trends in the recruitment of participants by sex for registered Australian clinical trials, 2006–2020

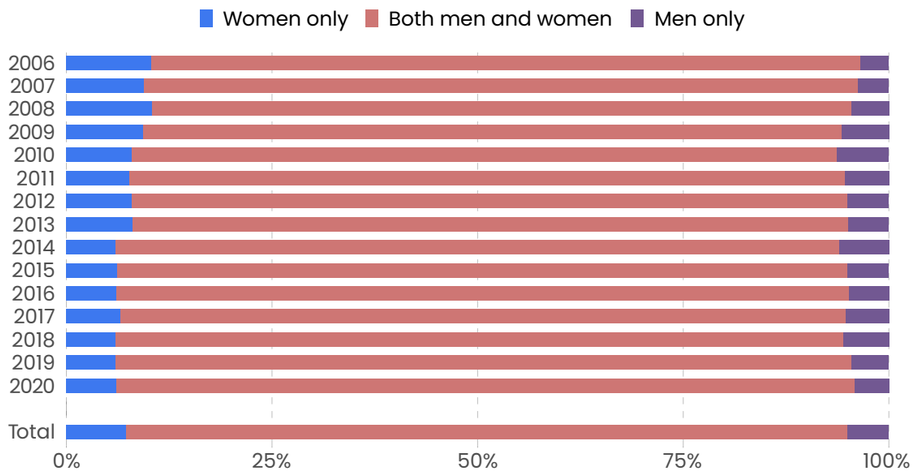


Table 29: Number and proportion of Australian clinical trials registered each year, 2006–2020 by eligible sex

	Women only		Both men and women		Men only	
	No. trials	Proportion	No. trials	Proportion	No. trials	Proportion
2006	75	10.3%	625	86.2%	25	3.4%
2007	71	9.4%	656	86.9%	28	3.7%
2008	87	10.4%	712	85.1%	38	4.5%
2009	103	9.4%	930	84.9%	63	5.7%
2010	81	8.0%	870	85.7%	64	6.3%
2011	89	7.7%	1,011	87.0%	62	5.3%
2012	95	7.9%	1,043	87.1%	60	5.0%
2013	103	8.0%	1,114	87.0%	63	4.9%
2014	72	6.0%	1,062	88.0%	73	6.0%
2015	84	6.2%	1,209	88.8%	68	5.0%
2016	90	6.1%	1,322	89.1%	72	4.9%
2017	102	6.6%	1,359	88.1%	81	5.3%
2018	108	6.0%	1,598	88.5%	100	5.5%
2019	98	6.0%	1,463	89.5%	74	4.5%
2020	82	6.1%	1,211	89.8%	56	4.2%
Total	**1,340**	**7.3%**	**16,185**	**87.7%**	**927**	**5.0%**

DATA NOTES
Selecting sex of eligible participants for a trial is mandatory for both the ANZCTR and ClinicalTrials.gov. However, there is 1 trial record registered on the ANZCTR with missing values for eligible sex.

3.4 PARTICIPANT ALLOCATION METHOD: RANDOMISED OR NOT

In a randomised controlled trial, subjects are allocated randomly to either the intervention or the control group. A non-randomised trial is one in which subjects are allocated deliberately, or not at random; this term may also apply to a single-arm trial with no comparator / control arm.

Approximately 78% of Australian clinical trials registered each year are randomised controlled trials.

The proportion of randomised controlled trials registered each year has gradually declined, from 81% in 2006 to 69% in 2020. Overall, there appears to be little difference between the proportion of drug and non-drug trials using random allocation from 2006 to 2020.

Figure 36: Trends in randomised control trials as a proportion of total trials (where allocation method has been specified), for drug and non-drug trials, 2006–2020

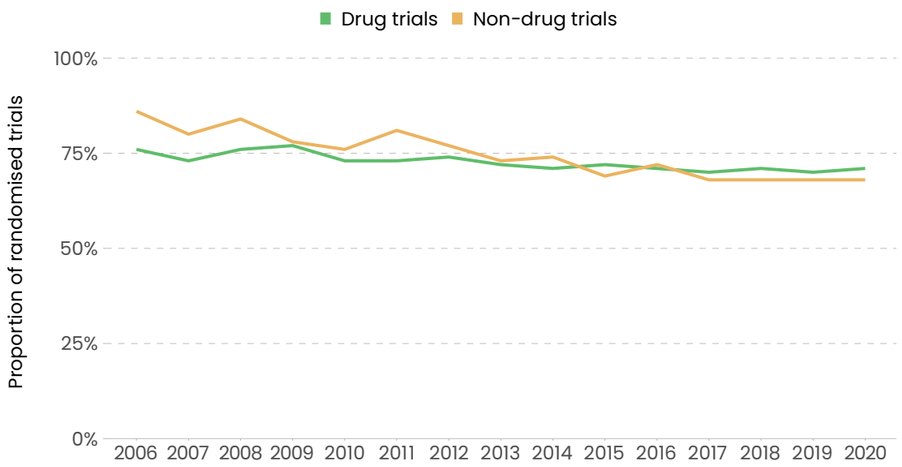


Table 30: Number of Australian drug trials and non-drug trials registered each year, 2006–2020, by participant allocation method

	Drug trials			Non-drug trials		
	Randomised	Non-randomised	Not Specified	Randomised	Non-randomised	Not Specified
2006	315	74	23	267	44	0
2007	299	73	35	279	61	9
2008	346	58	50	323	53	7
2009	401	87	31	449	110	18
2010	378	86	55	377	98	21
2011	378	98	43	520	103	20
2012	378	89	44	526	120	41
2013	401	109	45	530	168	27
2014	363	83	65	515	149	32
2015	430	103	61	533	198	36
2016	416	109	59	643	222	34
2017	458	121	77	598	241	46
2018	554	141	82	703	299	27
2019	485	135	69	640	274	32
2020	412	125	46	523	214	29
Total	**6,014 (80%)**	**1,491 (20%)**	**785**	**7,426 (76%)**	**2,354 (24%)**	**379**

DATA NOTES
The allocation method field is mandatory on the ANZCTR but optional for ClinicalTrials.gov; a total of 785 drug trials and 370 non-drug trials registered on ClinicalTrials.gov provided no information on participant allocation (listed as 'Not specified'). Four trials have not stipulated treatment intervention and are unable to be classed as drug or non-drug trials.
Proportions are of trials where allocation method has been specified (a total of 7,505 drug trials and 9,780 non-drug trials).

3.5 INTERVENTION ASSIGNMENT METHOD

This indicator reflects the way interventions are assigned to trial participants. The main methods are:

- **Single group** assignment, where all participants receive the same intervention. This is the second most common method, accounting for 18% of trials.
- **Parallel** assignment, where different groups of participants receive different interventions during the same time period. This is the most common assignment method for registered Australian clinical trials, used by 66% of those specifying a method.

Less common assignment methods, which together account for 16% of trials specifying a method, are:

- **Crossover** assignment, where participants receive all interventions, one at a time and in either a random or non-random sequence.
- **Factorial** assignment, where participants are randomly allocated to receive two or more interventions, either in combination, each intervention alone or no intervention.
- **Other methods,** for example sequential cohort dose escalation trials and stepped wedge cluster trials.

The proportion of interventional studies by assignment type has changed only slightly over the 15 years 2006–2020. The proportion of parallel assignment in trials has slightly decreased from 71% in 2006 to 57% in 2020, albeit absolute numbers have increased from 512 in 2006 to 771 in 2020 due to an overall increase in trial registrations.

In the last 5 years, the proportion of trials using other methods such as sequential dose escalation trials and stepped wedge cluster trials has increased from 1–5% (before 2016) to 8–10% in recent years. The proportion of trials using crossover and factorial assignment methods has been consistent over time.

Figure 37: Trends in methods of assigning interventions to participants for registered Australian clinical trials, 2006–2020

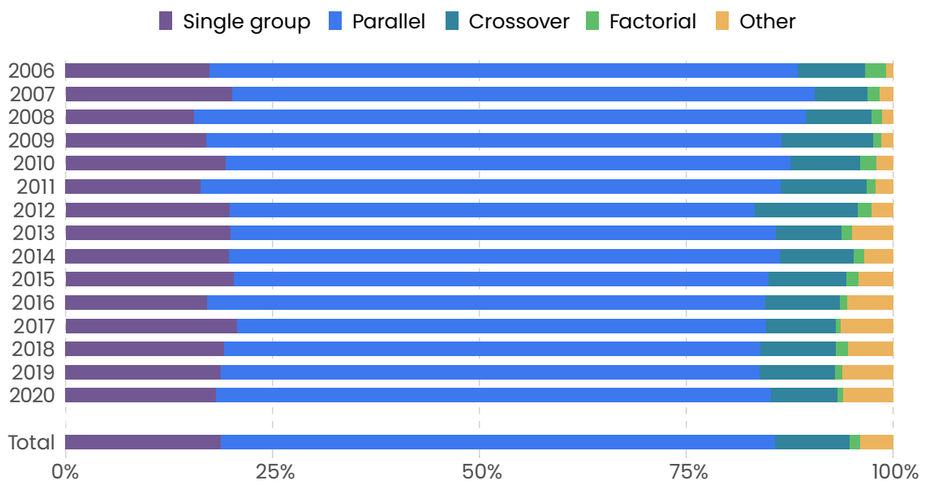


Table 31: Number of Australian clinical trials registered each year, 2006–2020, by assignment method

	Single group	Parallel	Crossover	Factorial	Other	Not specified
2006	125	512	59	18	7	4
2007	149	520	47	11	14	15
2008	125	598	64	10	12	28
2009	169	689	109	10	15	104
2010	181	636	79	18	21	80
2011	179	771	114	12	24	62
2012	225	718	141	19	31	64
2013	233	770	93	14	60	110
2014	217	728	98	14	42	108
2015	254	807	118	18	58	106
2016	230	909	121	13	83	128
2017	288	888	118	7	130	111
2018	305	1,033	145	25	142	156
2019	268	930	130	14	137	156
2020	210	771	93	8	140	127
Total	**3,158 (18%)**	**11,280 (66%)**	**1,529 (9%)**	**211 (1%)**	**916 (5%)**	**1,359**

DATA NOTES
Specifying which assignment method is used is optional for both the ANZCTR and ClinicalTrials.gov. A total of 1,359 trials did not provide information on assignment; these are listed as 'Not specified'. Proportions are of trials specifying an assignment method (N = 17,094).

PART 4: TRIAL REGISTRATION

Registration of clinical trials on a publicly accessible database such as the ANZCTR is important to improve research transparency, identify research gaps, avoid duplication of research effort, and promote collaboration, as well as to facilitate trial participation.

Registration should be completed prospectively—before enrolment of the first participant. Prospective registration aims to mitigate bias, specifically to prevent selective reporting and publication bias. The ICMJE has mandated prospective registration for clinical trials as a requirement since 2005, consequently prospective registration is required for publication in many journals.

The ICMJE outlined in 2017 that clinical trials must include a data sharing plan as part of the trial registration process. The WHO supported the ICMJE's requirement, and since 2018, the ANZCTR requires a data sharing statement before a trial can be registered. Also, it is now mandatory to indicate where trial data have been published at the time of updating trial registration details to 'completed' or 'stopped early'.

DATA NOTES
This section specifically uses data on Australian clinical trials registered on the ANZCTR only.
Equivalent analyses are not possible for ClinicalTrials.gov as this registry only collects data on the month, not the specific date that recruitment starts.
'Year' refers to year of trial registration.

4.1 KEY FINDINGS

From 2006 to 2020:

- The proportion of Australian studies registered prospectively (i.e. before enrolment of the first participant) on the ANZCTR each year has increased from 48% in 2006 to around 80% in recent years.
- For prospectively registered studies, the median number of days between trial registration and start of enrolment ranges from 21 to 78 days. For retrospectively registered trials, the median time between start of enrolment and registration ranges from 108 to 326 days.
- Among the trials registered prospectively, 82% had ethics approval at the time of registration.

What is new since 2016?

- Prospective trial registration has continued to increase from 70% in 2016 to 77% in 2017 and plateaued since with 78% in 2020.
- Since the introduction of data sharing statements in October 2018, 23% of trials indicate that they intend to share individual participant data of their trial after trial completion.

4.2 PROSPECTIVE VERSUS RETROSPECTIVE REGISTRATION ON THE ANZCTR

Studies can be registered on the ANZCTR regardless of whether recruitment has not yet started, is ongoing, or has already been completed.

Prospective registration means the registration process is complete and a registration number has been allocated before the first participant is enrolled. Prospective registration is encouraged by numerous organisations nationally and internationally. For example, the ICMJE declared that from 1 July 2005, they would not consider a trial for publication without evidence that it had been registered on a publicly accessible trials registry prior to enrolment of the first participant (i.e. prospectively)[26]. The Declaration of Helsinki and NHMRC's updated National Statement on Ethical Conduct in Human Research now explicitly state that 'researchers must register the project as a clinical trial on a publicly accessible register complying with international standards (...) before the recruitment of the first participant'[27,28].

The proportion of Australian studies registered prospectively on the ANZCTR each year increased from 48% in 2006 to 70% in 2012 and has plateaued at around 80% in recent years since 2017.

Table 32: Number and proportion of Australian clinical trials registered with ANZCTR 2006–2020, by prospective versus retrospective registration

	Prospectively registered		Retrospectively registered		
	No. trials	Proportion	No. trials	Proportion	No. trials
2006	174	48%	189	52%	363
2007	200	50%	198	50%	398
2008	233	53%	210	47%	443
2009	339	47%	387	53%	726
2010	343	55%	281	45%	624
2011	468	60%	306	40%	774
2012	560	70%	240	30%	800
2013	574	69%	259	31%	833
2014	568	73%	211	27%	779
2015	573	65%	310	35%	883
2016	726	70%	306	30%	1,032
2017	797	77%	234	23%	1,031
2018	1,016	80%	249	20%	1,265
2019	918	80%	230	20%	1,148
2020	721	78%	203	22%	924
Total	**8,210**	**68%**	**3,813**	**32%**	**12,023**

DATA NOTES
A trial is considered 'Prospectively registered' when the trial has completed the registration process prior to commencement of participant enrolment.
Prospective / retrospective registration is determined using the date of registration and the date of first participants enrolment. Where the actual date of first participant enrolment is not available, the anticipated date of first participant enrolment is used instead.
Two (2) trials completed registration but were withdrawn and did not stipulate the anticipated or actual date of participant enrolment and thus are excluded from this analysis.

4.3 TIME BETWEEN REGISTRATION AND PARTICIPANT ENROLMENT

For prospectively registered studies, the median number of days between trial registration and start of participant enrolment has remained around 50 days since 2007. In 2020, this interval shortened mainly due to external factors extending processing times of registration records.

For trials registering retrospectively, the median time between start of enrolment and registration was 167 days for 2006–2020.

Figure 38: Trends in the median number of days between trial registration and enrolment of the first participant, for Australian trials registered 2006–2020

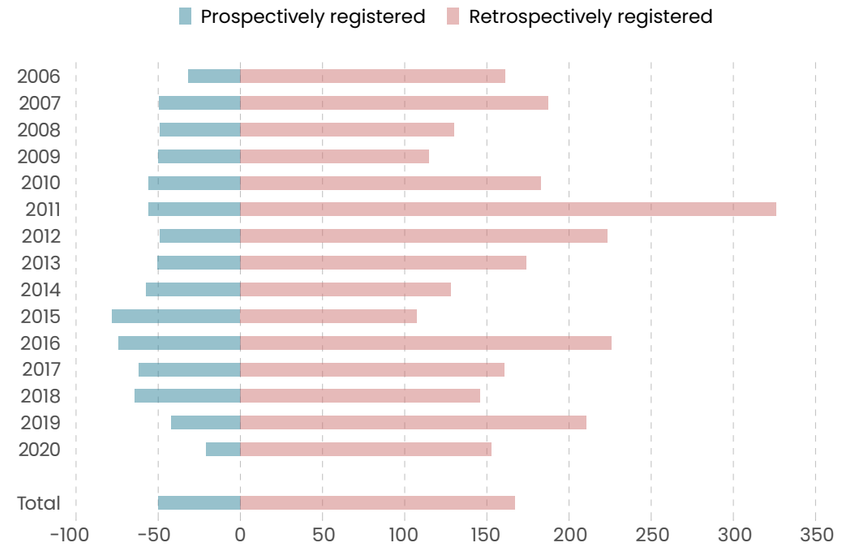


Table 33: Median number of days between registration on the ANZCTR and enrolment of the first participant, for prospectively and retrospectively registered Australian clinical trials, 2006–2020

	Prospectively registered trials	Retrospectively registered trials
2006	32	161
2007	50	188
2008	49	130
2009	50	115
2010	56	183
2011	56	326
2012	49	224
2013	51	174
2014	58	128
2015	78	108
2016	75	226
2017	62	161
2018	65	146
2019	42	211
2020	21	153
Total	**50**	**167**

Refer to Tables 32 for data notes.

4.4 ETHICS APPROVAL STATUS

Ethics approval is not specifically required at the time of registration unless recruitment has already commenced. Of the 8,210 trials registered prospectively on the ANZCTR between 2006 and 2020, 82% had ethics approval in place at the time of registration. This proportion has generally hovered between 70 - 90% since 2007, albeit there has been a small overall upward trend, with a peak of 93% in 2017.

Of trials that have commenced recruitment, the vast majority has an approved ethics application status (>99%), whilst 27 trials commenced with not yet approved ethics registration status. Of the trials yet to start recruitment, 38% did not yet have an approved ethics registration status. Since 2015, those trials were only registered provisionally until they obtained ethics approval.

Figure 39: Trends in the proportion of Australian clinical trials registered prospectively with ethics approved at time of registration, 2006–2020

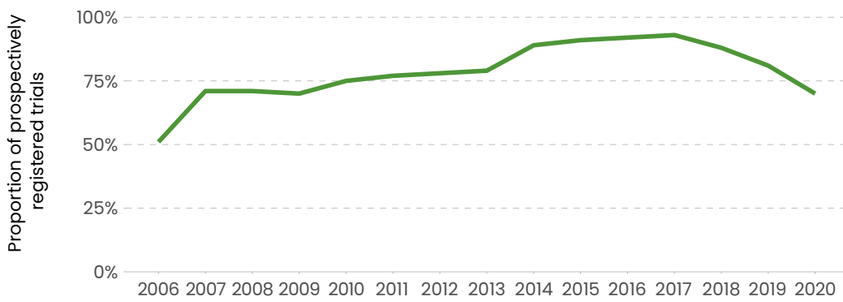


Table 34: Number and proportion of Australian clinical trials registered prospectively on the ANZCTR with ethics approved at registration, 2006–2020

	Prospectively registered trials	Trials with ethics approved	
	No. trials	No. trials	Proportion
2006	174	89	51%
2007	200	142	71%
2008	233	165	71%
2009	339	236	70%
2010	343	258	75%
2011	468	362	77%
2012	560	435	78%
2013	574	454	79%
2014	568	503	89%
2015	573	520	91%
2016	726	668	92%
2017	797	738	93%
2018	1,016	892	88%
2019	918	742	81%
2020	721	507	70%
Total	**8,210**	**6,711**	**82%**

DATA NOTES
Ethics application status is provided by the registrant for each study record at the time of registration and can be updated at any point, for example if the ethics application is approved after allocation of the ANZCTR registration number. No date of ethics approval has been provided for 1499 prospectively registered trials, and thus are excluded from this analysis. Of these 1449 trials, 1113 had not commenced their study and were either planning to submit to ethics or awaiting ethics approval, 5 did not require ethics approval, and 308 had received ethics approval but did not provide an approval date. Of the 308 that had received ethics approval, all were registered prior to 2015, when it was not mandatory to provide the ethics approval date.

Table 35: Ethics approval and recruitment status of Australian clinical trials registered on the ANZCTR 2006–2020

	Recruitment status		Total
Ethics Status	**Commenced**	**Not yet commenced**	**No. trials**
Approved	8,732	1,888	10,620
Not yet approved	27	1,138	1,165
Total	**8,759**	**3,026**	**11,785**

DATA NOTES
Ethics application status is provided by the registrant for each study record at the time of registration and can be updated at any point, for example if the ethics application is approved after allocation of the ANZCTR registration number. Recruitment status is also provided by the registrant and can be updated at any point, though preferably ethical approval must be provided before trial commencement. The 27 trials that began without ethics approval were registered before 2015; in 2015, the ANZCTR implemented logic rules to prevent study investigators stating that a trial had commenced without ethics approval. A total of 240 trials have been excluded from this analysis. Of these 240 trials, 4 did not require ethics approval, 1 did not specify ethics status, and 235 were withdrawn before the recruitment of the first participant.

4.5 DATA SHARING PLANS AT REGISTRATION STAGE

In June 2017, the ICMJE announced that 'clinical trials that begin enrolling participants on or after 1st January 2019 must include a data sharing plan in the trial's registration'[29]. The WHO followed soon after and added that a data sharing plan must be an item collected by primary registries by the end of 2019.

The ANZCTR has requested data sharing plans for all new trials being registered since late October 2018 and 23% of trials (485 of 2143) have indicated their intention to share individual participant data (IPD) at some point after trial completion. Some reasons for the low level of support include concerns of not having the right consent from participants or insufficient resources to process data requests. Of those trials that intend to share IPD, most declared that they were unlikely to provide supportive documentation about the trial. If documents were to be made available, these would include study protocols, and ethics and consent forms.

Table 36: Number and proportion of Australian clinical trials registered, 2006–2020 by anticipated IPD availability

Will IPD be available?	No. trials	Proportion
Yes	485	23%
No	1,658	77%

DATA NOTES
Data sharing plans only became a field on the ANZCTR in October 2018. Only trials registered after this date, or those that have performed updates, have provided information for these data fields.

Table 37: Number and proportion of Australian clinical trials registered, 2006–2020 by type of provided

	Trials	
What supporting documents will be available?	**No. trials**	**Proportion**
No other documents available	1,456	50%
Study protocol	454	16%
Ethical approval	433	15%
Informed consent form	335	12%
Statistical analysis plan	93	3%
Clinical study report	72	2%
Analytic code	16	<1%
Other	44	2%

DATA NOTE
The total count of trials listing a document type is higher than the total number of trials because trialists can provide more than one document for each trial.
This field was added to the ANZCTR in October 2018. Specifying the type of supporting documents that are or will be made available is a mandatory field on the ANZCTR, though the registrant can select 'No other documents available' as an option.
If 'Other' is selected, the registrant must specify as free text the type of document that is/will be available.

APPENDICES

APPENDIX 1: TRIAL REGISTRATION IN AUSTRALIA

In Australia the registration of clinical trials on a publicly accessible trial registry is a mandatory condition of ethics approval. Investigators wishing to undertake a clinical trial need to:

- enter data regarding key aspects of their trial on a trial registry (either the ANZCTR or another registry recognised by the World Health Organization [WHO]; see Appendix 2);
- submit an ethics application form (either electronically or in hard copy) to one or more Human Research Ethics Committees (HRECs); and
- (where applicable) submit a Clinical Trial Notification or Exemption (CTN/CTX) form to the Therapeutic Goods Administration (TGA).

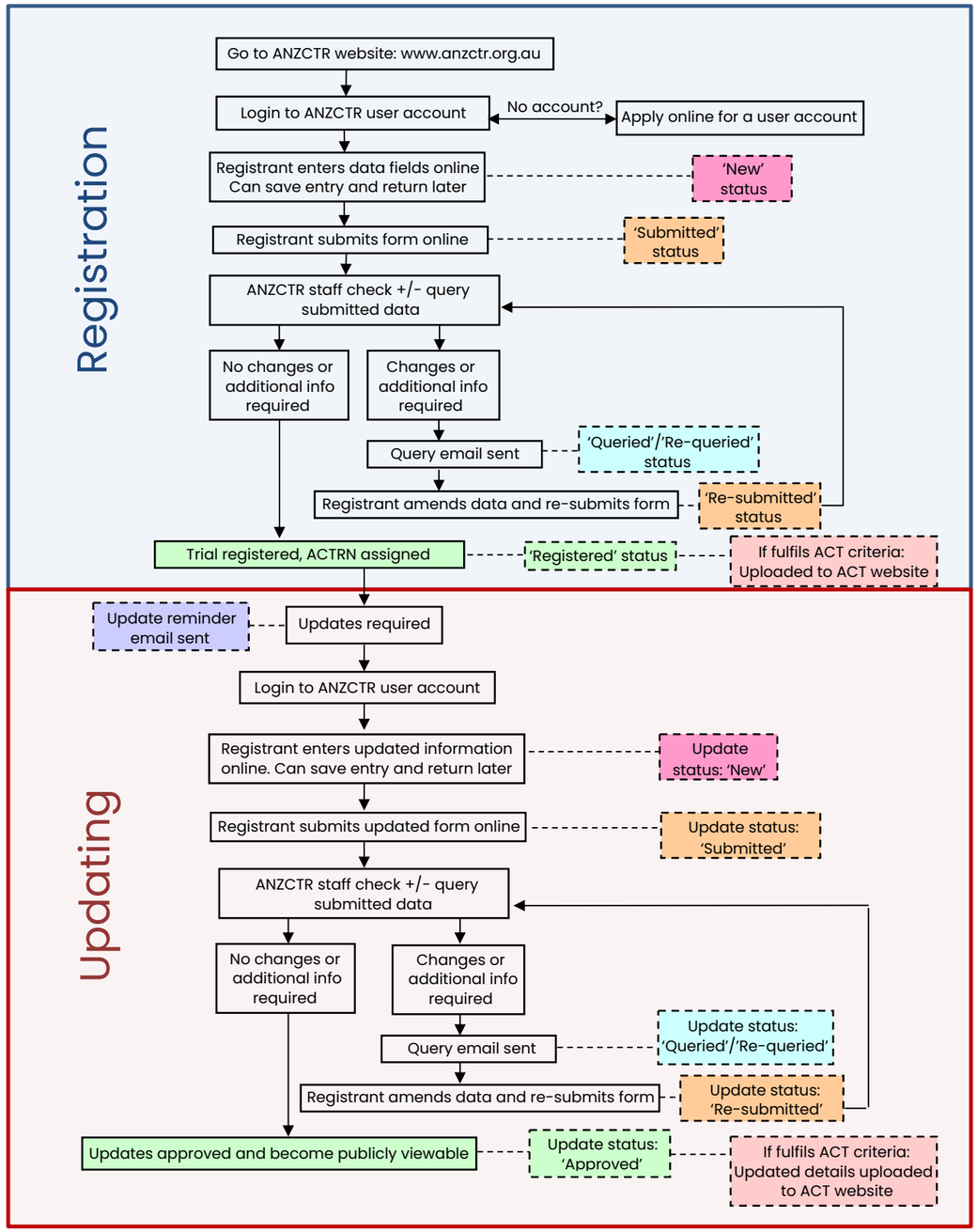
Data entry for these three agencies is currently not fully harmonised nor is data exchanged. Data lodged with the TGA and HRECs are not publicly available.

REGISTRATION WITH THE ANZCTR

Key characteristics of the process of registering and updating a study on the ANZCTR (see Figure 40) include:

- Only the study's primary sponsor or their authorised representative should register the study.
- The study should be registered with the ANZCTR only once and preferably with only one WHO primary registry (see Appendix 2).
- For registrants from a country with a WHO primary registry, the ANZCTR recommends registration with the registry from that country.
- A study can be submitted for registration with the ANZCTR before or after ethics approval has been obtained. If a study is registered before receiving ethics approval, a 'Provisional' watermark label appears on the record.
- All submitted data are checked by ANZCTR staff to ensure all WHO dataset requirements are met before allocation of a registration number. Data are also checked for clarity and consistency, validity, logic and formatting.
- The registrant is responsible for all information provided in the ANZCTR record. Registration on the ANZCTR does not reflect endorsement by the ANZCTR.
- Registration records can be updated at any point, with all changes viewable via a publicly accessible audit trail.

Figure 40. Overview of ANZCTR trial registration and updating processes



ACTRN: Australian Clinical Trials Registry Number
ACT website: Australian Cancer Trials website

ANZCTR ONLINE

The ANZCTR website, at www.anzctr.org.au, offers:

- the ability to search both the ANZCTR and ClinicalTrials.gov registries for Australian studies
- the ability to register a study on the ANZCTR
- a range of summary statistics for the ANZCTR, updated monthly
- links to other registries and data sources.

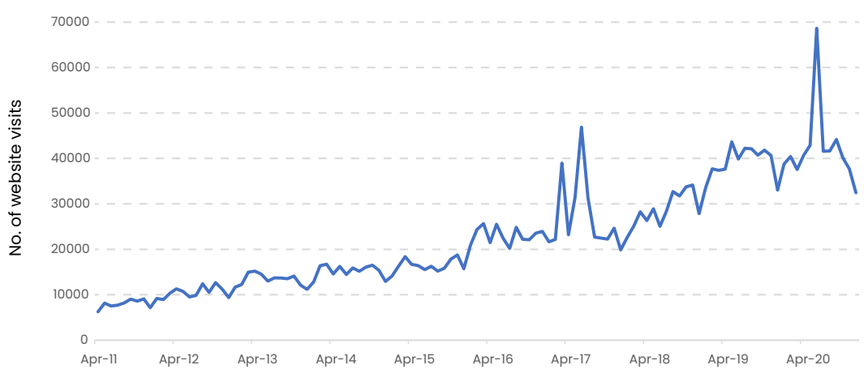
Website usage has been measured using a Google Analytics account since April 2011.

A total of 1,614,477 unique visitors have used the site to 31 December 2020, with an average of 453 visitors per day (for 3,562 days inclusive). There were 10,962,335 page views during this period (approximately 93,695 page views per month), suggesting that approximately six pages were viewed per user.

A total of 2,664,947 sessions (total visits) were recorded during this period, with an average duration of approximately 4 minutes and 30 seconds and four pages viewed per session. A 61.48% 'bounce rate' for these visits indicates the proportion of people who visited a single page before leaving.

Figure 41 shows monthly visits to the ANZCTR website from April 2011 to December 2020 (inclusive). The overall number of monthly visits has progressively increased since monitoring with Google Analytics started, with dips occurring during December / January periods.

Figure 41. Trends in total monthly visits to the ANZCTR website 4 April 2011 to 31 December 2020



Of the visitors to the ANZCTR homepage from 4 April 2011 to 31 December 2020, 85% were new, compared with 15% who had previously accessed the website during this period.

APPENDIX 2: OTHER TRIAL REGISTRIES

WHO-RECOGNISED CLINICAL TRIAL REGISTRIES

The World Health Organization International Clinical Trials Registry Platform (WHO ICTRP) recognises registries as **primary registries** if they fulfil certain criteria with respect to data content, quality and validity, accessibility, unambiguous identification, technical capacity, and administration and governance.

Partner registries meet the same criteria as primary registries in the WHO Registry Network (i.e. for content, quality and validity, etc) except they do not need to:

- have a national or regional remit or the support of government
- be managed by a not-for-profit agency
- be open to all prospective registrants.

For example, they may be limited to trials in a particular condition or intervention.

All partner registries must also be affiliated with either a primary registry in the WHO Registry Network or an ICMJE-approved registry.

Data providers are responsible for a database that is used by one or more registries and provide data to WHO for inclusion in the ICTRP search portal. The ICTRP will accept trial records from data providers if it is satisfied that those trial records have been created and managed in a manner that is consistent with the WHO Registry Criteria.

Table 38: Clinical trial registries in the WHO Registry Network

Name	Status
Australian New Zealand Clinical Trials Registry (ANZCTR)	Primary registry, Data provider
Brazilian Clinical Trials Registry (ReBec)	Primary registry, Data provider
Chinese Clinical Trial Registry (ChiCTR)	Primary registry, Data provider
Clinical Research Information Service (CRiS), Republic of Korea	Primary registry, Data provider
Clinical Trials Registry—India (CTRI)	Primary registry, Data provider
Cuban Public Registry of Clinical Trials (RPCEC)	Primary registry, Data provider
EU Clinical Trials Register (EU-CTR)	Primary registry, Data provider
German Clinical Trials Register (DRKS)	Primary registry, Data provider
Iranian Registry of Clinical Trials (IRCT)	Primary registry, Data provider
ISRCTN	Primary registry, Data provider
Japan Primary Registries Network (JPRN)	Primary registry, Data provider
Lebanese Clinical Trials Registry (LBCTR)	Primary registry, Data provider
Pan African Clinical Trials Registry (PACTR)	Primary registry, Data provider
Peruvian Clinical Trials Registry (REPEC)	Primary registry, Data provider
Sri Lanka Clinical Trials Registry (SLCTR)	Primary registry, Data provider
Thai Clinical Trials Registry (TCTR)	Primary registry, Data provider
The Netherlands National Trial Register (NTR)	Primary registry, Data provider
Centre for Clinical Trials, Clinical Trials Registry—Chinese University of Hong Kong. Affiliated registry: ChiCTR	Partner registry
The Acupuncture-Moxibustion Clinical Trial Registry (AMCTR) Beijing Affiliated registry: ChiCTR	Partner registry
ClinicalTrials.gov	Data provider

REGISTRATION OF STUDIES WITH AUSTRALIAN RECRUITMENT SITES IN OTHER REGISTRIES

The majority of registered studies recruiting in Australia are registered on the ANZCTR (approximately 62%) or ClinicalTrials.gov (approximately 34%). Only around 4% of all registered studies recruiting in Australia are registered on other WHO primary registries.

Some studies counted are registered on multiple registries and are thus duplicated in Table 39. The number of studies registered on both the ANZCTR and ClinicalTrials.gov is estimated to be approximately 253 as at December 2020, although this may be an underestimate as confirmed duplicates are only possible when a study cross-references both registration identification numbers in the records of both registries.

Table 39: Number of Australian studies registered on different clinical trial registries, as of 31 December 2020

Registry	Status
ANZCTR	14,467
ClinicalTrials.gov	7,893
ISRCTN	383
German CTR (DRKS)	288
EU-CTR	168
Sri Lanka CTR (SLCTR)	0
Brazilian CTR (ReBec)	0
Japan Primary Registries Network (JPRN)	13
Lebanese Clinical Trials Registry (LBCTR)*	–

Registry	Status
Chinese CTR (ChiCTR)	5
Clinical Research Information Service (CRiS), Republic of Korea	0
Clinical Trials Registry—India (CTRI)	11
Cuban Public Registry of Clinical Trials (RPCEC)	0
Iranian Registry of Clinical Trials (IRCT)	0
The Netherlands National Trial Register (NTR)	16
Pan African Clinical Trials Register (PACTR)	0
Thai Clinical Trials Registry (TCTR)	0
Peruvian Clinical Trials Registry (REPEC)	0

Registry search not available on date of search at 12/04/2021, shown with an asterisk (*).

APPENDIX 3: ANZCTR / CLINICALTRIALS.GOV MAPPING TABLES

STUDY TYPE

ANZCTR	ClinicalTrials.gov	Display as...
Interventional	Interventional Expanded access	Interventional
Observational	Observational	Observational

PURPOSE OF THE STUDY / PRIMARY PURPOSE

ANZCTR	ClinicalTrials.gov	Display as...
Treatment	Treatment	Treatment
Prevention	Prevention	Prevention
Diagnosis	Diagnostic	Diagnosis
Educational / counselling / training	Educational / counselling / training (available only in 2006)	Education al / counselling / training
-	Basic science Device feasibility Health services research Screening Supportive care	Other

INTERVENTION CODE / INTERVENTION TYPE

ANZCTR	ClinicalTrials.gov	Display as...
Diagnosis / prognosis	Diagnosis / prognosis	Diagnosis / prognosis
Early detection / screening	-	Early detection / screening
Prevention	-	Prevention
Treatment: Drugs	Treatment: Drugs	Treatment: Drugs
Treatment: Devices	Treatment: Devices	Treatment: Devices
Treatment: Surgery	Treatment: Surgery	Treatment: Surgery
Treatment: Other	Treatment: Other	Treatment: Other
Lifestyle	-	Lifestyle
Behaviour	Behaviour	Behaviour
Rehabilitation	-	Rehabilitation
Other interventions	Other interventions Combination product	Other interventions
None / not applicable	-	None / not applicable

PHASE / STUDY PHASE

ANZCTR	ClinicalTrials.gov	Display as...
Not applicable	Not applicable	Diagnosis / prognosis
Phase 0	Phase 0	Phase 0
Phase 1 Phase 1 / 2	Phase 1 Phase 1 / 2	Phase 1
Phase 2 Phase 2 / 3	Phase 2 Phase 2 / 3	Phase 2
Phase 3 Phase 3 / 4	Phase 3	Phase 3
Phase 4	Phase 4	Phase 4

PRIMARY SPONSOR TYPE / LEAD SPONSOR

ANZCTR	ClinicalTrials.gov	Display as...
Government body	NIH Other US federal agency	Government body
Hospital	-	Hospital
University	-	University
Commercial sector / industry	Industry	Commercial sector / industry
Charities / societies / foundations	-	Charities / societies / foundations
Other collaborative groups	-	Collaborative groups
Individual	-	Individual
Other	All others (individuals, universities, organisations)	Other

ASSIGNMENT / INTERVENTION MODEL

ANZCTR	ClinicalTrials.gov	Display as...
Single group	Single group	Single group
Parallel	Parallel	Parallel
Crossover	Crossover	Crossover
Factorial	Factorial	Factorial
Other	-	Other
None	Not applicable	Not specified

AIHW BURDEN OF DISEASE AREAS / ANZCTR CONDITION CATEGORIES AND CONDITION CODES

ANZCTR	ANZCTR Condition Code	AIHW Burden of Disease Areas	Display as...
Cancer		Cancer and other neoplasms	Cancer
Cardiovascular Stroke		Cardiovascular diseases	Cardiovascular
Musculoskeletal Inflammatory and Immune System	Rheumatoid arthritis	Musculoskeletal conditions	Musculoskeletal
Mental Health		Mental health and substance abuse disorders	Mental health
Injuries and Accidents Mental Health	Suicide	Injury	Injuries and accidents
Respiratory		Respiratory diseases (incl. asthma)	Respiratory
Neurological		Neurological (incl. dementia)	Neurological
Metabolic and Endocrine	Diabetes Thyroid disease Other endocrine disorders	Endocrine disorders	Endocrine
Ear Eye		Hearing and vision disorders	Hearing and vision
Infection		Infectious disease	Infection
Skin		Skin disorders	Skin

For all other fields direct matching was possible and no mapping was required.

APPENDIX 4: ANZCTR DATA FIELD DEFINITIONS

This document includes the definitions and explanation of the data fields to be completed when submitting a record for registration on the ANZCTR. The information requested is based on the definitions and set requirements for trial registration from the ICMJE and World Health Organization (WHO) Trial Registration Data Set[30].

Mandatory data items for trial registration with the ANZCTR are marked in BOLD and with an asterisk (*).

Data Item	Definition / Explanation
Step 1: Titles and IDs	
Public title*	The public title of the study is intended for the lay public and should be in easily understood language. An informative public title should include at least two of the following components: participants, intervention / exposure, and main outcome of the study. Acronyms should be defined at first use. This field will be displayed on the main search page of the WHO ICTRP Search Portal.
Scientific title*	The scientific title is intended for use in grant and ethics applications. It should contain information on the participants in the study, the intervention(s) / exposure(s) and the primary outcome(s) to be assessed.
Secondary IDs*	Identifying numbers issued by authorities other than the ANZCTR if any. This includes: • Trial registration numbers issued by other registries (both Primary and Partner Registries in the WHO Registry Network, and other registries) • Identifiers assigned by the sponsor (record sponsor name and sponsor-issued trial number (e.g. protocol number)) • Identifiers issued by funding bodies, collaborative research groups, etc. • This does not include ethics identification numbers. These should be provided in the relevant Ethics section in Step 9. All secondary identifiers will have two elements: an identifier for the issuing authority (e.g. NCT, ISRCTN) plus a number. It is possible that the trial may not have a secondary ID. Please include the text 'Nil known' if you do not know of any secondary IDs. Enter only **one** secondary ID and issuing authority per box. Click 'Add new secondary ID' to add more boxes if necessary. There is no limit to the number of Secondary ID entries (boxes) that can be added.
UTN	The Universal Trial Number (UTN) is a unique number which aims to facilitate the unambiguous identification of clinical trials registered in primary registries in the WHO Registry Network and displayed on the WHO ICTRP Search Portal. A UTN should be obtained from http://apps.who.int/trialsearch/utn.aspx early in the history of a trial and should be used every time the trial is identified.
Trial acronym	A trial acronym is a word formed from the initial letters of the several words in the name, which identifies the specific trial, e.g. ACT (Angioplasty Compliance Trial). If there is no trial acronym then please leave this field blank.
Linked study record	If this trial is linked to a parent study, sub-study or follow-up study then please provide the identifying number (or citation if no identifying number available) for the linked study.
Step 2: Health condition	
Health condition(s) or problem(s) studied*	Primary health condition(s) or problem(s) studied (e.g. depression, breast cancer, medication error). For studies conducted in healthy volunteers, enter the health area under investigation and / or the health condition(s) for which the intervention may be indicated and / or the health condition(s) being prevented. Enter only **one** health condition or problem per box. Click 'Add new health condition' to add more boxes. The form allows a maximum of 20 entries (boxes).
Condition category and condition code*	Choose the most appropriate condition category (1st level) and condition code (2nd level) from the list. **Note:** the full list is available at the end of this document. Click 'Add new condition category / code' to add more boxes if necessary. The form allows a maximum of 10 sets of entries.

Data Item	Definition / Explanation
Step 3: Intervention / Exposure	
Study type*	Choose the appropriate study type from the list. Interventional: Any research study that prospectively assigns human participants or groups of humans to one or more health-related interventions to evaluate the effect on outcomes. Interventions include, but are not restricted to, drugs, cells and other biological products, surgical procedures, radiologic procedures, devices, behavioural approaches, process-of-care changes, preventive care, diagnostic procedures. Observational: A study in which no experimental intervention or treatment is applied. The investigator observes the effect of a risk factor, diagnostic test, or treatment on a particular outcome, e.g. the relationship between smoking and heart attacks. It involves observing without altering or influencing that which is being observed. For example, in an observational study the researchers examine and report on what is happening, without controlling the course of events. Certain outcomes are measured but no attempt is made to affect the outcome (i.e. no treatment or experimental intervention is given)
Patient registry (Only available when **Observational** is selected for **'Study type'** in Step 3)	For observational studies only, check the 'Patient registry' box if this record describes a study that is considered to be a patient registry. A patient registry is an organised system that uses observational methods to collect uniform data (clinical and other) prospectively for a population defined by a particular disorder / disease, condition (including susceptibility to a disorder), or exposure (including products, health care services, and / or procedures) and that serves a predetermined scientific, clinical, or policy purpose. Patient registries may be single purpose or ongoing data collection programs that address one or more questions..
Target follow-up duration (Only available when **patient registry** is selected in Step 3)	For patient registries, the anticipated time period over which each participant is to be followed. Provide a number and select a unit of time (weeks, months, years).
Description of intervention(s) / exposure*	Describe the specific intervention(s) being studied. Please provide sufficient detail so that information will be meaningful to ANZCTR users (refer to TIDieR checklist [31]). **Brief name:** Provide the name or a phrase that describes the intervention. If there are multiple intervention arms, please label with subheadings (e.g. Arm 1, Arm 2, etc.). Note: there is a separate field below for details of comparator / control treatment(s). Intervention names should be consistent throughout the form. Avoid using alternative intervention names for clarity. For drug trials: Provide the International Non-proprietary Name (INN) of each drug (not brand / trade names). For an unregistered drug, the generic name, chemical name, or company serial number is acceptable. For each intervention drug, please also specify: - the **dose** administered, e.g. 5mg once daily; - the **duration** of administration, e.g. 4 weeks; - the **mode** of administration, e.g. oral tablet, intravenous infusion. For non-drug trials: For each intervention, briefly describe: - any physical or informational **materials** that will be used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers; - each of the **procedures**, activities, and / or processes used, including any enabling or support activities; - **who** will deliver the intervention and if relevant, their expertise, e.g. dietician with minimum 5 years' experience; - the **mode of delivery** (such as face to face or by some other mechanism, e.g. internet or telephone) and whether it will be provided individually or in a group; - the **number of times** the intervention will be delivered and over what period of time including the number of sessions, their schedule, and their **duration, intensity, or dose**; e.g. 8 x 1 hour sessions, once / week for 8 weeks, then once / month for 4 months. - the **location** where the intervention occurs, e.g. urban antenatal clinic, participant's home, high school, etc. For all trials: If the intervention is planned to be **personalised**, titrated or adapted to individuals or groups of individuals in the intervention arm, then describe what, why, when, and how this will occur. If intervention **adherence** or fidelity will be assessed, describe how and by whom, and if any strategies will be used to maintain or improve fidelity, describe them. For observational studies: Provide a brief description of the condition observed and / or the exposure. The duration of observation must also be described.

Data Item	Definition / Explanation
Intervention code*	Choose the most appropriate intervention code(s) from the list. The form allows a maximum of three entries. Click 'Add new intervention code' to add more boxes. Note that only the first three codes are available for observational studies. Not applicable: study in which no experimental intervention or treatment is applied. This selection is not available for interventional studies. Diagnosis/prognosis: study designed to evaluate one or more tests aimed at identifying a disease or health condition, or determining a patient's prognosis. Early detection/screening: study that involves the systematic examination of a group of participants, in order to separate well persons from those who have an undiagnosed pathologic condition or who are at high risk. It could also refer to the initial evaluation of an individual, intended to determine suitability for a particular treatment modality or to detect specific markers or characteristics that may require further investigation. Prevention: study designed to assess one or more interventions aimed at preventing the development of a specific disease or health condition. Treatment: Drugs: study designed to assess the effect(s) of one or more chemical or biological agents including vaccines. Treatment: Surgery: study designed to assess the effect(s) of one or more manual or operative surgical techniques, whether in the fields of cosmetic, elective, experimental, plastic, or replacement surgery (performed to diagnose, treat, or prevent disease or other abnormal conditions). Treatment: Devices: study designed to evaluate the use of any physical item used in medical treatment whether it be an instrument, piece of equipment, machine, apparatus, appliance, material or other article, and whether it is used alone or in combination with the intention of preventing, diagnosing, treating, and curing a disease or condition. Examples include: artificial limbs, contact lenses, ventilators, catheters, implants, vibration therapy machines. Treatment: Other: studies that do not fall under the broad definitions of drug, surgical, or device trials. Examples include interventions such as exercise, physiotherapy, cognitive therapy, special diets, herbal medicines, web-based treatments, motivational classes, music therapy, stem cell interventions. Rehabilitation: studies designed to evaluate one or more interventions which aim to restore the physical or mental health, function and quality of life in participants who have had or are currently suffering from an illness or injury. Rehabilitation may be performed through physical therapy (e.g. physiotherapy, chiropractic) and/or education (e.g. diet and exercise advice/counselling). Lifestyle: studies designed to investigate the effect of interventions which relate to a way of life or style of living. Interventions may aim to alter the attitudes, habits and values of a person or group, and how these participants cope with their physical, psychological, social, and economic environments on a day-to-day basis. Examples include diet and nutrition plans, exercise or physical activity programs, quit smoking programs. Behaviour: studies designed to assess the effect of interventions which aim to elicit or modify mental or physical actions, responses or conduct in a person or group. Examples of behavioural interventions include cognitive behavioural therapy, exercise behaviour interventions, and breast feeding behavioural interventions. Other interventions: studies that do not fit under any of the above categories. This should only be selected when no other options are adequate. Examples include prayer, singing, driving.
Comparator / control treatment*	For controlled trials, the identity of the comparator / control arm should be clear. The comparator / control(s) is / are the treatments against which the study intervention is being compared (e.g. place-bo, no treatment, active control). If an active control is used, be sure to provide the specific name of the treatment. For each comparator / control treatment, describe the details as applicable, following the TIDieR Checklist (e.g. dose, dura-tion, mode of administration, etc). If the study is uncontrolled then please enter the text 'No control group' or similar.
Control group*	A 'control' group is the type of treatment to which the intervention is being compared, also known as a 'comparator' group. Choose the most appropriate description of the study's control group from the list. Placebo: an inactive or sham treatment that has no treatment value is given to the control group, such as sugar pill or saline solution. Active: when the control treatment is active. This includes standard care, alternate forms of treatment, no treatment given, or if patients act as their own control (crossover study). Uncontrolled: when there is no control group, as in single group tri-als. The same intervention is applied to all subjects in the study. Historical: a group of people who received their care in the past, i.e. not at the same time as the people receiving the intervention. This selection is not applicable for randomised controlled trials. The source and time period that historical data was collected needs to be described in the 'Comparator / control treatment' field. Dose comparison: the comparator group receives the same treatment as the intervention group, but in a different dose.

Data Item	Definition / Explanation
Step 4: Outcomes	
Primary outcome(s) and timepoint(s)*	Primary outcome(s) is the outcome(s) which provides the primary measure of the effectiveness (or lack of effectiveness) of the intervention. In many studies, more than one variable is used as a primary outcome measure. The primary outcome should be the outcome used in sample size calculations, or the main outcome(s) used to determine the effect of the intervention(s). Provide specific names of all primary outcomes, one at a time, e.g. '% with Beck depression score > 10' rather than just 'depression'. All outcomes should be provided in an objective form without indicating suspected or hypothesised results, e.g. 'Change in blood glucose' or 'proportion of participants with a reduction in blood glucose' rather than 'reduced blood glucose'. Instrument(s) to be used for the assessment / measurement need to be included / described, e.g. serum assay, MRI scan, 100mm visual analogue scale. If a questionnaire is used, the name of the questionnaire should be provided (if validated) or indicate whether it was designed specifically for the study. For adverse events provide examples of known / possible adverse reactions / events and how they will be assessed. For each outcome provide all timepoints at which it is assessed in the 'Timepoint' box. Timepoints should be specific, for example '7 days post commencement of intervention' rather than just '7 days'. For primary outcomes assessed at multiple timepoints, please also specify the primary timepoint, if applicable, e.g. '1 hour, 3 hours (primary timepoint) and 6 hours post dose'. Enter only **one** primary outcome per box. Click 'Add new primary outcome' to add more boxes if the study has multiple primary outcomes. The form allows a maximum of three sets of entries for the primary outcome and timepoint. Examples: *Primary Outcome 1:* all-cause mortality as assessed by data linkage to medical records *Timepoint:* at one year after randomisation *Primary Outcome 2:* mean Beck depression score *Timepoint:* Baseline, 6 weeks (primary timepoint) and 12 weeks after intervention commencement
Secondary outcome(s) and timepoint(s)*	Secondary outcomes are events, variables, or experiences that are of secondary interest or that are measured at timepoints of secondary interest. A secondary outcome may involve the same event, variable, or experience as the primary outcome, but measured at timepoints other than those of primary interest (e.g. primary outcome: all-cause mortality at 5 years; secondary outcome: all-cause mortality at 1 year, 3 years), or may involve a different event, variable, or experience altogether (e.g. Primary outcome: all-cause mortality at 5 years; Secondary outcome: hospitalisation rate at 5 years). Instrument(s) to be used for the assessment / measurement need to be included / described. For each outcome, also provide all timepoints at which it is assessed in the 'Timepoint' box. Enter only **one** secondary outcome per box. Click 'Add new secondary outcome' to add more boxes if the study has multiple secondary outcomes. The form allows a maximum of 40 sets of entries for the secondary outcome(s) and timepoint(s). If there are no secondary outcomes then enter the text 'Nil'. Examples: *Secondary Outcome 1:* knee pain assessed using a 100mm Visual Analogue Scale (VAS) *Timepoint:* at 6 months after randomisation *Secondary Outcome 2:* quality of life assessed using the SF-36 Quality of Life Questionnaire *Timepoint:* Baseline, and at 4 and 8 weeks after intervention commencement.

Data Item	Definition / Explanation
Step 5: Eligibility	
Key inclusion criteria*	Summary of key inclusion criteria of patient characteristics that determine eligibility for participation in the study.
Minimum age*	Specify minimum age of eligible study participants. Enter the number and choose the appropriate unit from the list. If there is no minimum age limit leave the box for the number blank and select 'No limit' from the unit of measurement list. ☐ Years ☐ Months ☐ Weeks ☐ Days ☐ Hours ☐ No limit
Maximum age*	Specify maximum age of eligible study participants. Enter the number and choose the appropriate unit from the list. If there is no maximum age limit leave the box for the number blank and select 'No limit' from the unit of measurement list. ☐ Years ☐ Months ☐ Weeks ☐ Days ☐ Hours ☐ No limit
Gender*	Choose the appropriate selection for gender of the study's participants. ☐ Males ☐ Females ☐ Both males and females
Can healthy volunteers participate?*	Indicate whether healthy volunteers may participate in this study. Studies where the Inclusion Criteria requires pregnant women or those with any condition, including non-debilitating conditions (e.g. myopia, smoking, etc.), are not considered healthy volunteer studies and should respond 'No' to this question. ☐ Yes ☐ No
Key exclusion criteria*	Summary of key exclusion criteria of patient characteristics that determine eligibility for participation in the study. These should not simply be the opposite of the inclusion criteria.
Step 6: Study design	
Purpose of the study* (Mandatory when **Interventional** is selected for **'Study type'** in Step 3)	Choose the most appropriate purpose of the study from the list. Treatment: study designed to evaluate one or more interventions for treating a disease, syndrome or other health condition(s). Prevention: study designed to assess one or more interventions aimed at preventing the development of a specific disease or health condition. Diagnosis: study designed to evaluate one or more interventions aimed at identifying a disease or health condition. Educational / Counselling / Training: study designed to assess one or more interventions in an educational, counselling or training environment.
Allocation to intervention* (Mandatory when **Interventional** is selected for '**Study type** in Step 3')	Choose the appropriate type of allocation to intervention. Randomised controlled trial means that allocation of subjects into different groups (i.e. intervention and control) was random or by a method based on chance. Non-randomised trial means that allocation of subjects into different groups (i.e. intervention and control) is expressly or deliberately done, and is not random or by chance. Note: Trials with quasi-randomisation allocation procedures such as allocation by hospital record number, birth date or alternate days of the week, do not qualify as a randomised trial. Therefore, these studies should be classified as non-randomised trials.

Data Item	Definition / Explanation
Allocation concealment (Only available when **Interventional** is selected for **'Study type'** in Step 3)	Only applicable for randomised controlled trials. Allocation concealment means that the person who determined if a subject was eligible for inclusion in the trial was unaware, when this decision was made, to which group the subject would be allocated. Allocation was concealed if it was done by, for example: 1. sealed opaque envelopes 2. numbered containers 3. central randomisation by phone / fax / computer 4. allocation involved contacting the holder of the allocation schedule who was off-site or at central administration site. If concealment was not carried out, the text 'Allocation is not concealed' should be stated for this section.
Sequence generation (Only available when **Interventional** is selected for **'Study type'** in Step 3)	Only applicable for randomised controlled trials. This is the method used to create the random order for the allocation of subjects into different groups. Examples of the random order generation include (but are not limited to): 1. Simple randomisation using a randomisation table from a statistic book 2. Simple randomisation using a randomisation table created by computer software (i.e. computerised sequence generation) 3. Simple randomisation using procedures like coin-tossing and dice-rolling 4. Permuted block randomisation 5. Dynamic (adaptive) random allocation methods such as Minimisation If stratified allocation was employed in the study, specify factor(s) used for the stratification. Examples of factors that can be used for stratification include centre, age, gender or previous treatment. Quasi-randomisation allocation procedures or inappropriate randomisation methods such as allocation by hospital record number, birth date or alternate days of the week, do not qualify as a random order generation.
Masking / blinding (Only available when **Interventional** is selected for **'Study type'** in Step 3)	Masking / blinding is when the person in question (participant, therapist / clinician, assessor or data analyst) did not know which group the participant had been allocated to. For trials in which key outcomes are self-reported (e.g. visual analogue scale, pain diary), the assessor is considered to be blinded if the subject was blinded. Open (masking not used): all involved in the study know the identity of the intervention assignment. Participant, therapist / clinician, assessor and data analyst are not blinded. Blinded (masking used): when one or more of the parties (participants, therapist / clinician, assessor or data analyst) is / are blinded or unaware of the intervention assignment. If 'Blinded (masking used)' option was chosen above, please tick who is / are blinded (choose all that apply), from the list. ☐ the people receiving the treatment / s (participants) ☐ the people administering the treatment / s (therapist / clinician) ☐ the people assessing the outcomes (assessor) ☐ the people analysing the results / data (data analyst)
Assignment (Only available when **Interventional** is selected for **'Study type'** in Step 3)	Choose the most appropriate description of the study's assignment from the list. Single group: all participants receive the same intervention throughout the study. Trials in which participants are assigned to receiving one of two or more interventions are not single group studies. Crossover trials are not single group studies. Parallel: different groups of participants receive different interventions during the same time span of the study. Crossover: all participants receive all the interventions in random order or in a specific sequence (non-randomised) during the study. They act as their own control. Factorial: participants are randomly allocated to receive either no intervention, one or some interventions, or all interventions combined. For example in a 2x2 factorial trial of diet and exercise for weight loss, participants would be allocated to: diet alone, exercise alone, both diet and exercise, or neither. In this way it is possible to test the independent effects of diet and exercise on the outcome, i.e. weight loss. Other: None of the selections provide an appropriate description of the study's assignment. If "Other" is selected for the study's assignment, please give a brief description of the study's assignment in the 'Other design features' field below.
Other design features (Only available when **Interventional** is selected for **'Study type'** in Step 3)	Briefly describe other design features if 'Other' is selected for Assignment above.

Data Item	Definition / Explanation
Phase* (Mandatory when **Interventional** is selected for **'Study type'** in Step 3)	Phases of investigation generally only apply to drug trials for the purposes of this registration form. Not applicable: this selection is for a non-drug trial. Phase 0: includes exploratory, first-in-human trials. Phase 0 trials are also known as human micro-dosing studies and are designed to speed up the development of promising drugs or imaging agents by establishing very early on whether the drug or agent behaves in human subjects as was anticipated from preclinical studies. Exploratory trials are conducted before traditional dose escalation and safety studies and gives no data on safety or efficacy, being by definition a dose too low to cause any therapeutic effect. Phase 1: includes initial study to determine the metabolism and pharmacologic actions of drugs in humans, the side effects associated with increasing doses, and to gain early evidence of effectiveness; may include healthy participants and / or patients. Trials are often dose ranging / escalating trials which are done to determine the maximum dose of a new medication that can be safely given to a patient. Phase 1 / Phase 2: for trials at a combined stage of Phases 1 and 2. Phase 2: includes controlled clinical studies conducted to evaluate / test the effectiveness of a new drug / medication or intervention for a particular indication or indications in patients with the disease or condition being studied and to determine the common short-term side effects and risks. Phase 2 / Phase 3: for trials at a combined stage of Phases 2 and 3. Phase 3: includes expanded controlled and uncontrolled trials after preliminary evidence suggesting effectiveness of the drug has been obtained, and are intended to gather additional information to evaluate the overall benefit-risk relationship of a new drug / medication or intervention, including possible adverse reactions. It is also to provide an adequate basis for physician labelling. Phase 3 / Phase 4: for trials at a combined stage of Phases 3 and 4. Phase 4: post-marketing study to delineate additional information. Trials are done to monitor the toxicity, risks, utility, benefits and optimal use after the efficacy of the drug / medication or intervention has been proven.
Type of endpoint(s) (Only available when **Interventional** is selected for **'Study type'** in Step 3)	Choose the most appropriate study endpoint(s) from the list. Safety: to show if the intervention is safe under conditions of proposed protocol / use. Efficacy: to measure an intervention's influence on a disease or health condition. Safety / efficacy: combination of safety and efficacy. Bio-equivalence: scientific basis for comparing generic and brand name drugs. Bio-availability: rate and extent to which a drug is absorbed or otherwise available to the treatment site in the body. Pharmacokinetics: the action of a drug in the body over a period of time including the process of absorption, distribution and localisation in tissue, biotransformation, and excretion of the compound. Pharmacodynamics: action of drugs in living systems. Pharmacokinetics / pharmacodynamics: combination of pharmacokinetics and pharmacodynamics.
Statistical methods / analysis	Provide a brief description of how the number of participants needed to achieve study objectives was determined, including clinical and statistical assumptions supporting any sample size calculations. A brief summary of the statistical methods and / or analysis plan to be used to evaluate the data also need to be provided.
Purpose (Only available when **Observational** is selected for **'Study type'** in Step 3)	If the study is an observational study, choose the most appropriate purpose of the study from the list. Natural history: study designed to investigate a disease or condition through observation under natural conditions (i.e. without intervention). Screening: study designed to assess or examine persons or groups in a systematic way to identify specific markers or characteristics (e.g. for eligibility for further evaluation). Psychosocial: study designed to observe the psychosocial impact of natural events.
Duration (Only available when **Observational** is selected for **'Study type'** in Step 3)	If the study is an observational study, choose the most appropriate duration of the study from the list. Longitudinal: study in which participants are evaluated over long period of time, typically months or years. Cross-sectional: study in which participants are evaluated at a particular point in time.

Data Item	Definition / Explanation
Selection (Only available when **Observational** is selected for **'Study type'** in Step 3)	If the study is an observational study, choose the most appropriate sample selection of the study from the list. Convenience sample: participants or populations are selected at the convenience of the investigator or primarily because they were available at a convenient time or place. The investigators make little or no effort to ensure that the sample is an accurate representation of some larger group or population. Defined population: participants or populations are selected based on predefined criteria. Random sample: participants or populations are selected by chance in a manner such that all samples of a population have an equal chance of being selected. Case control: participants or populations are selected to match control participants or populations in all relevant factors except for the disease; only the case participants or populations have the disease
Timing (Only available when **Observational** is selected for **'Study type'** in Step 3)	If the study is an observational study, choose the most appropriate timing of the study from the list. Retrospective: study that observes events in the past. Prospective: study that observes events in real time (may also occur in future). Both: study that combines retrospective and prospective observation.
Step 7: Recruitment	
Recruitment status*	Choose the most appropriate description of the study's current recruitment status from the list. Not yet recruiting: participants are not yet being recruited. Recruiting: open for recruitment and the first participant has been enrolled. Active, not recruiting: closed to recruitment and participants are being treated or examined. Completed: the study has concluded normally; participants are no longer being treated or examined (i.e. follow-up and data collection are complete). Withdrawn: study halted prematurely, prior to enrolment of first participant. Suspended: there is a temporary halt in recruitment and enrolment but potentially will resume. Stopped early: recruiting or enrolling participants has halted prematurely and will not resume.
Data analysis? (Only available when **Stopped early** is selected for **'Recruitment status'** in Step 7)	Choose the most appropriate option from the drop-down menu: ☐ No data analysis planned ☐ Data collected is being analysed ☐ Data analysis is complete
Reason for early stopping / withdrawal (Only available when **Withdrawn** or **Stopped early** is selected for **'Recruitment status'** in Step 7)	Please tick all that apply: ☐ Lack of funding / staff / facilities ☐ Participant recruitment difficulties ☐ Safety concerns ☐ Other reasons / comments (please specify)
Date of first participant enrolment *	This is defined as the date of randomisation of the first participant for randomised trials. For non-randomised studies, it is defined as the date that the first participant commences treatment / intervention / exposure. **Anticipated date** (dd/mm/yyyy) is mandatory if recruitment has not started. **Actual date** (dd/mm/yyyy) is mandatory once recruitment has started. For studies involving secondary analysis of data, please specify the anticipated / actual start date of data collection.
Date of last participant enrolment	The **anticipated date** (dd/mm/yyyy) that recruitment into the study will cease. The **actual date** (dd/mm/yyyy) that the final participant was enrolled into the study. This is mandatory for studies which have completed recruitment. For studies involving secondary analysis of data, please specify the anticipated / actual end date of data collection.
Date of last data collection	The **anticipated date** (dd/mm/yyyy) of last data collection for last participant. The **actual date** (dd/mm/yyyy) of last data collection for last participant.
Target sample size*	The total number of participants the investigators plan to enrol before closing the trial to new participants. Note: This is a number only field.
Accrual to date	The total number of participants who have been enrolled into the study to date. This is mandatory for studies with ongoing recruitment, and for studies with suspended recruitment. Note: This is a number only field.

Data Item	Definition / Explanation
Final sample size	The final number of participants enrolled into the study at close of recruitment. This is mandatory for studies which have completed recruitment. Note: This is a number only field.
Recruiting in Australia (Recruitment sites)	Tick this box if your study is / was or will be recruiting from within Australia.
Recruitment states* (Mandatory when **'Recruiting in Australia'** is selected in Step 7)	Tick the boxes corresponding to all recruiting states within Australia. ☐ NSW ☐ VIC ☐ QLD ☐ ACT ☐ NT ☐ SA ☐ TAS ☐ WA
Recruitment hospitals (Mandatory when **'Recruiting in Australia'** is selected in Step 7)	Type the full name of the recruiting hospital(s), and click on the matching option that appears on the list to add it to this form. E.g. instead of 'RPA', please enter 'Royal Prince Alfred Hospital'. If the site you wish to enter does not appear, then please email us at info@anzctr.org.au.
Recruitment postcode(s) (Mandatory when **'Recruiting in Australia'** is selected in Step 7)	Type the four-digit postcode for the suburb where recruitment will occur, and click on the matching option that appears on the list to add it to this form.
Outside Australia (Recruitment sites)	Tick this box if your study is / was or will be recruiting from countries outside Australia. Select the appropriate recruitment country from the drop-down list and enter the state / province of recruitment (free text). If there is more than one country of recruitment outside Australia, please click on the 'Add new country' button.
Step 8: Funding and Sponsors	
Funding source(s)*	Major source(s) of monetary or material or infrastructure support for the study, including in-kind support. Funding type: choose the most appropriate type from the list. ☐ Government body ☐ Hospital ☐ University ☐ Commercial sector / industry ☐ Charities / societies / foundations ☐ Other collaborative groups ☐ Self funded / unfunded ☐ Other **Note:** The selection 'Self funded / unfunded' applies to studies which are either funded by an individual person or not funded at all. Name of funding source: enter only **one** per box. Address of funding source: enter the full address of the named funding source, including street number and name, suburb / town / city, postcode and state / province (where applicable). Alternatively PO Box / Locked Bag / Private Bag addresses are also permitted. Country of funding source: choose the appropriate country from list. Click 'Add new funding source' to add more boxes if the study has multiple funding sources. The form allows maximum of 20 sets of entries.

Data Item	Definition / Explanation
Primary sponsor*	The individual, organisation, group or other legal person taking on responsibility for securing the arrangements to initiate and / or manage a study, including arrangements to ensure that the design of the study meets appropriate standards and to ensure appropriate conduct and reporting. The primary sponsor is normally the main applicant or principal investigator for regulatory authorisation or funding to begin the study. The primary sponsor is responsible for ensuring that the trial is properly registered. It may or may not be the main funder. Primary sponsor type: choose the most appropriate type from the list. ☐ Government body ☐ Hospital ☐ University ☐ Commercial sector / industry ☐ Charities / societies / foundations ☐ Other collaborative groups ☐ Individual ☐ Other Name of primary sponsor: enter only one name of the study's primary sponsor. Address of primary sponsor: enter the full address of the primary sponsor, including work organisation / affiliation, street number and name, suburb / town city, postcode and state / province (where applicable). Alternatively PO Box / Locked Bag / Private Bag addresses are also permitted. Country of primary sponsor: choose the appropriate country from list. The form allows only one entry for primary sponsor. For additional sponsors, please refer to the secondary sponsor(s) section.
Secondary sponsor(s)*	Additional individuals, organisations or other legal persons, if any, that have agreed with the primary sponsor to jointly take on responsibilities of sponsorship. A secondary sponsor may have agreed to form a group with the primary sponsor in which the responsibilities of sponsorship are allocated among the members of the group and / or to act as the sponsor's legal representative in relation to some or all of the trial sites. A secondary sponsor may take responsibility for the accuracy of trial registration information submitted. **Note:** The primary and secondary sponsors should not be the same. Secondary sponsor type: choose the most appropriate type from the list. ☐ Government body ☐ Hospital ☐ University ☐ Commercial sector / industry ☐ Charities / societies / foundations ☐ Other collaborative groups ☐ Individual ☐ Other ☐ None Name of secondary sponsor: enter only one name of the study's secondary sponsor per box. Address of secondary sponsor: enter the full address of the named sponsor, including work organisation / affiliation, street number and name, suburb / town city, postcode and state / province (where applicable). Alternatively PO Box / Locked Bag / Private Bag addresses are also permitted. Country of secondary sponsor: choose the appropriate country from list. Click "Add new secondary sponsor" to add more boxes if the study has multiple secondary sponsors. The form allows maximum of 20 sets of entries for the secondary sponsor(s).

Data Item	Definition / Explanation
Other collaborator(s)	Additional individuals, organisations or other legal persons, if any, that have agreed with the primary sponsor to jointly take on responsibilities of sponsorship. A collaborator may have agreed to form a group with the primary sponsor in which the responsibilities of sponsorship are allocated among the members of the group and / or to act as the sponsor's legal representative in relation to some or all of the trial sites. Collaborator type: choose the most appropriate type from the list. ☐ Government body ☐ Hospital ☐ University ☐ Commercial sector / industry ☐ Charities / societies / foundations ☐ Other collaborative groups ☐ Individual ☐ Other Name of collaborator: enter only **one** name of the study's collaborator per box. Address of collaborator: enter the full address of the named collaborator, including work organisation / affiliation, street number and name, suburb / town city, postcode and state / province (where applicable). Alternatively PO Box / Locked Bag / Private Bag addresses are also permitted. Country of collaborator: choose the appropriate country from list. Click 'Add new other collaborator' to add more boxes if necessary. The form allows maximum of 20 sets of entries.
Step 9: Ethics and Summary	
Ethics application status*	Select the appropriate option from the list. Not yet submitted: You intend to submit to at least one ethics committee, but have not yet done so. **Note:** If this option is selected it is mandatory to provide the date which the trial's primary sponsor or their representatives intend to submit an ethics application in the 'Submit date' field. Submitted, not yet approved: You have submitted an application to at least one ethics committee, but have not yet received approval. **Note:** If this option is selected it is mandatory to provide the date when the ethics application was submitted in the 'Submit date' field. Approved: You have received full ethical approval for this study from at least one ethics committee. **Note:** If this option is selected it is mandatory to provide the date when the ethics approval was granted in the 'Approval date' field. Not required: Ethics approval not required for this study. **Note:** If this option is selected it is mandatory to provide the reason(s) why ethics approval is not required in the 'Public notes' field in Step 9 of the form.
Ethics committee details* (mandatory, except when **'Not required'** selected for Ethics application status)	Please also provide the following information: Name of ethics committee: enter only **one** per box. Address of ethics committee: enter the full address of the named ethics committee, including street number and name, suburb / town city, postcode and state / province (where applicable). Alternatively PO Box / Locked Bag / Private Bag addresses are also permitted. Country of ethics committee: choose the appropriate country from list. Submit date: enter the date that the ethics committee application was submitted, or is planned to be submitted. **Note:** This field is mandatory when either 'Not yet submitted' or 'Submitted, not yet approved' has been selected for ethics application status above. Approval date: enter the date that the ethics committee application was approved. **Note:** This field is mandatory when 'Approved' has been selected for ethics application status above. Approval ID: enter the approval ID assigned to the ethics application by the ethics committee at the time of granting approval. **Note:** This field is not mandatory. Click 'Add new ethics committee' to add more boxes if the study has received approval from multiple ethics committees. The form allows a maximum of 50 sets of entries.
Brief summary*	Short description of the primary purpose of the study, including a brief statement of the study hypothesis, intended for the lay public. Ensure that the information provided in the brief summary is consistent with study design, intervention description and study outcomes provided in the form. This information may be displayed on other websites (such as Australian Clinical Trials: https://www.australianClinicalTrials.gov.au/) to facilitate recruitment.
Trial website	If the study has a trial website, enter the web address / URL (Uniform Resource Locator) in this section. Otherwise, please leave blank.

Data Item	Definition / Explanation
Trial related presentations / publication list	Please note that it is no longer possible to add trial related presentations / publications in this field. Please add these in Steps 11 (Data sharing statement) and / or 12 (Summary results) instead. It is still possible to remove text from this field.
Public notes	This field is for any extra, miscellaneous text you would like included within the trial registration record which is not relevant elsewhere on this form. Anything placed here **WILL** be publicly viewable.
Private notes	This field is for any extra, miscellaneous text you would like included within the trial registration record which is not relevant elsewhere on this form. Anything placed here **will NOT** be publicly viewable, but will be available to ANZCTR staff.
Attachments	Please note that it is no longer possible to add attachments to this field. Please use the study-related documents field in Step 11 (Data sharing statement) and / or the publications fields in Step 12 (Summary results) instead. It is still possible to remove attachments from this field if necessary. Attached files **WILL** remain publicly available via your trial's ANZCTR registration record. This optional section was previously used to upload any relevant documents (e.g. trial protocol, ethics approval forms, blank clinical record forms). Files are in PDF or Word with a maximum size of 15MB per file. It is the responsibility of the registrant to ensure that any uploaded documents continue to comply with copyright regulations.
Step 10: Contacts	
Principal investigator*	Title, name, address, country, telephone number and email address of the principal investigator of the study. Functional / institutional contact details should be provided. Address should include work organisation / affiliation, street number and name, suburb / town city, postcode and state / province (where applicable). Alternatively PO Box / Locked Bag / Private Bag addresses are also permitted. Telephone and fax numbers should be entered in the format +country code, area code, number, for example: +61 2 9562 5333 (for Sydney, Australia) +1 310 8298781 (for Santa Monica CA, USA) **Note:** The information provided here is functional and not personal; therefore it is recommended to provide institutional and not personal information. By providing this information the registrant consents that the information provided can or may be published on a public website. Once provided, the information cannot be redacted or anonymised, even to comply with new privacy legislation such as the European General Data Protection Regulation (GDPR). Note that while the current contact information may be modified at any time, all information published on the ANZCTR remains in the public domain, whether as part of the audit trail in historical versions of the record or in the most recent version of the record.
Contact person for public queries*	Title, name, address, telephone number and email address of the contact person who will respond to general queries, including information about current recruitment status. Functional / institutional contact details should be provided. Address should include work organisation / affiliation, street number and name, suburb / town city, postcode and state / province (where applicable). Alternatively PO Box / Locked Bag / Private Bag addresses are also permitted. Telephone and fax numbers should be entered in the format +country code, area code, number, for example: +61 2 9562 5333 (for Sydney, Australia) +1 310 8298781 (for Santa Monica CA, USA) **Note:** The information provided here is functional and not personal; therefore it is recommended to provide institutional and not personal information. By providing this information the registrant consents that the information provided can or may be published on a public website. Once provided, the information cannot be redacted or anonymised, even to comply with new privacy legislation such as the European GDPR. Note that while the current contact information may be modified at any time, all information published on the ANZCTR remains in the public domain, whether as part of the audit trail in historical versions of the record or in the most recent version of the record.

Data Item	Definition / Explanation
Contact person for scientific queries*	Title, name, address, telephone number and email address of the contact person for scientific inquiries about the trial (e.g. principal investigator, medical director for the study). For a multi-centre study, enter the contact information for the lead principal investigator or overall medical director. Functional / institutional contact details should be provided. Address should include work organisation / affiliation, street number and name, suburb / town city, postcode and state / province (where applicable). Alternatively PO Box / Locked Bag / Private Bag addresses are also permitted. Telephone and fax numbers should be entered in the format +country code, area code, number, for example: +61 2 9562 5333 (for Sydney, Australia) +1 310 8298781 (for Santa Monica CA, USA) **Note:** The information provided here is functional and not personal; therefore it is recommended to provide institutional and not personal information. By providing this information the registrant consents that the information provided can or may be published on a public website. Once provided, the information cannot be redacted or anonymised, even to comply with new privacy legislation such as the European GDPR. Note that while the current contact information may be modified at any time, all information published on the ANZCTR remains in the public domain, whether as part of the audit trail in historical versions of the record or in the most recent version of the record.
Step 11: Data sharing statement	
Will individual participant data (IPD) for this trial be available (including data dictionaries)?*	Indicate whether there is a plan to make IPD publicly available for this trial. IPD refers to raw line-by-line data collected from each participant. ☐ Yes; IPD and related data dictionaries are / will be available ☐ No; IPD will not be available **Note:** the option of 'Undecided' is no longer able to be selected due to a recent decision by the ICMJE.
No IPD sharing reason / comment (Only available when **'No'** is selected for previous field)	Provide reasons / comments for why the IPD are not planned to be shared.
What data will be shared?* (Mandatory when **'Yes'** is selected for **IPD** question in Step 11)	Please describe what data will be shared; e.g. all of the IPD collected during the trial, after de-identification; individual participant data underlying published results only, etc.
When will data be available (start and end dates)?* (Mandatory when **'Yes'** is selected for **IPD** question in Step 11)	Please outline the timeframe of data availability, i.e. beginning and end dates for when the data is expected to be available, e.g. Immediately following publication, no end date; Beginning 3 months and ending 5 years following main results publication; no end date determined etc.
Available to whom?* (Mandatory when **'Yes'** is selected for **IPD** question in Step 11)	Please specify who can / will be able to access the data, e.g. anyone who wishes to access it, only researchers who provide a methodologically sound proposal, case-by-case basis at the discretion of primary sponsor, etc.
Available for what types of analyses?* (Mandatory when **'Yes'** is selected for **IPD** question in Step 11)	Please clarify if there is a specific type of analysis for which the data are / will be available, e.g. any purpose, only to achieve the aims in the approved proposal, for IPD meta-analyses, etc.
How or where can data be obtained?* (Mandatory when **'Yes'** is selected for **IPD** question in Step 11)	Please specify how / where data are / will be shared e.g. unrestricted access via web address *(provide link)*, access subject to approvals by Principal Investigator *(provide email or other contact details)*, etc.

Data Item	Definition / Explanation
What supporting documents are / will be available?*	Select all types of supporting information that will be shared. Choose the appropriate type(s) from the list. ☐ No other documents available† ☐ Study protocol ☐ Statistical analysis plan ☐ Informed consent form ☐ Clinical study report ☐ Ethical approval ☐ Analytic code ☐ Other (please specify)†† † Note that if this option is selected, other options will not be available for selection. †† If 'Other' is selected, please note that it is **mandatory** to specify the other type of document that is / will be available.
How or where can supporting documents be obtained?* (Mandatory for each of the documents selected in the previous field)	Indicate how the corresponding document can be obtained, e.g. citation, link, email, other, attachment. Note that it is mandatory to complete at least one of these. Attachment: It is the responsibility of the registrant to ensure that any uploaded documents comply with copyright regulations. Please note that any files attached **will** be publicly available via the trial ANZCTR registration record. Attached files cannot exceed the maximum size of 35MB per file. Maximum number of attachments allowed: 20
Step 12: Summary results	
Have study results been published in a peer-reviewed journal?*	Indicate whether any study results have been published in a peer-reviewed journal. ☐ Yes ☐ No
Publication date and citation / details* (Mandatory when **'Yes'** is selected for previous field)	It is **mandatory** to provide the date (dd/mm/yyyy) of publication. Please also provide details of how document(s) are / will be available and / or provide attachments where applicable. Example citation: Smith J. (2012) The effect of a very low energy diet on weight loss in obese women. JAMA 3(12)44-52. It is the responsibility of the registrant to ensure that any uploaded documents comply with copyright regulations. Please note that any files attached **will** be publicly available via the trial ANZCTR registration record. Attached files cannot exceed the maximum size of 35MB per file. Maximum number of publications allowed: 20
Have study results been made publicly available in another format?	Indicate whether any study results have been made publicly available in a format other than a peer-reviewed journal publication, e.g. conference abstract, presentation, report, etc. ☐ Yes ☐ No
Other publications details (Only available when **'Yes'** is selected for previous field)	Please provide details of how document(s) are / will be available and / or provide attachments where applicable. It is the responsibility of the registrant to ensure that any uploaded documents comply with copyright regulations. Please note that any files attached **will** be publicly available via the trial ANZCTR registration record. Attached files cannot exceed the maximum size of 35MB per file. Maximum number of publications allowed: 20
Results: Basic reporting	This field is for basic results reporting in a scientific format, and we recommend it be completed using this template. Note that you can modify this template to accommodate different study designs. Information provided should be factual and not include any interpretation of results. **Note:** The ICMJE will not consider as prior publication the posting of trial results in ANZCTR if results are limited to a brief (500 word) structured abstract or tables (see ICMJE policy here). It is the responsibility of the registrant to ensure that any uploaded documents comply with copyright regulations. Please note that any files attached **will** be publicly available via the trial ANZCTR registration record.
Results: Plain English summary	Please provide a brief summary of the main results of your study, presented in a factual manner without interpretation, using lay terminology for the benefit of the general public. This may include: 1. Research question 2. Background information 3. Participant characteristics 4. Key results 5. Limitations

APPENDIX 5: ANZCTR CONDITION CATEGORIES AND CODES

Categories and codes have been adapted to suit Australian needs from the Health Research Classification System developed by the UK Clinical Research Collaboration (see https://hrcsonline.net/health-categories/). These condition categories are based on the World Health Organization (WHO) International Classification of Diseases (ICD) codes.

Condition category (Level 1)	Condition code (Level 2)
Alternative and complementary medicine	Spiritual care
	Herbal remedies
	Other alternative and complementary medicine
Anaesthesiology	Anaesthetics
	Pain management
	Other anaesthesiology
Blood	Haematological diseases
	Anaemia
	Clotting disorders
	Normal development and function of platelets and erythrocytes
	Other blood disorders
Cancer	Any
	Biliary tree (gall bladder and bile duct)
	Bladder—transitional cell cancer
	Bone
	Bowel—anal
	Bowel—back passage (rectum) or large bowel (colon)
	Bowel—small bowel (duodenum and ileum)
	Brain
	Breast
	Cervical (cervix)
	Children's—brain
	Children's - leukaemia and lymphoma
	Children's—other
	Head and neck
	Hodgkin's
	Kidney
	Leukaemia—acute leukaemia
	Leukaemia—chronic leukaemia
	Liver
	Lung—mesothelioma
	Lung—non-small cell
	Lung—small cell
	Lymphoma (non-Hodgkin's lymphoma)—high grade lymphoma
	Lymphoma (non-Hodgkin's lymphoma)—low grade lymphoma
	Malignant melanoma
	Myeloma

Condition category (Level 1)	Condition code (Level 2)
Cancer continued	Neuroendocrine tumour (NET)
	Non-melanoma skin cancer
	Oesophageal (gullet)
	Ovarian and primary peritoneal
	Pancreatic
	Penile (penis)
	Prostate
	Sarcoma (also see 'Bone')—soft tissue
	Stomach
	Testicular
	Thrombocythaemia
	Thyroid
	Womb (uterine or endometrial cancer)
	Other cancer types
Cardiovascular	Coronary heart disease
	Diseases of the vasculature and circulation including the lymphatic system
	Hypertension
	Other cardiovascular diseases
	Normal development and function of the cardiovascular system
Diet and nutrition	Obesity
	Other diet and nutrition disorders
Ear	Deafness
	Other ear disorders
	Normal ear development and function
Emergency medicine	Resuscitation
	Other emergency care
Eye	Diseases / disorders of the eye
	Normal eye development and function
Infection	Acquired immune deficiency syndrome (AIDS / HIV)
	Sexually transmitted infections
	Other infectious diseases
	Studies of infection and infectious agents
Inflammatory and immune system	Rheumatoid arthritis
	Connective tissue diseases
	Autoimmune diseases
	Allergies
	Other inflammatory or immune system disorders
	Normal development and function of the immune system
Injuries and accidents	Fractures
	Poisoning
	Burns
	Other injuries and accidents

Condition category (Level 1)	Condition code (Level 2)
Human genetics and inherited disorders	Down's syndrome
	Cystic fibrosis
	Other human genetics and inherited disorders
Mental health	Depression
	Schizophrenia
	Psychosis and personality disorders
	Addiction
	Suicide
	Anxiety
	Eating disorders
	Learning disabilities
	Autistic spectrum disorders
	Other mental health disorders
	Studies of normal psychology, cognitive function and behaviour
Metabolic and endocrine	Diabetes
	Thyroid disease
	Metabolic disorders
	Other metabolic disorders
	Other endocrine disorders
	Normal metabolism and endocrine development and function
Musculoskeletal	Osteoporosis
	Osteoarthritis
	Other muscular and skeletal disorders
	Normal musculoskeletal and cartilage development and function
Neurological	Dementias
	Transmissible spongiform encephalopathies
	Parkinson's disease
	Neurodegenerative diseases
	Alzheimer's disease
	Epilepsy
	Multiple sclerosis
	Other neurological disorders
	Studies of the normal brain and nervous system
Oral and gastrointestinal	Inflammatory bowel disease
	Crohn's disease
	Other diseases of the mouth, teeth, oesophagus, digestive system including liver and colon
	Normal oral and gastrointestinal development and function
Physical medicine / rehabilitation	Physiotherapy
	Speech therapy
	Occupational therapy
	Other physical medicine / rehabilitation

Condition category (Level 1)	Condition code (Level 2)
Public health	Epidemiology
	Health promotion / education
	Health service research
	Other public health
Renal and urogenital	Kidney disease
	Pelvic inflammatory disease
	Other renal and urogenital disorders
	Normal development and function of male and female renal and urogenital system
Reproductive health and childbirth	Fertility including in vitro fertilisation
	Contraception
	Abortion
	Fetal medicine and complications of pregnancy
	Normal pregnancy
	Mammary gland development
	Menstruation and menopause
	Breastfeeding
	Antenatal care
	Childbirth and postnatal care
	Complications of newborn
	Other reproductive health and childbirth disorders
Respiratory	Asthma
	Chronic obstructive pulmonary disease
	Sleep apnoea
	Other respiratory disorders / diseases
	Normal development and function of the respiratory system
Skin	Dermatological conditions
	Normal skin development and function
	Other skin conditions
Surgery	Surgical techniques
	Other surgery
Stroke	Ischaemic
	Haemorrhagic
Other	Conditions of unknown or disputed aetiology (such as chronic fatigue syndrome / myalgic encephalomyelitis)
	Research that is not of generic health relevance and not applicable to specific health categories listed above

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