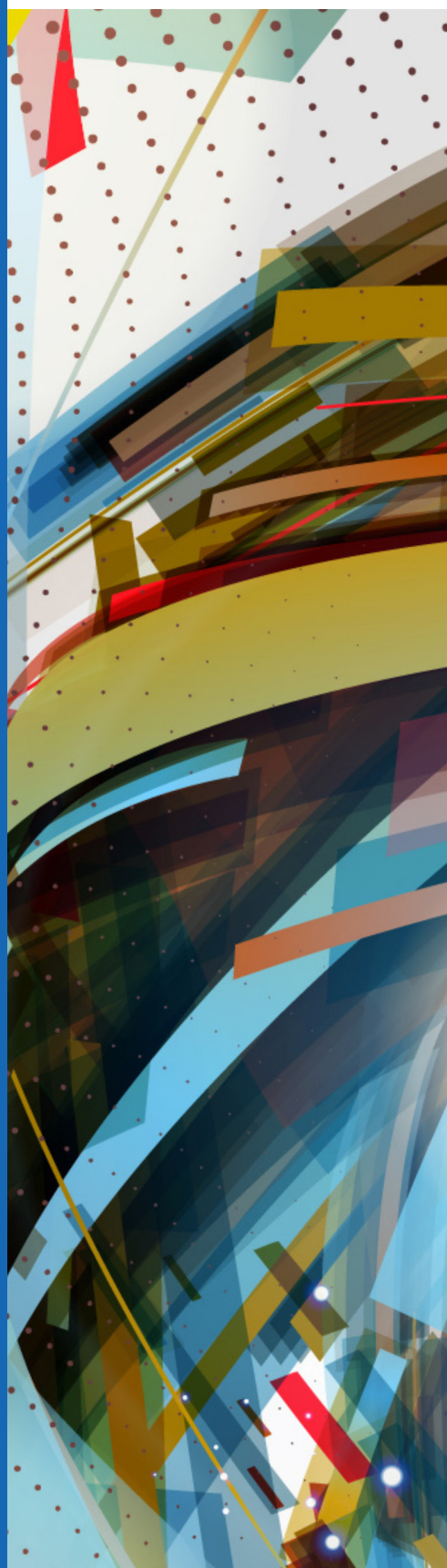
ANZCTR
Australian New Zealand Clinical Trials Registry

THE CLINICAL TRIALS LANDSCAPE IN NEW ZEALAND 2006–2015



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(* Hunter & Seidler contributed equally to this report).

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Foreword

Clinical trials are a vital component of a health research system that can improve health and wellbeing for all New Zealanders. Of paramount importance, they can produce robust evidence on the effectiveness of interventions across all aspects of healthcare. But clinical trials can also provide research opportunities to enhance the careers of health professionals, strengthen the culture of research and pathways for translation in the health sector, and provide a mechanism to advance and capitalise on innovative ideas. The importance of clinical trials to improving health and wealth in New Zealand is recognised and highlighted in the New Zealand Health Research Strategy, 2017-2027.

We congratulate the Australian New Zealand Clinical Trials Registry (ANZCTR) on the high quality of data collected over 10 years, which has enabled this report: the most complete overview of national clinical trial activity ever available in New Zealand. The Health Research Council of New Zealand is proud to have been the chief contact for this initiative in New Zealand since its establishment in 2005, and to have contributed financially, alongside the primary funder, the Australian Government's National Health and Medical Research Council.

This report shows that New Zealand has a high level of clinical trials activity per capita, and that the number of registered trials has steadily increased, with ANZCTR now the preferred registry for New Zealand based clinical trials. The associated searchable database can provide benefits that extend well beyond its core purpose to enable fulfilment of ethical requirements and promote transparency. The database can facilitate trial participation, with over half of the registrations representing multinational trials. It can also help us shape the research agenda by enabling identification of gaps, opportunities for collaboration, and areas of strength or unnecessary duplication. As such, it will be a central tool to inform and monitor the implementation of the Strategy over the next decade.

We strongly encourage researchers in New Zealand to continue to register, and update, their clinical trials on the ANZCTR, and look forward to our continued involvement with the ANZCTR as it evolves to consolidate its position as vital infrastructure for health research in New Zealand.

Professor Kathryn McPherson
Chief Executive
Health Research Council of New Zealand

Dr Ashley Bloomfield
Director-General of Health
Ministry of Health

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About the Australian New Zealand Clinical Trials Registry (ANZCTR)

The Australian New Zealand Clinical Trials Registry (ANZCTR) is an online (www.anzctr.org.au) registry of clinical trials and observational studies being undertaken in Australia, New Zealand and elsewhere. It includes trials from the full spectrum of therapeutic areas of pharmaceuticals, surgical procedures, preventive measures, lifestyle, devices, rehabilitation strategies and complementary therapies. Importantly, it enables researchers to fulfil their scientific, ethical and moral obligations to ensure that information about *all* clinical trials is made publicly available.

The ANZCTR was established in mid-2005 and is housed at the NHMRC Clinical Trials Centre, University of Sydney, Australia. It is publicly available to search or enter data, 24 hours a day, seven days per week. It was one of the first clinical trial registries to be endorsed by the International Committee of Medical Journal Editors (ICMJE) and then, in 2007, by the World Health Organization International Clinical Trials Registry Platform (WHO ICTRP) as a primary registry. The WHO 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.

The ANZCTR forms one of the key platforms in New Zealand's national research infrastructure, ensuring New Zealand takes responsibility for the oversight of health and medical research conducted within its borders, and it helps ensure New Zealanders meet their ethical and international obligations for research transparency.

Together with the 15 other primary registries and the US-based ClinicalTrials.gov, the ANZCTR has been at the forefront of the worldwide initiative to make public all clinical trials being conducted. This is essential in order to improve research transparency, facilitate trial participation, avoid duplication, promote research collaboration, improve trial quality and reduce research waste.

Trial registration is a mandatory condition of ethics approval for all New Zealand trials. However, without a national database of all trials that have received ethics approval, a complete denominator of all trials being conducted in New Zealand is not known.

Trials can be registered on ANZCTR at any time: before or after ethics approval or enrolment of the first participant. Updates to a trial registration record can also be made at any time, and the audit trail of those changes is publicly accessible. Researchers are encouraged to complete registration well before the first participant is enrolled and are reminded annually to keep their trial's registration record up-to-date. As such, data from the ANZCTR represents the most complete picture of national clinical trials activity currently available in New Zealand.

About this report

In 2015, the ANZCTR celebrated 10 years since its formation. Now with over 1,300 New Zealand trials registered, the ANZCTR stands as an important national resource for clinical trial decision-making. When combined with over 1,000 New Zealand trials registered on ClinicalTrials.gov, data from the 2,485 trials registered in the decade 2006–2015 that are contained within this report provide a unique overview of the current clinical trials landscape in New Zealand.

Acknowledgements

During the period covered by this report (2006–2015), the ANZCTR was funded by grants from the Australian National Health and Medical Research Council, the New Zealand Health Research Council and the Australian Federal Government's National Collaborative Research Infrastructure Strategy program, which is administered via Therapeutic Innovation Australia.

In addition to its funders, the ANZCTR wishes to acknowledge the members of its external Advisory Committee and its founding co-director, Professor Davina Ghersi, for their ongoing strategic advice, and Megan Willmott and Lucy Pomeroy from the New Zealand Health Research Council for their assistance in the preparation of this report.

Overview and commentary

The New Zealand clinical trials landscape

During the decade 2006-2015, clinical trial activity in New Zealand has been substantial, with about 2,500 clinical trials conducted and more than 1.6 million participants enrolled – that is more than 150 trials and 100,000 participants each year.

On a per capita basis this level of activity compares favourably with other countries internationally, with New Zealand being in the top tier of national clinical trial activity. There is, however, still room for improvement. Countries such as Denmark, the Netherlands and Belgium, where clinical trials are considered a routine part of delivering quality health care, are leading the way in per capita national clinical trial activity.

Clinical trials in New Zealand assess multiple types of interventions, including drug treatments (52 per cent), surgery (4 per cent), medical devices (13 per cent), behavioural therapies (6 per cent) and prevention strategies (9 per cent). The range of activities includes large multicentre phase 3 trials that are likely to impact clinical practice directly, as well as early-phase trials testing novel therapies or interventions that may become the new best treatments of tomorrow.

New Zealand trials cover a wide range of health conditions, as well as studying healthy populations at risk for future disease. There has been proportionally more activity in the areas of greatest national disease burden, with the most common disease areas studied in New Zealand clinical trials being cancer, cardiovascular disease and respiratory diseases. These represent 15 per cent, 13 per cent and 11 per cent of all trials, and 13 per cent, 31 per cent and 12 per cent of all trial participants respectively. However, some areas of high disease burden such as musculoskeletal disorders, mental disorders, and injuries remain under-represented. While this may partly relate to the limited availability of potentially effective interventions for evaluation within trials, these conditions probably represent areas that warrant more attention in the future.

A large proportion of New Zealand clinical trials are multinational (51 percent compared to 33 per cent for Australian trials), demonstrating a high degree of international connectedness and collaboration. Australia is the top collaborator with New Zealand, reflecting a strength acknowledged in the Australian Clinical Trials Alliance (ACTA) Clinical Trial Networks report.[1] Other countries that New Zealand trialists have a high level of collaboration with include the United States, Canada, Germany and the United Kingdom. Such international collaboration brings benefits to New Zealand, by providing access to larger participant numbers to facilitate answers to important questions, and providing patient access to treatments.

Over the period 2006-2015, clinical trials in New Zealand received an investment of $94 million from the Health Research Council. A greater proportion of New Zealand trials also have industry involvement when compared to Australian trials (55 per cent versus 45 per cent respectively). Clinical trials are expensive undertakings that often require millions of dollars to conduct in order to provide reliable evidence for the effectiveness of new or existing therapies. More information is needed on return on investment for clinical trials in New Zealand, as well as an understanding of which clinical trials have resulted in translation of evidence for the benefit of patients and/or the broader community.

Trends in clinical trial activity over the decade

The decade has seen several interesting trends in clinical trial activity. These include moderate growth in the total number of trials registered each year, mainly reflecting increases in smaller scale trials and non-drug interventions. Some of this growth may be due to an increase in the percentage of trials registered. Importantly, there has also been an increase in the number of New Zealand trials registered prospectively (i.e. before enrolment of the first

participant) with this sitting at around 75 per cent at the end of the decade. This is expected to increase based on the ethical requirement to register all clinical trials prospectively. It will be important to audit the rate of trial registration in the future to validate this, for example through tracking ethics committee cohorts.

Other trends include a marked increase in phase 1 trials as a proportion of clinical drug trials registered over the decade from 6 per cent in 2006 to 30 per cent in 2015. The absolute number of New Zealand registered trials sponsored by the commercial sector has also increased over time.

The reduction in trial size over the decade – from a median of 230 participants per trial down to 80 – is an important trend. It may reflect appropriate changes in design for more targeted therapies or, conversely, inappropriate reductions in sample size resulting in trials that are underpowered to detect significant, but moderate, treatment benefits. This is an area which warrants further in-depth assessment.

Value of clinical trial registries

Having a publicly accessible database of all clinical trials being undertaken in New Zealand is in line with the guiding principle of transparency highlighted in the NZ Health Research Strategy 2017-2027[2] and has several major benefits.

First, clinical trial registries such as the ANZCTR are key pieces of research infrastructure that can help to reduce research waste. It has been argued that more than half of research is wasted or underutilised because many trials do not publish their results or are poorly reported, ask unnecessary questions, or are not well designed.[3]

Clinical trial registries can help reduce such waste and maximise the value of research in several important ways. They can be used by funders (as a requirement of the application process) to check that those applying for new trial funding have ensured similar trials are not already underway or have recently been completed but not reported, thereby reducing unnecessary duplication or overlap, whilst still promoting prospectively planned research collaborations.[4] Clinical trial registries which permit the posting of clinical trial results can ensure that even trials unwilling or unable to publish their findings in peer-reviewed journals, can make all their results publicly available thereby minimising publication bias[5,6] and selective reporting of trial outcomes.[7] Clinical trial registries can also be used as repositories for other relevant documents, such as protocols and operations manuals, which are not usually available as part of the published research paper. The detailed information these documents provide can be invaluable for those wishing to either replicate a trial's findings or implement new, beneficial interventions directly into practice.

Another important way in which clinical trial registries can maximise the benefits of research is by improving timely recruitment to clinical trials. Clinical trials registries can also provide added-value in identifying areas where there are research gaps.[8] This report, The Clinical Trials Landscape in New Zealand, is an example of such analysis, and updated editions are planned every few years. This will make a major ongoing contribution to identifying trends in New Zealand clinical trial activity over time, thereby enabling better targeting of research funding in the areas of greatest national need. Registry data can also provide a rich and reliable source of metrics regarding the ongoing performance and efficiency of trials, including whether recruitment targets are being met and the timeliness of ethics approval processes. This will ensure New Zealand better prioritises, plans and performs nationally- and globally-relevant clinical trials.

Internationally, three major funders, ZonMw (the Netherlands), NIHR (United Kingdom) and PCORI (United States) have recognised these benefits and recently expressed their strong support for the role clinical trial registries play in ensuring that when research knowledge that leads to health benefits is generated, it is effectively and swiftly disseminated to end-users.[9]

In New Zealand, the Australian New Zealand Clinical Trials Registry (ANZCTR) and its associated publications are fundamental to this role, enabling New Zealand researchers to fulfil their ethical obligations[10] and publication requirements[11, 12] through registration of their trials on their national registry.

Future prioritisation

Going forward, it is important to prioritise mechanisms to ensure that all New Zealand clinical trials are prospectively registered, regularly updated and their results fully reported. This enables key stakeholders, including health care decision makers, consumers and clinicians to have access to a comprehensive overview of New Zealand trial activity. Mechanisms should include a requirement for prospective registration by all funders of clinical trials (both industry and non-industry) and all journal editors. All New Zealand ethics committees should ensure they comply with the Standard Operating Procedures for Health and Disability Ethics Committees, which requires prospective trial registration as a mandatory condition of ethics approval for all clinical trials.[13] Funders and ethics committees could also require evidence of an up-to-date trial registration record as part of annual reporting processes. Incorporating registration into the ethics approval process by electronic linkage of both interfaces could be an effective way to facilitate this.[14]

Better ways of streamlining the flow of information currently collected about New Zealand clinical trials from various agencies, including ethics committees, government, funders and regulators, should continue to be actively pursued, in order to support the Strategic Priorities of the New Zealand Health Research Strategy.

Future investment in clinical trials is likely to continue to produce large health benefits. Prioritisation of trials should be based on factors such as disease burden, gaps in health outcomes between different populations, and include those areas where there may be potential to have a greater impact and return on investment. Data collected by the ANZCTR can help inform priority-setting and then be used to monitor trial activity performance against these recognised priority areas. Ongoing investment in the national clinical trials registry itself needs to be secured to enable the ANZCTR to build on its role as key research infrastructure.

In summary

Clinical trials are a vital strategy in ensuring better health for all New Zealanders. By conducting clinical trials in this country we enable New Zealanders to access the best available healthcare options by maximising effective and efficient therapies, reducing research waste, and ensuring value for money from the health care dollars invested.

Clinical trial activity over the past decade has risen significantly and this growth is providing a greater range of health care benefits for both the prevention and treatment of disease. Some trends, such as trials of smaller size, need to be assessed further to ensure trials aimed at changing practice still provide reliable answers. The ANZCTR will remain a key component of the clinical trials landscape, enabling researchers to fulfil their scientific and ethical obligations, as well as capturing data on trial metrics and activity trends over time.

Given their demonstrable value, clinical trials in New Zealand appear to have a bright future, particularly if ongoing investment is made. The optimisation of such investments will require multiple strategies, including making full use of the data available through the ANZCTR, now and into the future.

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ANZCTR Manager

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Kylie Hunter
ANZCTR Senior Project Officer

Scope, terminology and methods

Clinical trials are research studies that recruit people to test new 'interventions'. These can be drugs, devices, vaccines, surgery, behavioural therapies, preventive care changes or other 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'.

This report draws on 2,485 New Zealand clinical trials registered on either the Australian New Zealand Clinical Trials Registry (ANZCTR) or the ClinicalTrials.gov registry between January 2006 and December 2015.

'**New Zealand**' clinical trials are defined as those with New Zealand listed as a recruitment country. These trials may be recruiting within New Zealand at a single site, multiple sites, or be part of a multinational study with multiple recruitment countries in addition to New Zealand. Studies that did not involve an intervention, but were purely observational in nature, were not included.

The report reflects the majority of registered trial activity in New Zealand, with only 18 per cent of New Zealand trials registered on one of the other 15 World Health Organization primary registries (see Appendix 2). The ANZCTR accounts for approximately 48 per cent of registered New Zealand trials, and ClinicalTrials.gov for the remaining 35 per cent.

Approximately 50 trials (2 per cent of the total) are known to be registered on both the ANZCTR and ClinicalTrials.gov, and therefore may be counted twice in some figures.

Unless otherwise noted, '**year**' refers to 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.

Where other terms have particular meanings in the context of this report, they are defined in the relevant section. See also Appendix 4 for ANZCTR data field definitions.

In the compilation of this report, all available data fields were extracted from both registries. A list of ANZCTR data fields and their definitions is available in Appendix 4. All data have been provided by the trial registrant, and the registrant is therefore responsible for their accuracy.

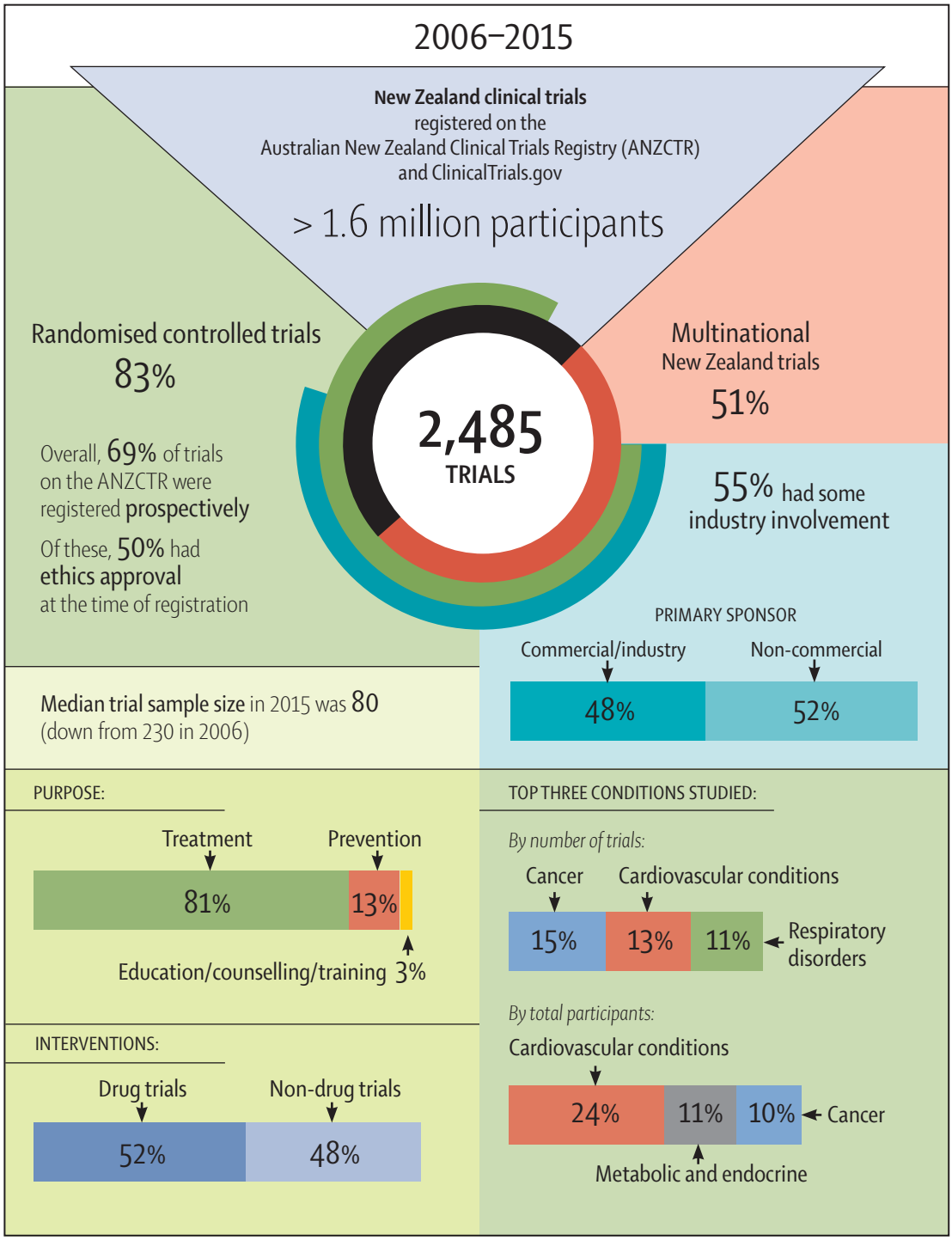
The data fields collected by ClinicalTrials.gov are slightly different from those collected by ANZCTR (see https://prsinfo.clinicaltrials.gov/definitions.html). Where possible, ClinicalTrials.gov fields were mapped to match ANZCTR fields, to enable synthesis of data. Details of data mapping can be found in Appendix 3.

Interventional trials 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.

Analyses were conducted using a combination of Microsoft Excel, Stata IC Software, and the open-source software R.

It is important to note that the data cover registered trials only, and may not necessary reflect overall trends in clinical trial activity. For example, any growth may be an artefact of increased trial registration, rather than increased trial activity.

Fast facts


2006–2015
New Zealand clinical trials
registered on the
Australian New Zealand Clinical Trials Registry (ANZCTR)
and ClinicalTrials.gov
> 1.6 million participants
2,485
TRIALS
Randomised controlled trials
83%
Overall, 69% of trials on the ANZCTR were registered prospectively
Of these, 50% had ethics approval at the time of registration
Multinational
New Zealand trials
51%
55% had some industry involvement
PRIMARY SPONSOR
Commercial/industry
Non-commercial
48%
52%
Median trial sample size in 2015 was 80
(down from 230 in 2006)
PURPOSE:
Treatment
Prevention
81%
13%
Education/counselling/training 3%
INTERVENTIONS:
Drug trials
Non-drug trials
52%
48%
TOP THREE CONDITIONS STUDIED:
By number of trials:
Cancer
Cardiovascular conditions
15%
13%
11%
Respiratory disorders
By total participants:
Cardiovascular conditions
24%
11%
10%
Cancer
Metabolic and endocrine

Part 1: Trial activity

An overview of clinical trial activity in New Zealand

Analysis of studies from the Australian New Zealand Clinical Trials Registry (ANZCTR) and ClinicalTrials.gov provides insights into the level of activity by registered trials undertaken in New Zealand over the 10 years to 2015, including the incidence of multinational trials, types of primary sponsor and comparisons to levels of activity in other countries.

This section uses combined ANZCTR and ClinicalTrials.gov data unless otherwise noted.

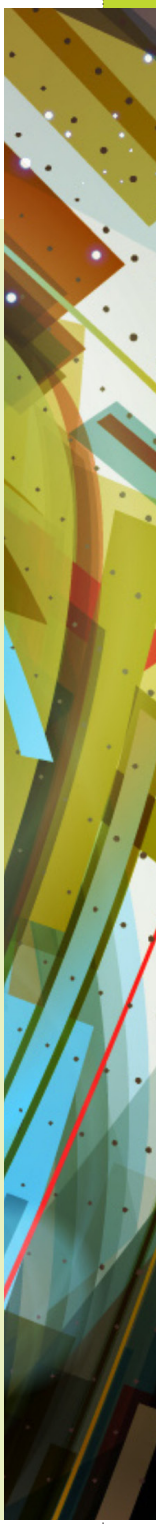
Data are displayed as per ANZCTR registration form categories and data from ClinicalTrials.gov have been mapped to the closest relevant ANZCTR category. Details of this mapping can be found in Appendix 3.

Only registered New Zealand clinical trials are included (i.e. interventional studies with at least one recruitment site in New Zealand).

Unless otherwise noted, 'year' refers to year of trial registration.

1.1 Key findings

- Registered clinical trial activity in New Zealand has been **increasing**, with the number of new studies registered each year rising from 169 in 2006 to 340 in 2015. In total, 2,485 New Zealand trials have been added to the ANZCTR and ClinicalTrials.gov databases over the decade.
- New Zealand ranks **above the average of comparable nations** in terms of clinical trial activity on a per capita basis, above Australia, Norway and Ireland, for example, and below Denmark.
- **Multinational trials** – those recruiting in other countries in addition to New Zealand – accounted for 51 per cent of trials registered between 2006 and 2015, a total of 1,266 trials. Multinational activity has remained relatively steady over the decade, with around 130 new trials registered annually as recruiting both in New Zealand and elsewhere. More than a quarter (28 per cent) of New Zealand multinational trials report recruitment in more than 15 countries as well as New Zealand.
- **Industry or commercial bodies** have been responsible for around 100-150 new trials annually – almost half of registrations overall (48 per cent). **Non-commercial sponsors** such as hospitals, universities and governments have been accounting for the other half of registrations (52 per cent).
- Just over half (55 per cent) of the New Zealand clinical trials registered over the decade have some kind of **industry involvement**, either as a funding source, primary sponsor, secondary sponsor or other collaborator.



1.2 Number of trials

The number of New Zealand clinical trials registered on ANZCTR and ClinicalTrials.gov has steadily increased over the decade, from 134 at the beginning of 2006 to a cumulative total of 1,517 at the end of 2015.

Registrations on ClinicalTrials.gov have grown relatively steadily, with around 100–115 new trials added each year. The ANZCTR has seen more rapid growth since 2009, with 137 new trials registered that year rising sharply to 191 in 2013 and more than 200 new trials registered in 2015. As a result, by the end of 2015 the ANZCTR accounted for more registered New Zealand trials (a total of 1,517 or 54 per cent) than ClinicalTrials.gov (1,269 or 46 per cent) where this pattern was the inverse a decade prior.

Figure 1. Growth in registered New Zealand clinical trial activity, 2006–2015

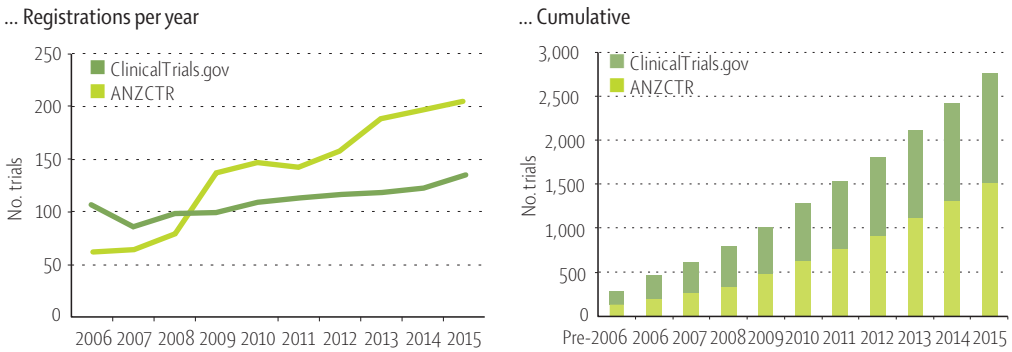


Table 1. Number of New Zealand clinical trials registered on the ANZCTR and ClinicalTrials.gov, per year and cumulatively, to December 2015

	NUMBER REGISTERED PER YEAR			CUMULATIVE REGISTRATIONS		
	ANZCTR	CLINICALTRIALS.GOV	TOTAL	ANZCTR	CLINICALTRIALS.GOV	TOTAL
Pre-2006	134	167	301	134	167	301
2006	62	107	169	196	274	470
2007	64	86	150	260	360	620
2008	80	97	177	340	457	797
2009	137	99	236	477	556	1,033
2010	146	108	254	623	664	1,287
2011	142	113	255	765	777	1,542
2012	159	117	276	924	894	1,818
2013	191	118	309	1,115	1,012	2,127
2014	197	122	319	1,312	1,134	2,446
2015	205	135	340	1,517	1,269	2,786
TOTALS	TOTAL NEW REGISTRATIONS 2006–2015			PROPORTION OF ALL TRIALS REGISTERED		
	1,383	1,102	2,485	54%	46%	

Most of the New Zealand trials registered on ClinicalTrials.gov are multinational (see page 13). They are more likely to be industry-sponsored (page 15), focus on drug interventions (page 30), and to have relatively large sample sizes (page 39). Trials registered on the ANZCTR tend to be recruiting only in New Zealand and are more diverse in terms of the interventions studied, types of sponsor and design.

1.3 Number of participants

More than 1.6 million people have participated in New Zealand clinical trials over the 10 years 2006 to 2015.

Each year participant numbers vary according to the number of trials registered and their sample sizes. While the number of participants has only moderately increased, the number of trials registered continues to grow (Figure 1, page 8), reflecting a general downward trend in sample sizes per trial (Figure 25, page 39).

Figure 2. Trends in the number of participants in New Zealand clinical trials registered, 2006–2015

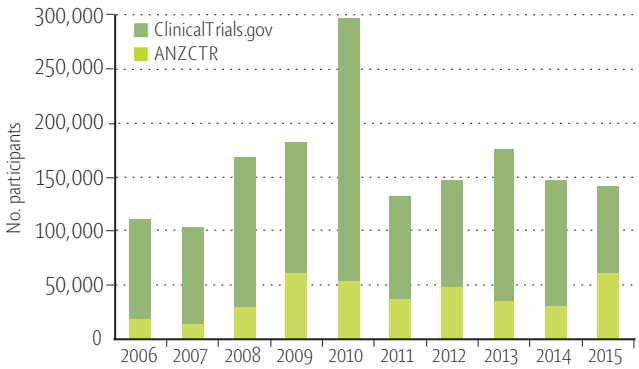


Table 2. Number of participants in New Zealand clinical trials registered each year on the ANZCTR and ClinicalTrials.gov, 2006–2015

	ANZCTR TRIALS	CLINICALTRIALS.GOV TRIALS	ALL REGISTERED TRIALS
2006	20,268	91,612	111,880
2007	14,044	90,304	104,348
2008	29,409	139,266	168,675
2009	62,105	121,267	183,372
2010	54,142	243,487	297,629
2011	37,650	94,478	132,128
2012	47,983	98,602	146,585
2013	35,286	140,653	175,939
2014	30,669	117,661	148,330
2015	62,826	79,372	142,198
TOTAL	394,382	1,216,702	1,611,084

DATA NOTES

Sample size is a mandatory field on both the ANZCTR and ClinicalTrials.gov registration forms. Data are missing for 9 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 any 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 along with an 'anticipated' or 'actual' label.

Two outlier studies registered on ANZCTR were excluded from this analysis. One was a 2013 cluster randomised community intervention involving 714,306 participants, the other a 2014 multinational trial involving 300,000 participants.

1.4 Activity in New Zealand compared to other countries

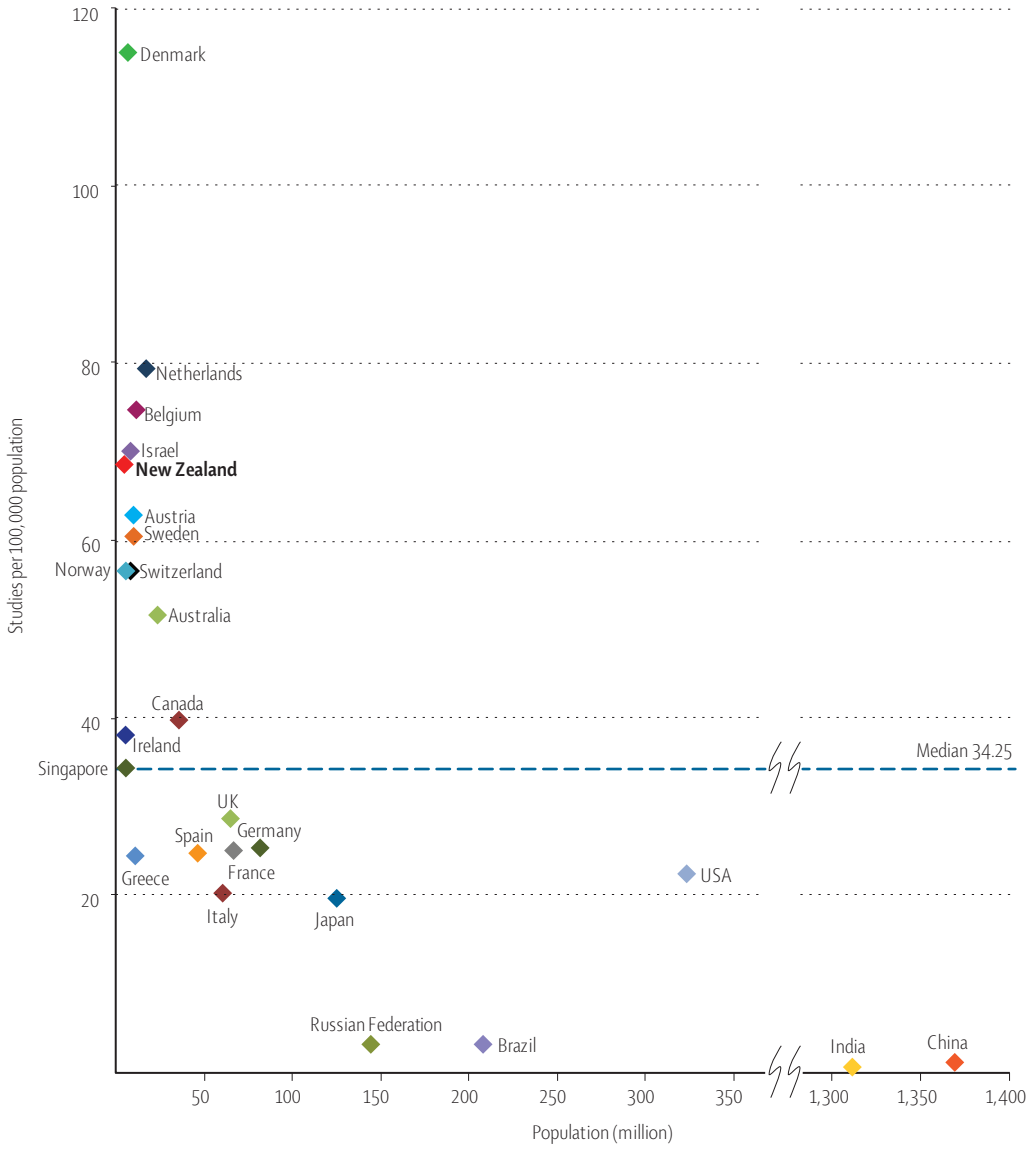
Given the size of its population, New Zealand has a comparably high level of activity similar to that of countries such as Belgium, Israel, Austria and Sweden. On a per capita basis, the number of studies conducted in New Zealand over the decade to 2015 sits well below Denmark, which ranks at number 1, but well above Australia, Germany, France, the UK and USA. This analysis includes observational studies as well as interventional clinical trials, with observational studies comprising an estimated 10 per cent of the total.

Table 3. Population, number of registered studies (interventional and observational) and studies per capita, for New Zealand and selected countries

COUNTRY	POPULATION 2015	NO. STUDIES 2006–2015	STUDY ACTIVITY PER 100,000 PEOPLE
Denmark	5,683,000	6,517	114.68
Netherlands	16,940,000	13,461	79.46
Belgium	11,249,000	8,478	75.37
Israel	8,380,000	5,882	70.19
New Zealand	**4,596,000**	**3,146**	**68.45**
Austria	8,638,000	5,436	62.93
Sweden	9,799,000	5,935	60.57
Switzerland	8,281,000	4,680	56.51
Norway	5,190,000	2,930	56.45
Australia	23,790,000	12,329	51.82
Canada	35,849,000	14,263	39.79
Ireland	4,644,000	1,765	38.01
Singapore	5,535,000	1,896	34.25
UK	65,129,000	18,733	28.76
Germany	81,680,000	20,763	25.42
France	66,538,000	16,545	24.87
Spain	46,444,000	11,520	24.80
Greece	10,821,000	2,634	24.34
USA	321,419,000	73,548	22.88
Italy	60,731,000	12,256	20.18
Japan	126,958,000	25,253	19.89
Brazil	207,848,000	6,984	3.36
Russian Federation	144,097,000	4,396	3.05
China	1,371,220,000	15,940	1.16
India	1,311,051,000	9,509	0.73

DATA NOTES
Sources: WHO Global Observatory on Health R&D; The World Bank.
For this data set, 'year' is when recruitment started.
Includes both interventional and observational studies uploaded to the World Health Organization International Clinical Trials Registry Platform (WHO ICTRP).

Figure 3. Registered study activity 2006–2015 (interventional and observational), plotted against population for selected countries, 2015



1.5 Multinational clinical trials in New Zealand

Clinical trials recruiting in multiple countries account for 51 per cent of New Zealand trials registered between 2006 and 2015, or a total of 1,266 studies. This includes 292 trials recruiting in only one country in addition to New Zealand (see Table 5, page 13).

Multinational activity in New Zealand has remained relatively steady over the decade, with around 125 new multinational trials registered annually, mostly on ClinicalTrials.gov. The increasing number of New Zealand-only trials registered each year closely follows the overall growth in ANZCTR registrations. Overall, 77 per cent of multinational trials recruiting in New Zealand have been registered on ClinicalTrials.gov.

Figure 4. Proportion of New Zealand clinical trials registered 2006-2015 with multinational recruitment

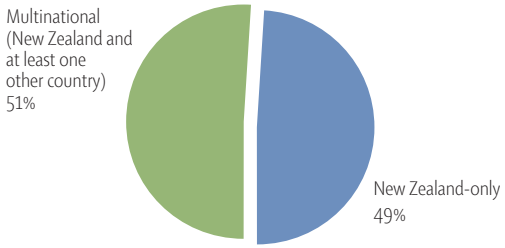


Figure 5. Trends in the number of registered New Zealand clinical trials with multinational recruitment compared to New Zealand-only trials, 2006–2015

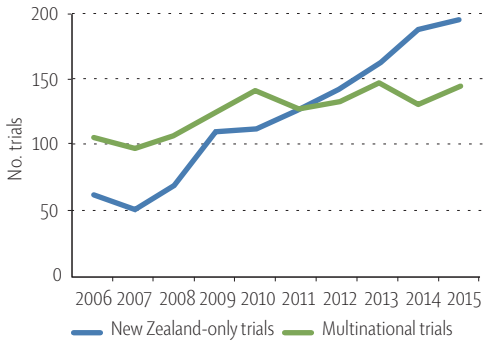


Table 4. Number of clinical trials registered in New Zealand each year, 2006–2015, by recruitment location

	NEW ZEALAND-ONLY RECRUITMENT		MULTINATIONAL RECRUITMENT INCLUDING NEW ZEALAND	
	NO.	PROPORTION	NO.	PROPORTION
2006	62	37%	107	63%
2007	52	35%	98	65%
2008	69	39%	108	61%
2009	110	47%	126	53%
2010	113	44%	141	56%
2011	126	49%	129	51%
2012	142	51%	134	49%
2013	162	52%	147	48%
2014	188	59%	131	41%
2015	195	57%	145	43%
TOTAL	1,219	49%	1,266	51%

DATA NOTES

Listing at least one country of recruitment is mandatory for registration on ANZCTR or ClinicalTrials.gov.

For the purposes of this report, 'multinational' trials refers to trials recruiting in at least two countries including New Zealand.

1.5.1 Multinational clinical trials by country of recruitment

Most multinational clinical trials (77 per cent) in New Zealand have recruited in more than one other country, with 52 per cent recruiting in more than five other countries, and 28 per cent in more than 15. The registered trial with the largest number of recruitment countries lists 59 countries, not counting New Zealand.

Overall, Australia is the most commonly cited country of recruitment for multinational clinical trials in New Zealand, with 1,065 studies, followed by the USA (765 trials) and Canada (572 trials).

Figure 6. Number of recruitment countries per trial in addition to New Zealand, for multinational clinical trials registered 2006–2015

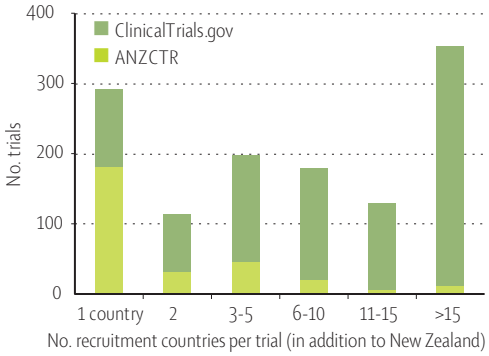


Table 5. Total number of multinational clinical trials in New Zealand registered 2006–2015, by number of recruitment countries per trial

	RECRUITMENT COUNTRIES PER TRIAL (IN ADDITION TO NEW ZEALAND)					
	1 COUNTRY	2 COUNTRIES	3–5	6–10	11–15	>15
ANZCTR	182	29	44	17	3	10
CLINICALTRIALS.GOV	110	84	154	162	127	344
TOTAL	292 (23%)	113 (9%)	198 (16%)	179 (14%)	130 (10%)	354 (28%)

Table 6. For multinational clinical trials recruiting in New Zealand registered 2006–2015, top 10 other recruitment countries by number of trials

RANK	COUNTRY	ANZCTR	CLINICALTRIALS.GOV	TOTAL
1	Australia	259	806	1,065
2	USA	37	728	765
3	Canada	38	534	572
4	Germany	25	496	521
5	United Kingdom	43	466	509
6	Spain	17	435	452
7	France	23	404	427
8	Poland	7	402	409
9	Italy	25	383	408
10	Belgium	24	374	398

1.6 Primary sponsor

'Primary sponsor' is defined by the Guidelines for Good Clinical Practice produced by the International Council for Harmonisation (ICH), and adapted in Medsafe's Guideline on the Regulation of Therapeutic Products in New Zealand, 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.

There has been an increase in the absolute number of trials sponsored by the commercial sector and by the non-commercial sector other than the government (including sponsors such as universities, hospitals, charities). In the commercial sector, the number of trials has risen from 90 trials in 2006 to 167 trials in 2015, in the non-commercial sector other than the government it has risen from 64 trials in 2006 to 162 trials in 2015. Sponsorship by the government sector has remained consistent over the decade accounting for around 5 to 15 trials registered each year. The proportion of trials from each sector has remained relatively stable over the decade, with on average 48 per cent of trials being sponsored by the commercial sector, 4 per cent of trials being sponsored by the government, and 48 per cent of trials being sponsored by the non-commercial sector other than the government. (See section 1.6.1 for more details.)

Figure 7. Trends in commercial and non-commercial primary sponsor type for registered New Zealand clinical trials, 2006–2015

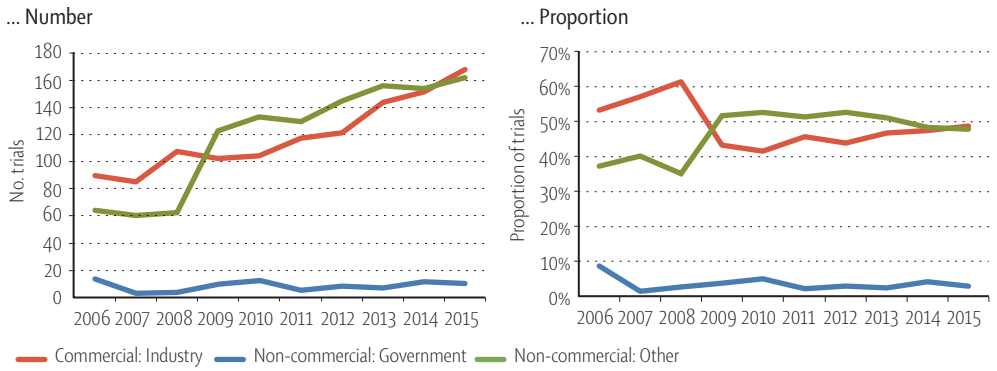


Table 7. Number and proportion of New Zealand clinical trials registered each year, 2006–2015, by commercial and non-commercial primary sponsor

	COMMERCIAL: INDUSTRY		NON-COMMERCIAL: GOVERNMENT		NON-COMMERCIAL: OTHER	
	NO.	PROPORTION	NO.	PROPORTION	NO.	PROPORTION
2006	90	53%	15	9%	64	38%
2007	86	57%	3	2%	61	41%
2008	109	62%	5	3%	63	36%
2009	103	44%	10	4%	123	52%
2010	106	42%	14	6%	134	53%
2011	118	46%	6	2%	130	51%
2012	122	44%	9	3%	145	53%
2013	144	47%	8	3%	157	51%
2014	151	47%	13	4%	155	49%
2015	167	49%	11	3%	162	48%
TOTAL	1,196	48%	94	4%	1,194	48%

DATA NOTES: 1.6

Type of primary sponsor is mandatory for registration on 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.

There was 1 trial with no data on primary sponsor (N=2,484).

Values in Table 7 for the years 2008, 2010 and 2013 add to 101% due to rounding error.

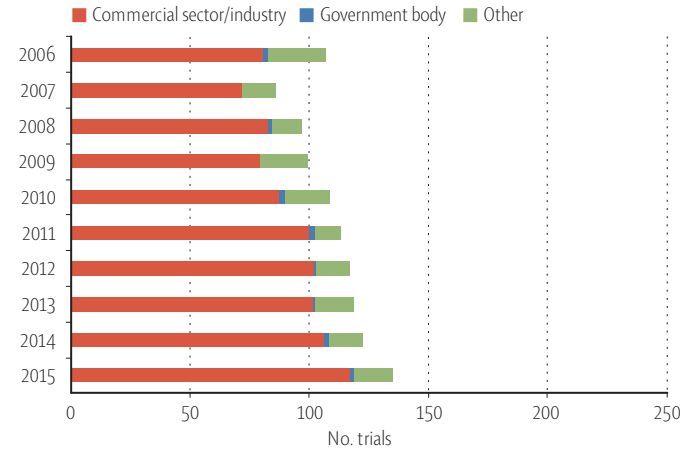
1.6.1 Non-commercial primary sponsors

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

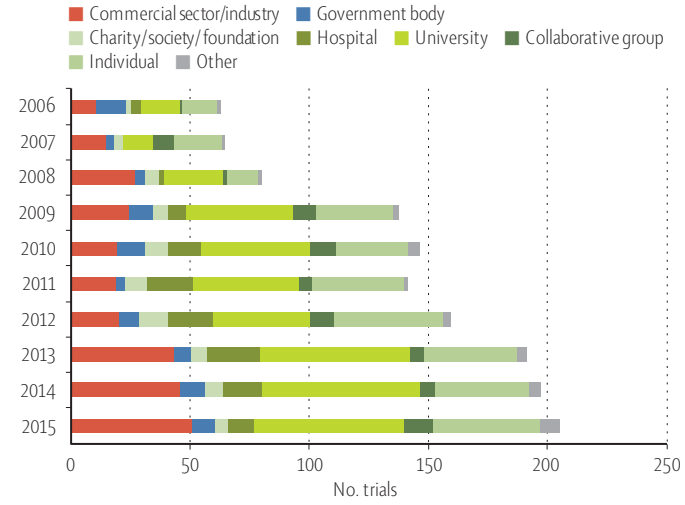
Hospitals and universities are making an increasing contribution. After the commercial sector/industry, with a total of 1,196 trials sponsored across both registries, universities represent the second most common sponsoring organisation, with 422 trials registered on the ANZCTR alone, followed by hospitals with 117 trials on the ANZCTR.

Individuals also play a significant part – an academic lead, for example, perhaps acting as sponsor for a trial with multiple stakeholders and/or funding sources. Individuals are listed as the primary sponsor for 318 trials registered on the ANZCTR over the decade.

Figure 8. Trends in primary sponsor type for New Zealand clinical trials, 2006–2015, registered on ... ClinicalTrials.gov



... ANZCTR



1.6.1 continued ...

Table 8. Number of New Zealand clinical trials registered each year, 2006–2015, by primary sponsor type, on ClinicalTrials.gov and on the ANZCTR

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	TOTAL
CLINICALTRIALS.GOV											
Industry	80	72	83	79	87	100	102	101	106	117	927
US government body	3	0	1	0	3	2	1	1	2	1	14
Other	24	14	13	20	18	11	14	16	14	17	161
ANZCTR											
Commercial sector/industry	10	14	26	24	19	18	20	43	45	50	269
Government body	12	3	4	10	11	4	8	7	11	10	80
University	16	13	24	45	46	44	41	63	66	64	422
Hospital	4	0	3	8	14	20	19	22	17	10	117
Charity/society/foundation	3	4	6	6	10	9	12	7	7	6	70
Collaborative group	1	9	2	10	11	6	10	6	7	12	74
Individual	15	20	13	32	30	39	46	39	39	45	318
Other	1	1	2	2	5	1	3	4	5	8	32

DATA NOTES

On ClinicalTrials.gov:

- US government body = NIH or other US federal agency.
- Other = All others (individuals, universities, organisations, Australian/ New Zealand government bodies).

1.7 Industry involvement

Just over half (55 per cent) of the New Zealand clinical trials registered 2006–2015 have some kind of industry involvement, either as a funding source, primary sponsor, secondary sponsor or other collaborator.

Trials registered on ClinicalTrials.gov are much more likely to have industry involvement (86 per cent) than those registered on the ANZCTR (30 per cent).

Figure 9. Proportion of New Zealand clinical trials registered 2006–2015 with any industry involvement

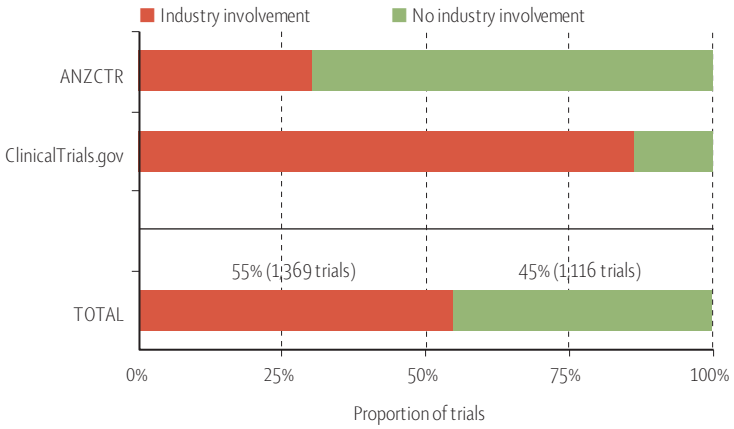


Table 9. Number and proportion of New Zealand clinical trials registered 2006–2015, with and without industry involvement

	INDUSTRY INVOLVEMENT		NO INDUSTRY INVOLVEMENT	
	NO.	PROPORTION	NO.	PROPORTION
ANZCTR	419	30%	964	70%
CLINICALTRIALS.GOV	950	86%	152	14%
TOTAL	**1,369**	**55%**	**1,116**	**45%**

DATA NOTES
Trials can choose more than one funding source, secondary sponsor or collaborator.
'Any industry involvement' derived as follows:
- ANZCTR: selection of 'Commercial sector/Industry' for funding source or primary sponsor or secondary sponsor or other collaborator.
- ClinicalTrials.gov: selection of 'Commercial sector/Industry' for any sponsor/collaborators.

Part 2: Trial focus

Health conditions and interventions studied in New Zealand clinical trials

This section uses combined ANZCTR and ClinicalTrials.gov data unless otherwise noted.

Data are displayed as per ANZCTR registration form categories and 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 New Zealand clinical trials are included (i.e. interventional studies with at least one recruitment site in New Zealand).

Unless otherwise noted, 'year' refers to year of trial registration.

2.1 Key findings

- **Cancer** has been the most frequently studied health issue in New Zealand clinical trials registered between 2006 and 2015, with 375 trials (15 per cent of the total) selecting this category, followed by **cardiovascular** conditions with 334 (13 per cent) and **respiratory** conditions with 278 (11 per cent).
- Trial activity in oral and gastrointestinal conditions, metabolic and endocrine conditions, diet and nutrition, infection, musculoskeletal conditions, and mental health has **grown steadily** since 2006.
- In terms of numbers of **trial participants**, the most studied condition is **cardiovascular disease**, involving more than 500,000 people over the decade. **Metabolic and endocrine** trials are next, with over 200,000 participants.
- Measured against the **relative 'burden of disease'** for key health conditions, the number of trials in cardiovascular disease is close to what would be expected, but there are significantly more participants than expected. For cancer trials, number of trials and participants are slightly below what would be anticipated. For musculoskeletal conditions, mental disorders, and injuries, the actual number of trials registered is lower than would be expected.
- The majority (81 per cent) of clinical trials conducted in New Zealand aim to assess the effects of **treatments**, with investigation of **preventive** strategies being the next most common purpose (13 per cent).
- **Drugs** are the single most researched intervention in New Zealand clinical trials, accounting for 52 per cent of trials registered 2006–2015. However, the share of trial activity they represent has fallen over the decade, from 62 per cent in 2006 to 51 per cent in 2015.
- Most drug trials (58 per cent) have focussed on a combination of the **safety and efficacy** of the intervention, with an additional 24 per cent looking at efficacy alone and 7 per cent assessing safety alone.
- Among the **non-drug trials**, those focussing on treatments other than devices or surgery have shown particular growth, from just 19 in 2006 (11 per cent of all trials) to 80 in 2015 (24 per cent). 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.
- **Efficacy** has been the most common focus specified for non-drug trials, accounting for 54 per cent, with an additional 35 per cent assessing a combination of efficacy and safety.

2.2 Conditions studied

2.2.1 Most studied conditions by number of trials

Cancer has been the most commonly studied health issue in New Zealand clinical trials registered between 2006 and 2015, with 375 trials in total selecting this category, closely followed by cardiovascular conditions with 334 and respiratory with 278 (Figure 10).

As a proportion of New Zealand clinical trials registered each year, those investigating cancer, cardiovascular disease, and respiratory conditions have slightly decreased over the decade, with cancer dropping from 21 per cent in 2006 to 13 per cent in 2015, cardiovascular disease from 17 per cent to 8 per cent, and respiratory diseases from 14 per cent to 9 per cent (Figure 11).

Figure 10. Top 15 conditions by number of trials, for New Zealand clinical trials registered 2006–2015

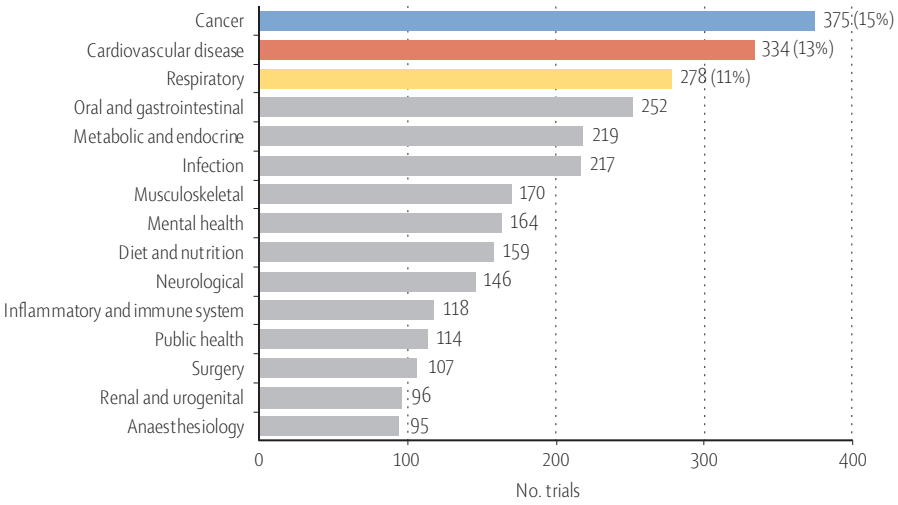


Figure 11. Trends in the top three types of condition studied by New Zealand clinical trials registered 2006–2015

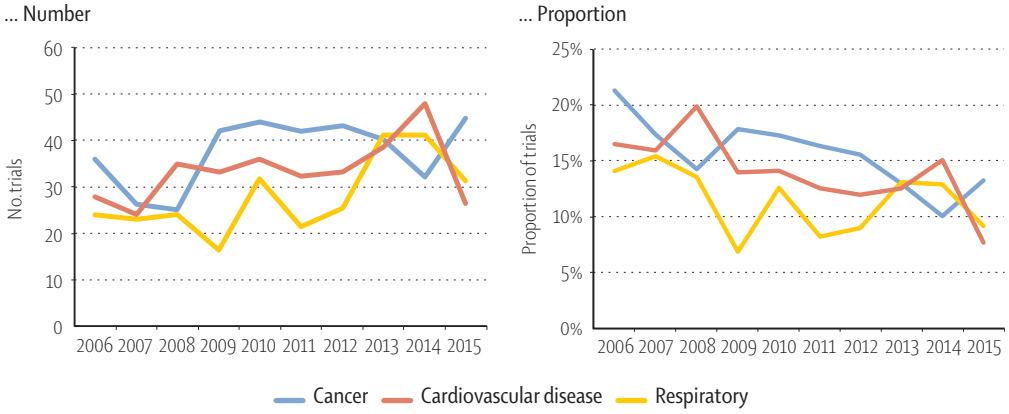


Table 10. Number of New Zealand clinical trials registered each year, 2006–2015, by condition

CONDITION	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	TOTAL
Cancer	36	26	25	42	44	42	43	40	32	45	375
Cardiovascular disease	28	24	35	33	36	32	33	39	48	26	334
Respiratory	24	23	24	16	32	21	25	41	41	31	278
Oral and gastrointestinal	8	15	9	15	14	38	35	31	35	52	252
Metabolic and endocrine	12	10	16	18	23	24	30	28	28	30	219
Infection	7	9	11	17	11	23	31	31	33	44	217
Musculoskeletal	2	7	14	14	15	18	28	18	24	30	170
Mental health	9	5	6	17	12	17	27	29	19	23	164
Diet and nutrition	3	4	2	13	18	20	26	16	30	27	159
Neurological	16	17	10	17	14	10	11	10	22	19	146
Inflammatory and immune system	12	7	9	10	16	8	20	10	12	14	118
Public health	4	6	3	7	14	19	17	20	15	9	114
Surgery	9	1	8	17	9	15	10	13	12	13	107
Renal and urogenital	6	3	3	10	13	10	5	15	20	11	96
Anaesthesiology	3	3	11	15	11	19	4	12	7	10	95
Physical medicine / rehabilitation	2	2	3	4	4	3	8	20	20	14	80
Reproductive health and childbirth	4	4	5	6	6	13	9	8	12	10	77
Skin	0	2	4	5	8	10	9	7	11	16	72
Injuries and accidents	2	2	3	11	13	11	8	3	10	8	71
Blood	5	7	5	2	7	5	11	5	7	5	59
Human genetics and inherited disorders	2	2	5	2	8	8	7	6	5	9	54
Stroke	7	5	3	6	5	8	2	7	4	7	54
Eye	4	1	3	6	2	4	3	7	6	6	42
Alternative and complementary medicine	0	2	0	1	4	5	3	10	4	8	37
Ear	0	0	0	0	0	0	3	4	0	0	7
Other	4	2	1	6	1	4	2	15	21	29	85

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 three condition codes from a pre-specified list (see Appendix 4).

ClinicalTrials.gov registration form allows for entry of multiple condition descriptors, which are based on MeSH codes. Only the first health condition (primary condition) in a trial's record has been mapped to the relevant ANZCTR condition codes. Therefore, the true number of conditions studied by trials registered on ClinicalTrials.gov is likely to be understated.

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 in Figure 10 are of the total number of registered trials 2006-2015 (N=2,485), and proportions in Figure 11 are of the number of registered trials per year.

2.2.2 Most studied conditions by number of trial participants

Trials focussing on cardiovascular conditions have involved the most participants, with a total of 506,433 people participating over the decade. This large overall number is mainly due to multinational mega-trials with over 10,000 participants each that have been conducted in this field. Trials with cardiovascular conditions are followed by metabolic and endocrine disorders in overall participant number (233,620). Trials with a cancer focus come next, with 217,446 participants, while respiratory trials move down to fourth place, as these tend to have smaller sample sizes per trial. On an annual basis, the total number of participants tends to fluctuate.

Figure 12. Top 15 conditions by total number of trial participants, for New Zealand clinical trials registered 2006–2015

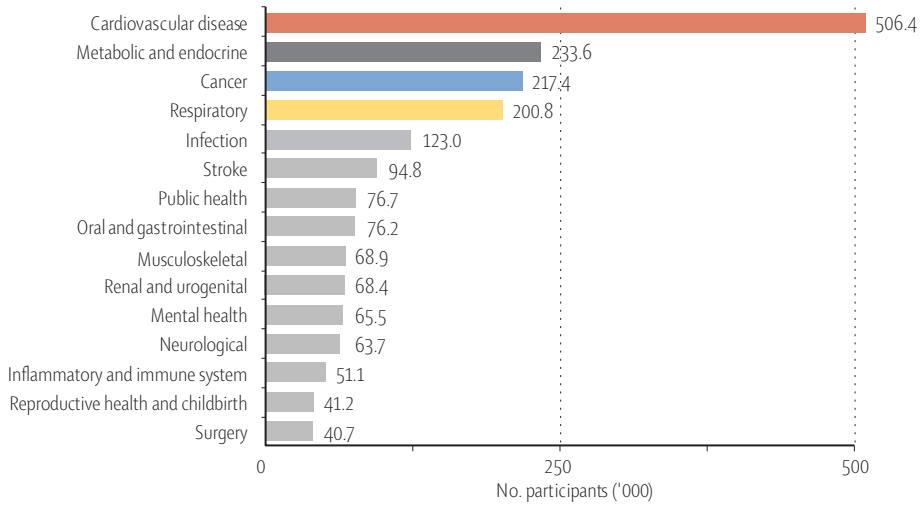
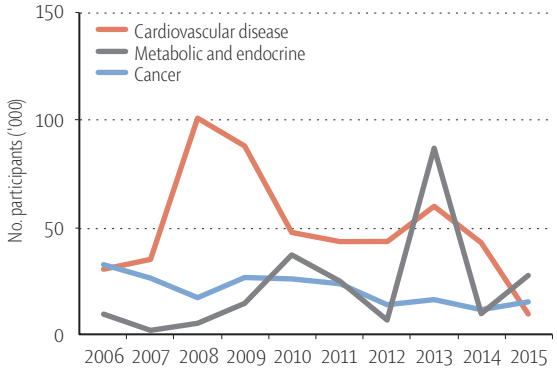


Figure 13. Trends in the top three conditions by total number of trial participants, for registered New Zealand clinical trials 2006–2015



DATA NOTES

Sample size is a mandatory field on both the ANZCTR and ClinicalTrials.gov registration forms. Data are missing for 24 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 any 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 along with an 'anticipated' or 'actual' label.

Table 11. Total trial participants ('000s) for New Zealand clinical trials registered each year, 2006–2015, by condition

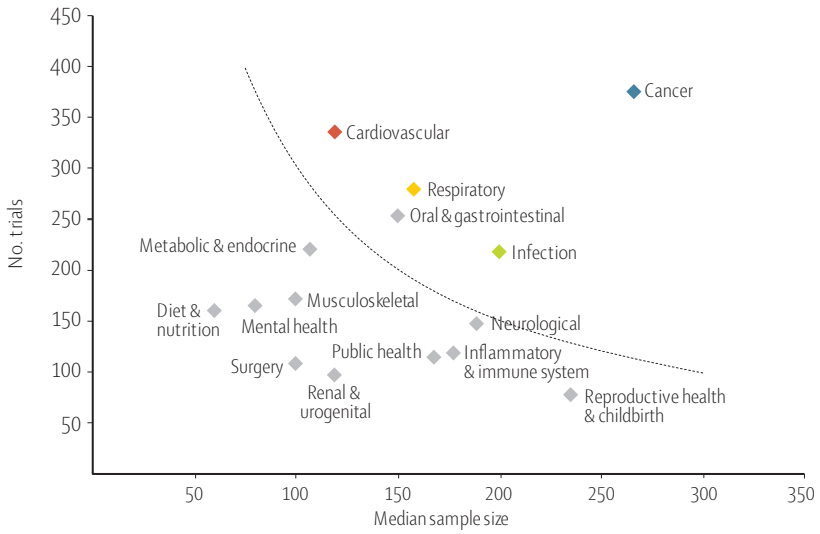
CONDITION	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	TOTAL
Cardiovascular disease	31.15	35.87	101.42	87.93	48.34	44.64	43.79	60.54	43.09	9.68	506.43
Metabolic and endocrine	10.61	1.76	6.27	14.59	37.64	26.54	8.72	87.70	11.67	28.11	233.62
Cancer	33.26	27.55	18.24	27.13	26.44	24.17	15.13	17.26	12.35	15.91	217.45
Respiratory	7.25	35.82	7.84	17.20	39.61	14.54	8.88	18.70	36.83	14.12	200.79
Infection	2.75	8.96	4.81	12.16	2.66	10.00	15.02	15.39	8.74	42.50	123.00
Public health	17.59	4.76	24.11	6.19	0.84	5.40	0.17	28.51	6.53	0.71	94.79
Oral and gastrointestinal	1.83	2.90	2.81	10.74	16.90	6.96	11.69	16.63	5.35	0.92	76.73
Renal and urogenital	1.04	6.00	1.86	3.69	2.10	11.95	16.66	7.26	9.09	16.51	76.16
Musculoskeletal	1.81	3.01	12.46	5.44	2.50	11.89	15.87	3.35	5.30	7.27	68.89
Mental health*	1.07	1.48	0.34	2.96	4.69	10.42	0.94	19.49	12.46	14.62	68.45
Neurological	8.52	1.44	5.87	9.65	2.16	14.47	13.02	3.36	2.98	3.99	65.46
Stroke	3.37	8.63	3.94	8.43	2.79	9.92	6.93	4.19	6.58	8.93	63.70
Inflammatory and immune system	7.16	1.82	0.92	3.89	12.77	2.22	8.41	2.37	6.89	4.63	51.09
Reproductive health and childbirth*	2.56	0.63	4.31	1.91	4.78	4.46	3.54	1.50	4.85	12.67	41.20
Surgery	4.31	0.15	5.97	2.29	11.11	3.50	3.43	2.31	6.27	1.42	40.75
Diet and nutrition	0.07	0.26	0.36	3.12	9.05	1.76	2.87	16.13	2.99	3.98	40.59
Injuries and accidents	0.12	1.48	0.39	6.38	1.58	12.39	1.33	0.59	3.82	4.65	32.72
Anaesthesiology	1.44	0.43	1.89	1.15	1.84	2.68	6.77	3.29	3.71	2.17	25.37
Blood	2.02	0.08	1.68	0.31	10.32	1.31	0.93	3.04	1.53	0.66	21.88
Human genetics and inherited disorders	0.65	0.86	0.43	0.28	1.62	2.00	11.83	0.59	0.96	0.63	19.85
Skin	0.00	0.52	0.49	0.95	2.85	2.58	0.69	2.41	3.12	3.15	16.76
Physical medicine / rehabilitation	2.10	0.17	0.39	0.18	0.18	0.51	0.53	1.79	1.44	0.83	8.12
Eye	0.47	0.24	0.02	1.35	0.00	0.37	0.26	0.39	0.84	2.73	6.67
Alternative and complementary medicine	0.00	0.52	0.00	0.05	0.34	1.26	0.06	0.53	0.09	0.42	3.26
Ear	0.05	0.00	0.17	0.08	0.14	0.00	0.19	0.14	0.11	0.00	0.87
Other	0.25	0.04	0.06	7.90	1.00	0.31	0.07	0.45	0.65	1.88	12.60

* An outlier has been removed from the analysis for the 'Reproductive health and childbirth' condition category. This was a cluster randomised controlled trial with 300,000 participants. An outlier has been removed for the category 'Mental health'. This was a multi-level community intervention with 714,306 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 tend to be. By this measure, cancer has been the number one focus for registered New Zealand clinical trials over the decade.

Figure 14. Top 15 conditions by number of trials and median sample size for New Zealand clinical trials registered 2006–2015



The dotted line in the figure represents a trial activity indicator value of 30,000, where trial activity = number of trials selecting a condition category x median sample size for that category.

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 three condition codes from a pre-specified list (see Appendix 4).

ClinicalTrials.gov registration form allows for entry of multiple condition descriptors, which are based on MeSH codes. Only the first health condition (primary condition) in a trial's record has been mapped to the relevant ANZCTR condition codes. Therefore, the true number of conditions studied by trials registered on ClinicalTrials.gov is likely to be understated.

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.

Sample size is a mandatory field on both the ANZCTR and ClinicalTrials.gov registration forms. Data are missing for 14 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 any 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 along with an 'anticipated' or 'actual' label.

Table 12. Summary of key statistics for conditions studied by New Zealand clinical trials registered 2006–2015, ranked by trial activity indicator

CONDITION	NO. TRIALS	SAMPLE SIZE		TOTAL NO. PARTICIPANTS	TRIAL ACTIVITY INDICATOR*
		Median	IQR		
Cancer	375	266	79-688	217,446	99,750
Respiratory	278	158	40-450	200,789	43,924
Infection	217	200	75-497	123,003	43,400
Cardiovascular	334	119	49-630	506,433	39,746
Oral and gastrointestinal	252	150	40-350	76,161	37,800
Neurological	146	189	45-537	63,699	27,594
Metabolic and endocrine	219	107	40-506	233,619	23,433
Inflammatory and immune system	118	177	40-518	51,086	20,886
Public health	114	168	60-500	76,725	19,152
Reproductive health and childbirth**	77	235	80-550	41,196	18,095
Musculoskeletal	170	100	40-233	68,891	17,000
Mental health**	164	80	38-203	65,459	13,120
Renal and urogenital	96	119	41-458	68,449	11,424
Surgery	107	100	60-194	40,745	10,700
Diet and nutrition	159	60	24-114	40,585	9,540
Anaesthesiology	95	96	60-150	25,374	9,120
Injuries and accidents	71	122	55-450	32,723	8,662
Human genetics and inherited disorders	54	132	52-310	21,880	7,128
Skin	72	80	30-274	16,758	5,760
Stroke	54	100	57-448	94,788	5,400
Blood	59	90	30-227	19,845	5,310
Physical medicine / rehabilitation	80	41	26-94	8,123	3,280
Eye	42	70	29-179	6,671	2,940
Alternative and complementary medicine	37	45	24-100	3,259	1,665
Ear	7	40	35-45	872	280
Other	85	26	24-40	12,602	2,210

* Trial activity indicator = number of trials selecting a condition category x median sample size for that category.
** An outlier has been removed from the analysis for the 'Reproductive health and childbirth' condition category. This was a cluster randomised controlled trial with 300,000 participants. An outlier has been removed for the category 'Mental health'. This was a multi-level community intervention with 714,306 participants.

See also: Sample size by condition on page 41.

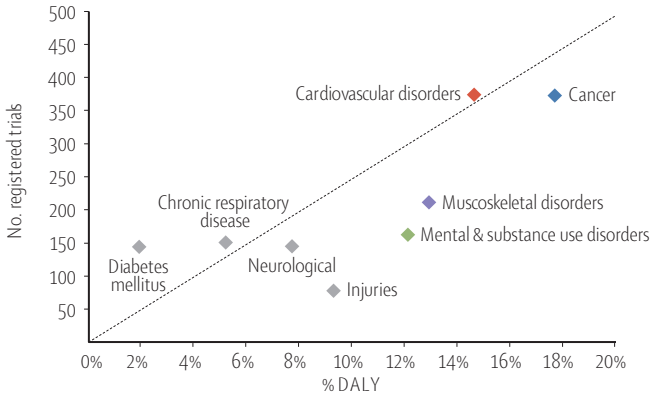
2.2.4 Number of trials per condition compared to burden of disease

In an update to the approach taken by Lam 2015 for Australian trials,[8] New Zealand estimates of disability-adjusted life-years (DALYs[15]) have been used to quantify the burden of disease for major condition groups.[16] These %DALYs have then been compared to the levels of New Zealand clinical trial activity in these areas.

In the case of cardiovascular disorders, chronic lung disease, and neurological disorders the number of registered trials is close to what would be expected given the relative disease burden each represents. For musculoskeletal conditions, mental disorders, and injuries, the actual number of trials registered is lower than would be expected, while trial activity is higher than expected for diabetes.

The pattern is different for some conditions when considering the scale of trial activity in terms of the total number of participants recruited.

Figure 15. Relationship between number of trials and %DALY (as an indicator of relative burden of disease) for conditions studied by New Zealand clinical trials registered 2006–2015



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

Table 13. Number of registered New Zealand clinical trials focussing on key condition groups as a percentage of total trial activity, and comparison to the expected number based on %DALY, for trials registered 2006–2015

	BURDEN OF DISEASE		NUMBER OF TRIALS				
HEALTH CONDITION GROUP	Rank	%DALY	Rank	Observed no.	%	Expected no. (based on %DALY)	Observed/ expected %
Cancer	1	18%	2	375	15%	440	85%
Cardiovascular disorders	2	15%	1	377	15%	363	104%
Musculoskeletal disorders	3	13%	3	213	9%	321	66%
Mental and substance use disorders	4	12%	4	164	7%	301	55%
Injuries (intentional and unintentional)	5	9%	8	77	3%	231	33%
Neurological (including dementia)	6	8%	6	146	6%	191	76%
Chronic respiratory diseases	7	5%	5	151	6%	129	117%
Diabetes mellitus	8	2%	7	144	6%	47	305%

DATA NOTES

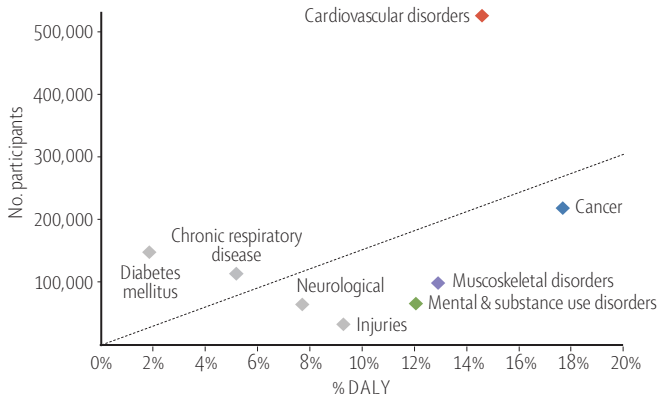
%DALY is derived from IHME, 2016[15]. Trial data for this section have been extracted from the ANZCTR and ClinicalTrials.gov according to the key condition groups extracted from the NZ Ministry of Health burden of disease report[16] and may not match data for the condition categories elsewhere in the report.

2.2.5 Number of trial participants per condition compared to burden of disease

The burden of disease can also be compared with the scale of trial activity in terms of numbers of participants. Participant numbers for cancer and chronic lung disease are fairly close to what would be expected given their relative burden of disease, while cardiovascular trials show higher than expected number of participants, reflecting that there are some multinational mega trials in this condition group. There are more participants in diabetes trials than what would be expected.

However, trials focussing on mental health show significantly fewer participants than would be expected, as do neurological conditions including dementia, injury, and musculoskeletal conditions.

Figure 16. Relationship between total number of trial participants and %DALY (as an indicator of relative burden of disease) and conditions studied by New Zealand clinical trials registered 2006–2015



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 the variable falls below the %DALY.

Table 14. Number of participants in registered New Zealand clinical trials focussing on key condition groups as a percentage of total number of participants, and comparison to the expected number based on %DALY, for trials registered 2006–2015

	BURDEN OF DISEASE		NUMBER OF TRIAL PARTICIPANTS				
HEALTH CONDITION GROUP	Rank	%DALY	Rank	Observed no.	%	Expected no. (based on %DALY)	Observed/ expected %
Cancer	1	18%	2	217,446	14%	267,462	81%
Cardiovascular disorders	2	15%	1	524,586	35%	220,618	238%
Musculoskeletal disorders	3	13%	5	97,819	6%	194,930	50%
Mental and substance use disorders	4	12%	6	65,459	4%	182,841	36%
Injuries (intentional and unintentional)	5	9%	8	33,979	2%	140,531	24%
Neurological (including dementia)	6	8%	7	64,681	4%	116,353	56%
Chronic respiratory diseases	7	5%	4	113,059	7%	78,576	144%
Diabetes mellitus	8	2%	3	147,732	10%	28,711	515%

DATA NOTES

%DALY is derived from IHME, 2016.[15] Trial data for this section have been extracted from the ANZCTR and ClinicalTrials.gov according to the key condition groups extracted from the NZ Ministry of Health burden of disease report[16] and may not match data for the condition categories elsewhere in the report.

An outlier has been removed for the burden of disease category 'Mental and substance use disorders'. This was a multi-level community intervention with 714,306 participants. Two additional outliers (with 300,000 and 100,000 participants) from studies which did not fall into one of the main burden of disease groups have been removed from the denominator. The denominator (N = 1,511,084) was based on all trials, excluding the three outliers.

2.3 Purpose of study – treatment, prevention, diagnosis, education

'Purpose of study' has been analysed according to the four categories available on the ANZCTR registration form.

Overall, of the 2,455 New Zealand clinical trials registered 2006–2015 that specify a purpose, 81 per cent cite 'treatment', 13 per cent 'prevention', 3 per cent 'education/counselling/training' and 2 per cent 'diagnosis'.

Trials aiming to investigate treatment interventions have fallen slightly as a proportion of registrations each year, accounting for 88 per cent of trials in 2006 and 83 per cent in 2015. 'Prevention' and 'diagnosis' trials and activity with a purpose of 'education/ counselling/ training' have remained relatively stable.

Table 15. Number of New Zealand clinical trials registered each year, 2006–2015, by purpose of study

	TREATMENT	PREVENTION	EDUCATION/ COUNSELLING/ TRAINING	DIAGNOSIS	OTHER	TOTAL WITH PURPOSE LISTED
2006	147	15	2	4	0	168
2007	117	26	3	2	1	149
2008	150	16	8	0	3	177
2009	196	29	3	3	2	233
2010	202	41	2	5	0	250
2011	202	33	8	5	6	254
2012	205	40	17	5	3	270
2013	239	42	11	12	3	307
2014	248	44	8	8	5	313
2015	278	37	5	10	4	334
TOTAL	1,984 (81%)	323 (13%)	67 (3%)	54 (2%)	27 (1%)	2,455

Figure 17. Purpose of study for New Zealand clinical trials registered 2006–2015

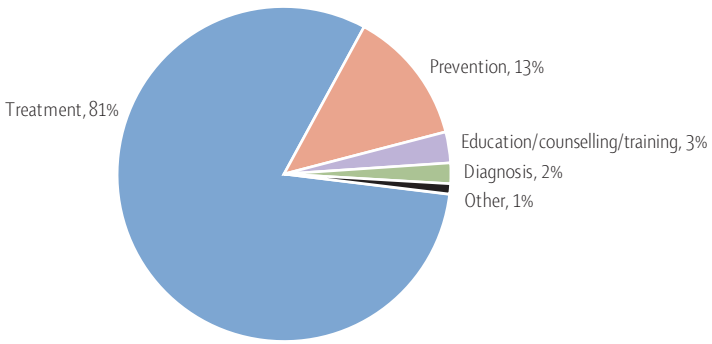
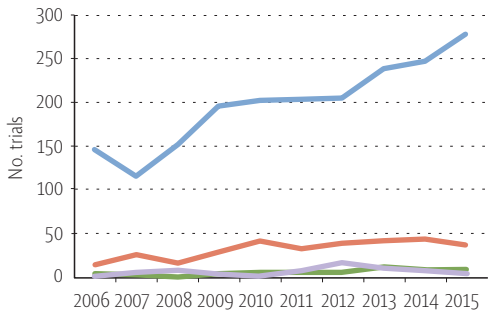
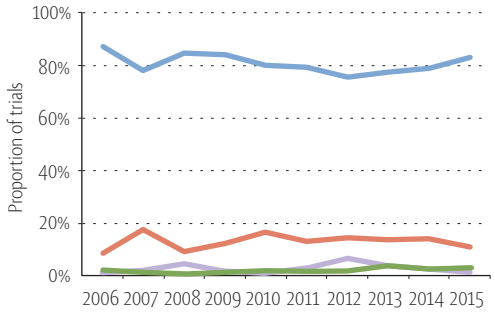


Figure 18. Trends in purpose of study for registered New Zealand clinical trials, 2006–2015

... Number



... Proportion



Treatment
Prevention
Education/counselling/training
Diagnosis

DATA NOTES

This is a mandatory field with only one selection allowed on both the ANZCTR and ClinicalTrials.gov registration forms.

Options available differ slightly between the ANZCTR and ClinicalTrials.gov forms. (See Appendix 3 for mapping details.)

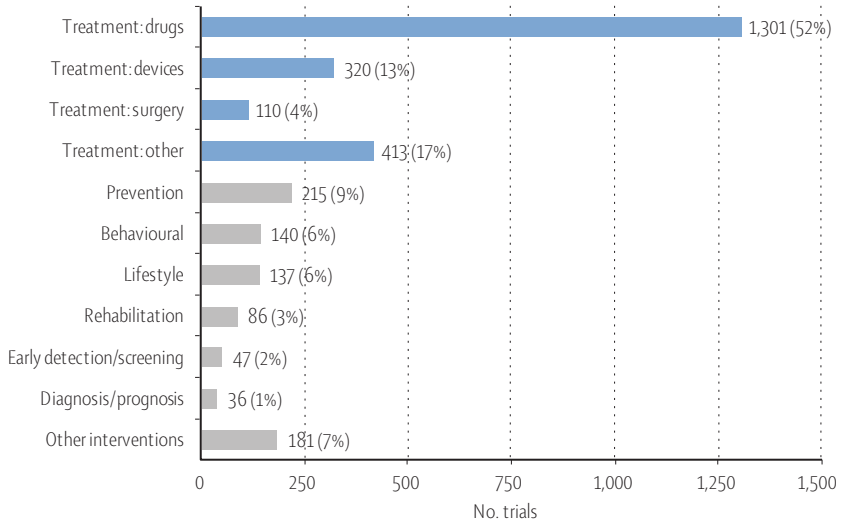
Proportions are of total trials where purpose is listed (N=2,455, including 27 registered on ClinicalTrials.gov with 'other' purposes – supportive care, screening, basic science, health service research). Thirty trials registered on ClinicalTrials.gov have no purpose listed and are not included in this analysis.

2.4 Intervention type – drugs, devices, behavioural interventions, screening programs

Drugs are the most commonly researched intervention in New Zealand clinical trials, studied by 52 per cent of trials registered 2006–2015. However, while the absolute number of drug trials registered has risen each year from 104 in 2006 to 175 in 2015, they have slightly fallen as a proportion of overall registered trial activity, from 62 per cent in 2006 to 51 per cent in 2015.

At the same time, the number of trials of preventive interventions, of devices, and of treatments other than drugs, devices or surgery, has been growing slightly. In particular, trial activity focussing on the 'other treatment' category has increased, from just 19 in 2006 (11 per cent of trials) to 80 in 2015 (24 per cent). This category includes interventions such as exercise, physiotherapy, cognitive therapy, special diets, psychological, herbal medicines, web-based treatments, motivational classes, music therapy and stem cell interventions.

Figure 19. Types of intervention studied by New Zealand clinical trials registered 2006–2015



DATA NOTES

Intervention type is a mandatory field on both the ANZCTR and ClinicalTrials.gov registration forms.

The ANZCTR form allows for entry of up to three intervention codes chosen from a specified list (see Appendix 4).

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 type comprises an intervention). Only one instance of any repeated code has been included.

Proportions are of total number of trials registered: N=2,485.

Figure 20. Trends in treatment interventions studied by registered New Zealand clinical trials, 2006–2015

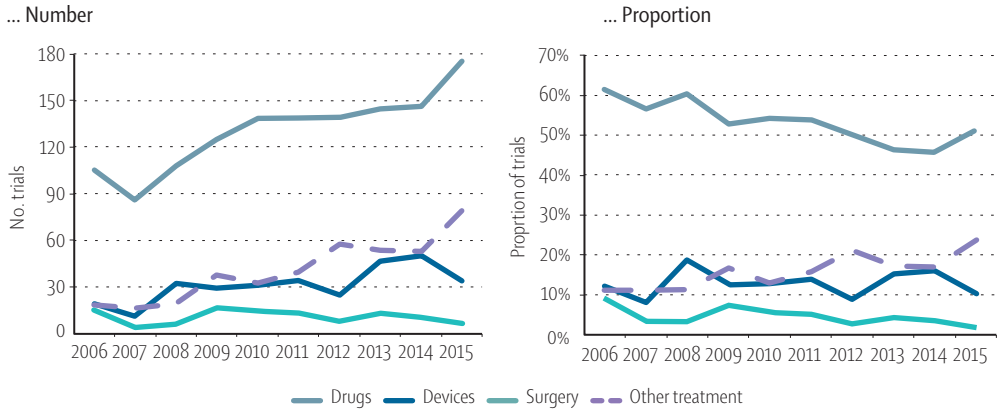


Table 16. Number of New Zealand clinical trials registered each year, 2006–2015, by intervention type

INTERVENTION TYPE	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Treatment: drugs	104	85	107	125	138	138	139	144	146	175
Treatment: devices	20	12	33	30	32	35	25	47	51	35
Treatment: surgery	15	5	6	17	15	13	8	13	11	7
Treatment: other	19	17	20	39	33	40	58	54	53	80
Prevention	4	9	3	16	27	28	38	22	35	33
Behaviour	5	3	4	7	13	15	25	23	25	20
Lifestyle	2	3	3	7	16	17	24	15	22	28
Rehabilitation	1	5	2	6	9	9	9	15	13	17
Early detection/ screening	1	1	0	1	3	8	9	9	12	3
Diagnosis/ prognosis	1	0	1	4	3	5	4	3	7	8
Other interventions	19	14	12	14	23	11	18	33	19	18
None/not applicable	5	0	1	0	0	0	0	0	0	0
TOTAL TRIALS REGISTERED*	169	150	177	236	254	255	276	309	319	340

* 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.

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 trials, the most common focus has been a combination of the safety and efficacy of the intervention, accounting for 58 per cent of drug trials specifying an endpoint. An additional 24 per cent specified efficacy alone and 7 per cent safety alone. 138 trials (11 per cent) cited assessment of the other endpoint categories, looking at specific aspects of drug actions and effects. The efficacy category and safety category have remained relatively stable as a proportion of trials registered each year, whilst there has been a downward shift in combined safety/efficacy trials and an increase in other endpoint types since 2012.

Predictably, efficacy has been the most frequently specified focus for non-drug trials, accounting for 54 per cent of trials, with an additional 35 per cent citing a combination of efficacy and safety. Only 7 per cent of non-drug trials looked at safety alone. Safety and other categories have remained relatively stable over the decade to 2015, whilst there has been a slight upward shift in efficacy trials and a slight downward shift in combined safety/efficacy trials.

Figure 21. Types of intervention endpoint for New Zealand clinical trials registered 2006-2015

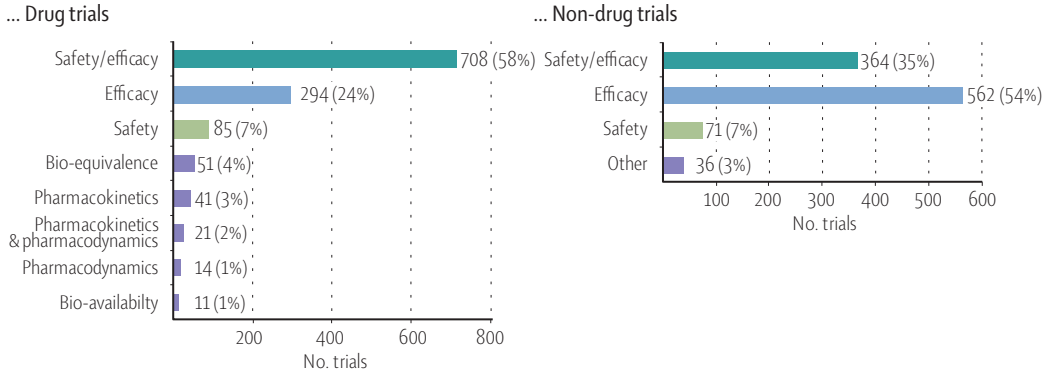


Figure 22. Trends in type of intervention endpoint for registered New Zealand clinical trials, 2006–2015

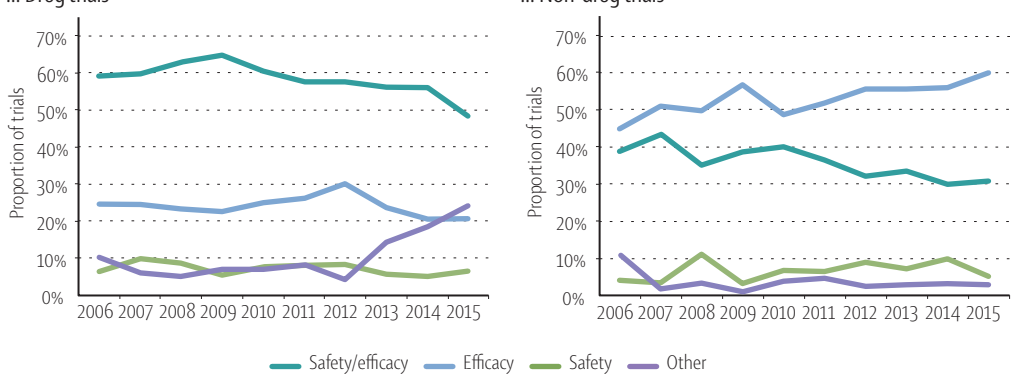


Table 17. Number of New Zealand clinical trials registered each year, 2006–2015, by type of endpoint

a. Drug trials

	SAFETY/ EFFICACY	EFFICACY	SAFETY	BIO-EQUIVALENCE	PHARMACOKINETICS	PHARMACOKINETICS/ PHARMACODYNAMICS	PHARMACODYNAMICS	BIO-AVAILABILITY	NOT SPECIFIED
2006	58	24	6	1	4	3	2	0	6
2007	49	20	8	0	2	2	1	0	3
2008	65	24	9	1	2	1	0	1	4
2009	75	26	6	0	2	5	0	1	10
2010	80	33	10	0	2	3	3	1	6
2011	71	32	10	0	2	2	3	3	15
2012	72	38	10	0	3	1	1	0	14
2013	78	33	8	14	4	2	0	0	5
2014	79	29	7	15	4	0	3	4	5
2015	81	35	11	20	16	2	1	1	8
TOTAL	708 (57.8%)	294 (24.0%)	85 (6.9%)	51 (4.2%)	41 (3.3%)	21 (1.7%)	14 (1.1%)	11 (0.9%)	76

b. Non-drug trials

	SAFETY/ EFFICACY	EFFICACY	SAFETY	OTHER	NOT SPECIFIED
2006	25	29	3	7	1
2007	27	32	2	1	3
2008	22	31	7	2	8
2009	39	57	3	1	11
2010	41	50	7	4	14
2011	39	55	7	5	11
2012	40	69	11	3	14
2013	47	78	10	4	26
2014	43	81	14	5	30
2015	41	80	7	4	33
TOTAL	364 (35.2%)	562 (54.4%)	71 (6.9%)	36 (3.5%)	151

DATA NOTES

Drug trials have been defined as any trial selecting intervention code 'Treatment: drugs' on ANZCTR or 'Drug' on ClinicalTrials.gov. 'Endpoint' is not a mandatory field on the ANZCTR or ClinicalTrials.gov. A total of 76 drug trials and 151 non-drug trials did not specify an endpoint. All proportions are of trials where endpoint has been specified (a total of 1,225 drug trials and 1,033 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 (1,211 out of a total of 1,301 registered New Zealand 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 only been 2 registered phase 0 drug trials over the decade to 2015.
- **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, 206 phase 1 drug trials have been registered between 2006 and 2015 (including 27 combined phase 1/2 trials), accounting for 17 per cent of drug trials specifying a phase. On an annual basis, phase 1 trials have grown as a proportion of trials registered, from 7 per cent in 2006 to 33 per cent in 2015.
- **Phase 2** trials are controlled studies designed to evaluate the effectiveness 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 New Zealand drug trials, with 308 phase 2 trials registered, accounting for 25 per cent of drug trials overall. This level of activity, which includes 29 combined phase 2/3 trials, has remained relatively stable over the decade.
- **Phase 3** trials are undertaken after preliminary evidence suggesting effectiveness of the drug has been obtained, in order to gather additional information on benefits and risk, including possible adverse reactions. A total of 579 phase 3 studies have been registered (including 18 combined phase 3/4 trials), accounting for 48 per cent of registered drug trials overall. This makes phase 3 the most common stage of research among New Zealand drug trials, although its share has been trending downward, falling from 65 per cent in 2006 to 40 per cent in 2015.
- **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 116 phase 4 studies have been registered between 2006 and 2015, accounting for 10 per cent of drug trials overall and a relatively consistent 6–12 per cent each year.

DATA NOTES

Drug trials have been defined as any trial selecting intervention code 'Treatment: drugs' on ANZCTR or 'Drug' on ClinicalTrials.gov.
Trial phase is a mandatory field on ClinicalTrials.gov registration form but not on the ANZCTR form. There are 36 drug trials on the ANZCTR with no value in the study phase field.
Only one selection is possible on both the ANZCTR and ClinicalTrials.gov forms.
Selection of 'Not applicable' is possible on both the ANZCTR and ClinicalTrials.gov registration forms. The ANZCTR recommends 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, for example, where drugs may be administered as part of the intervention but this is not the main focus of the trial. A total of 54 drug trials selected 'Not applicable'.
All proportions are of drug trials where phase has been specified (a total of 1,211 trials).

Figure 23. Trends in phase of study for registered New Zealand drug trials, 2006–2015

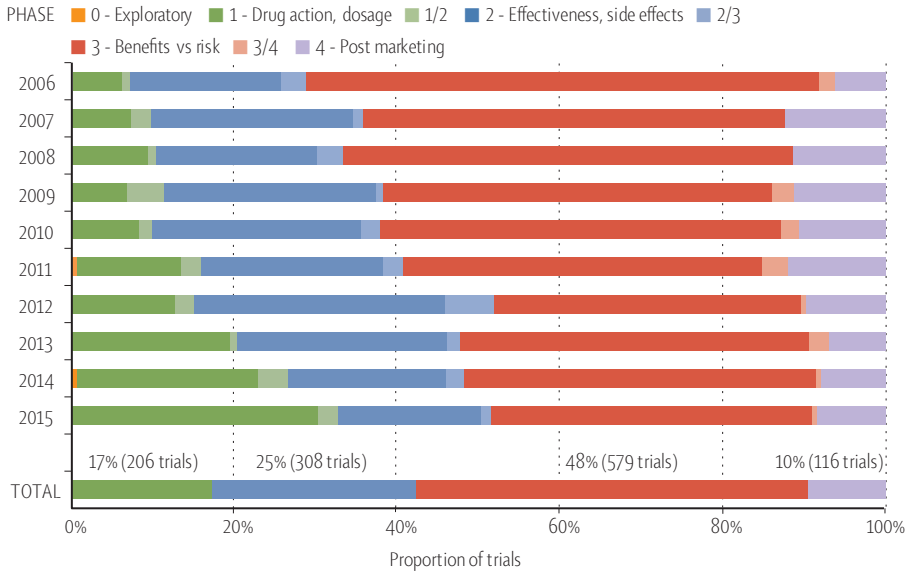


Table 18. Number of registered New Zealand clinical drug trials registered each year, 2006–2015, by phase of study

	PHASE 0	PHASE 1	PHASE 1/2	PHASE 2	PHASE 2/3	PHASE 3	PHASE 3/4	PHASE 4
2006	0	6	1	18	3	61	2	6
2007	0	6	2	20	1	42	0	10
2008	0	9	1	19	3	53	0	11
2009	0	8	5	30	1	55	3	13
2010	0	11	2	34	3	65	3	14
2011	1	16	3	28	3	55	4	15
2012	0	17	3	41	8	50	1	13
2013	0	25	1	33	2	55	3	9
2014	1	31	5	27	3	60	1	11
2015	0	50	4	29	2	65	1	14
TOTAL	2 (0.2%)	179 (14.8%)	27 (2.2%)	279 (23.0%)	29 (2.4%)	561 (46.3%)	18 (1.5%)	116 (9.6%)

Part 3: Trial design

Design aspects of New Zealand clinical trials

This section uses combined ANZCTR and ClinicalTrials.gov data unless otherwise noted.

Data are displayed as per ANZCTR registration form categories and 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 New Zealand clinical trials are included (i.e. interventional studies with at least one recruitment site in New Zealand).

Unless otherwise noted, 'year' refers to year of trial registration.

3.1 Key findings

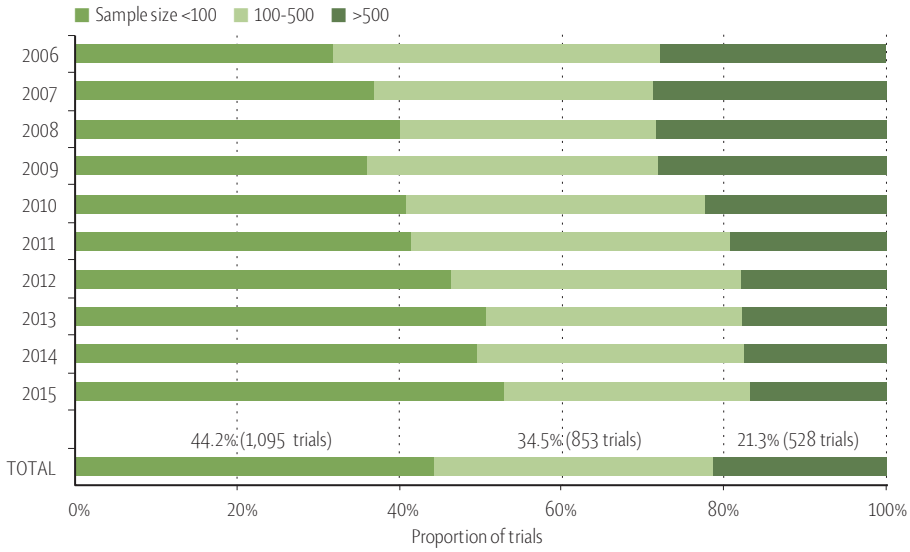
- The median **sample size** for New Zealand clinical trials has declined from 230 in 2006 to 80 in 2015.
- **Drug trials** have tended to involve more participants than non-drug trials. However, drug trials have also seen a sharp contraction in sample sizes over time, with the median falling by 57 per cent between 2006 and 2015, from 329 to 140.
- Overall, **cancer** trials had the largest median sample size (266), followed by trials focussing on reproductive health and childbirth (235) and infection (200).
- The majority (89 per cent) of registered New Zealand clinical trials have recruited **both male and female** participants. The proportion of all trials recruiting only women (7 per cent) has tended to be slightly higher than the proportion of trials recruiting only men (5 per cent).
- Approximately 83 per cent of New Zealand clinical trials registered each year have been **randomised controlled trials** and this proportion has declined slightly from a high of 89 per cent in 2007 to a low of 79 per cent in 2013. A higher proportion of drug trials have used randomised allocation (88%) compared to non-drug trials (78%).
- Parallel assignment, where different groups of participants receive different interventions during the same time period, has been the most common **method for assigning interventions** to trial participants, used by 67 per cent of trials specifying a method.

3.2 Sample sizes

The median sample size for all registered New Zealand clinical trials has decreased to around 90 participants since 2011. Before that, trials registered from 2006 to 2010 were characterised by higher medians of 139–230 (Table 19, page 39), with a larger proportion recruiting more than 500 participants (Figure 24).

Generally, as Figure 25 shows, 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 1.5.1, page 13).

Figure 24. Trends in sample size for registered New Zealand clinical trials, 2006–2015



DATA NOTES

Sample size is a mandatory field on both ANZCTR and ClinicalTrials.gov registration forms. Data are missing for 9 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 any 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 along with an 'anticipated' or 'actual' label.

Figure 25. Trends in median sample size and interquartile range (IQR) for registered New Zealand clinical trials, 2006–2015

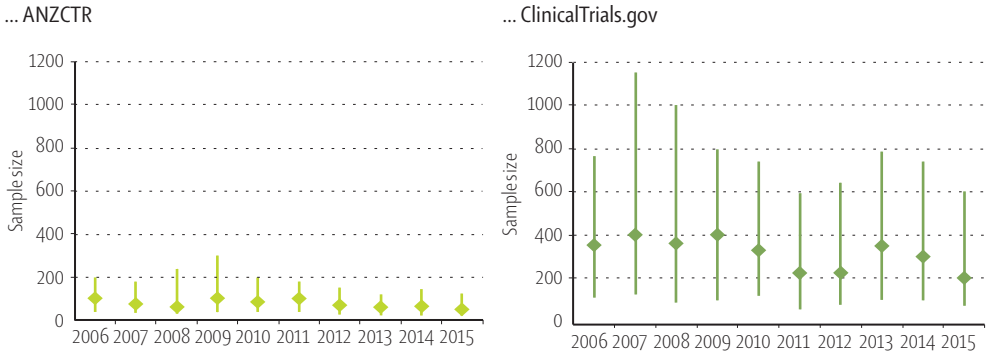


Table 19. Median sample size and interquartile range (IQR) for New Zealand clinical trials registered on the ANZCTR and on ClinicalTrials.gov, 2006–2015

	ANZCTR			CLINICALTRIALS.GOV			COMBINED		
	NO. TRIALS	MEDIAN SAMPLE SIZE	IQR	NO. TRIALS	MEDIAN SAMPLE SIZE	IQR	NO. TRIALS	MEDIAN SAMPLE SIZE	IQR
2006	62	100	40-200	107	353	118-769	169	230	65-597
2007	64	74	37-180	86	400	126-1,157	150	230	50-699
2008	80	60	32-238	97	359	86-1,000	177	159	50-553
2009	137	100	40-300	99	401	100-797	236	159	60-610
2010	146	85	40-200	108	330	120-738	254	139	50-430
2011	142	100	40-178	113	223	60-593	255	106	44-300
2012	159	68	30-150	117	223	79-645	276	100	40-335
2013	191	62	27-120	118	350	102-787	309	90	37-322
2014	197	65	24-143	122	300	100-739	319	100	34-304
2015	205	50	24-125	135	205	75-600	340	80	30-283
TOTAL	1,383	64	30-175	1,102	312	90-750	2,485	120	40-416

3.2.1 Drug trials versus non-drug trials

Drug trials registered each year tended to involve more participants than non-drug trials, with a median sample size of 210 participants overall in drug trials compared to 70 for non-drug trials.

The median sample size for drug trials fluctuated over time, falling from 329 participants in 2006 to 180 participants in 2011, increasing slightly to 219 participants in 2013 then falling again to 140 participants in 2015. Over the same period, the median sample size for non-drug trials also fluctuated; falling from 135 in 2006 to 60 in 2008, and increasing slightly to 100 in 2009 then falling to 60 participants in 2012, and remaining around that level since.

Figure 26. Trends in median sample size and interquartile range (IQR) for registered New Zealand clinical trials, 2006–2015

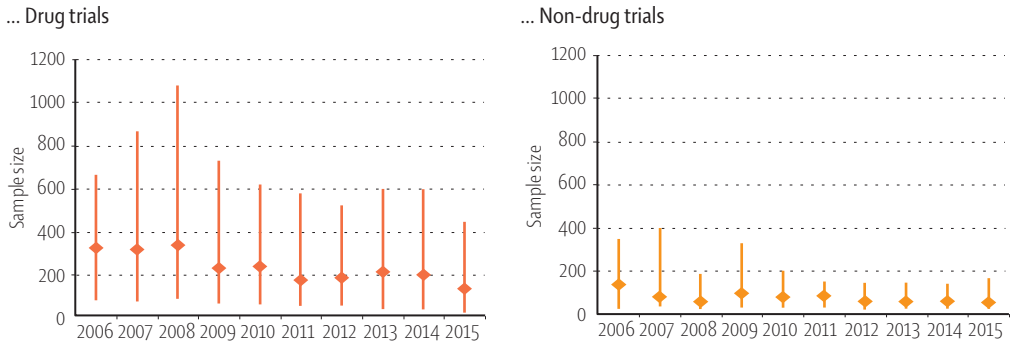


Table 20. Median sample size and interquartile range (IQR) for registered New Zealand drug and non-drug clinical trials, 2006–2015

	DRUG TRIALS			NON-DRUG TRIALS		
	NO. TRIALS	MEDIAN SAMPLE SIZE	IQR	NO. TRIALS	MEDIAN SAMPLE SIZE	IQR
2006	103	329	85-668	63	135	31-350
2007	84	323	83-869	65	84	40-403
2008	107	346	94-1,081	70	60	29-185
2009	125	234	70-732	110	100	36-330
2010	138	242	69-621	116	80	36-200
2011	138	180	60-580	117	90	36-150
2012	137	190	61-522	137	60	25-146
2013	143	219	45-600	165	60	30-144
2014	145	200	48-600	173	60	28-140
2015	175	140	32-450	165	54	30-168
TOTAL	1,295	210	60-627	1,181	70	30-200

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.
Sample size uses the 'Actual' sample size value if available or the 'Target' sample size value if no 'Actual' value has been provided on the ANZCTR.
Sample size data missing for 9 trials on ClinicalTrials.gov.

3.2.2 Sample size by condition

Overall, cancer trials have had the largest median sample size (266), followed by trials focussing on reproductive health and childbirth (235) and infection (200) (Table 22, page 43).

Of the three other most frequently studied conditions, cardiovascular trials had a median sample size of 119 participants, respiratory trials had a median sample size of 158 participants, and oral and gastrointestinal trials had a median sample size of 150 participants (Figure 27, page 42).

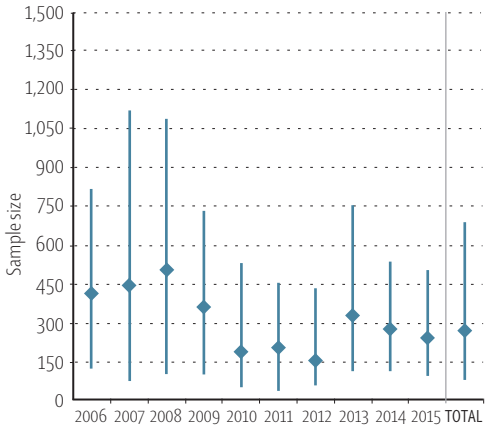
Table 21. Median sample size and interquartile range (IQR) of New Zealand clinical trials registered each year, 2006–2015, for the four types of condition most frequently studied

	CANCER		CARDIOVASCULAR CONDITIONS		RESPIRATORY CONDITIONS		ORAL AND GASTROINTESTINAL CONDITIONS	
	MEDIAN SAMPLE SIZE	IQR	MEDIAN SAMPLE SIZE	IQR	MEDIAN SAMPLE SIZE	IQR	MEDIAN SAMPLE SIZE	IQR
2006	415	124-815	224	100-780	64	34-314	33	25-213
2007	444	73-1,122	407	98-1,286	139	40-1,750	330	53-571
2008	500	105-1,090	388	102-2,322	185	24-447	82	39-280
2009	363	105-730	102	60-1,250	217	39-726	100	30-385
2010	185	50-527	98	47-487	151	30-330	101	52-200
2011	202	38-452	83	30-174	237	60-606	210	117-497
2012	150	55-433	93	30-307	182	60-488	199	51-357
2013	327	115-756	60	35-371	225	60-726	82	40-295
2014	274	117-534	85	40-550	300	50-440	162	50-302
2015	240	100-500	90	42-200	84	31-256	127	35-311
TOTAL	266	79-688	119	49-630	158	40-450	150	40-350

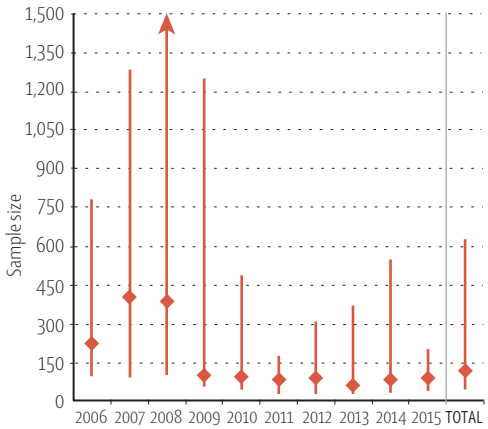
3.2.2 continued ...

Figure 27. Trends in median sample size and interquartile range (IQR) of registered New Zealand clinical trials, 2006–2015, for the four types of condition most frequently studied

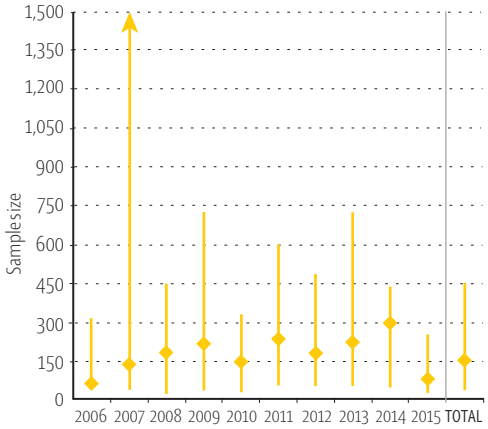
... Cancer



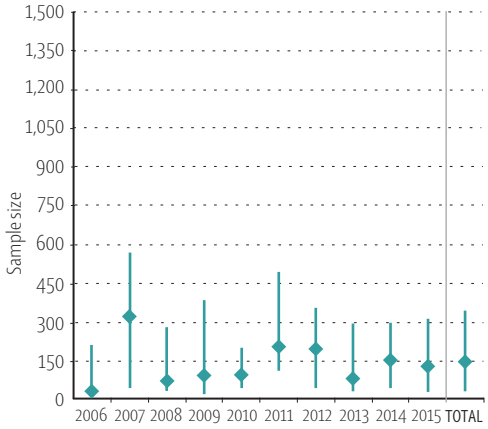
... Cardiovascular conditions



... Respiratory



... Oral and gastrointestinal



DATA NOTES

Sample size is a mandatory field on both the ANZCTR and ClinicalTrials.gov registration forms. Data are missing for 9 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 any 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 along with an 'anticipated' or 'actual' label.

Table 22. Median sample size for New Zealand clinical trials registered each year, 2006–2015, by condition

CONDITION	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	TOTAL
Cancer	415	444	500	363	185	202	150	327	274	240	266
Reproductive health and childbirth	248	83	385	275	750	105	417	72	273	135	235
Infection	326	137	200	383	152	165	360	320	174	200	200
Neurological	176	383	231	494	97	198	172	235	60	100	189
Inflammatory and immune system	251	80	20	163	606	65	85	258	217	142	177
Public health	260	402	1,300	1093	579	132	120	127	108	60	168
Respiratory	64	139	185	217	151	237	182	225	300	84	158
Oral and gastrointestinal	33	330	82	100	101	210	199	82	162	127	150
Human genetics and inherited disorders	1,011	80	466	156	229	73	124	247	172	40	132
Injuries and accidents	61	742	43	500	80	100	91	200	250	85	122
Cardiovascular	224	407	388	102	98	83	93	60	85	90	119
Renal and urogenital	127	448	110	240	120	75	120	229	80	60	119
Metabolic and endocrine	497	143	130	40	140	107	132	232	43	72	107
Musculoskeletal	413	180	135	123	90	147	90	129	51	48	100
Stroke	415	400	2,800	179	56	85	86	100	248	64	100
Surgery	121	150	78	100	120	100	111	100	100	80	100
Anaesthesiology	660	75	60	80	120	100	125	58	150	93	96
Blood	60	80	59	138	165	49	124	77	125	70	90
Mental health	135	83	195	502	96	100	80	48	65	50	80
Skin	-	262	57	98	324	75	15	45	138	107	80
Eye	75	243	50	121	68	91	90	50	44	220	70
Diet and nutrition	18	60	181	110	85	90	55	63	38	30	60
Alternative and complementary medicine	-	260	-	46	80	138	15	38	22	45	45
Physical medicine / rehabilitation	2,104	85	60	45	45	170	72	53	36	33	41
Ear	-	-	-	-	-	-	40	40	-	-	40
Other	25	18	60	150	1,000	43	35	26	26	24	26

3.3 Participant recruitment by sex

The majority (89 per cent) of registered New Zealand clinical trials have recruited both male and female participants. Trials recruiting only women have fallen slightly as a proportion of trials registered each year, from around 11 per cent in 2007 to 5-6 per cent in 2014 and 2015. At the same time, there has been a slight increase in the proportion of trials recruiting only men (from 3 per cent in 2006 to 6 per cent in 2015).

It should be noted that these data only describe participant eligibility and are not representative of the actual participation rate for each gender.

Figure 28. Trends in the eligibility of male and female participants for registered New Zealand clinical trials, 2006–2015

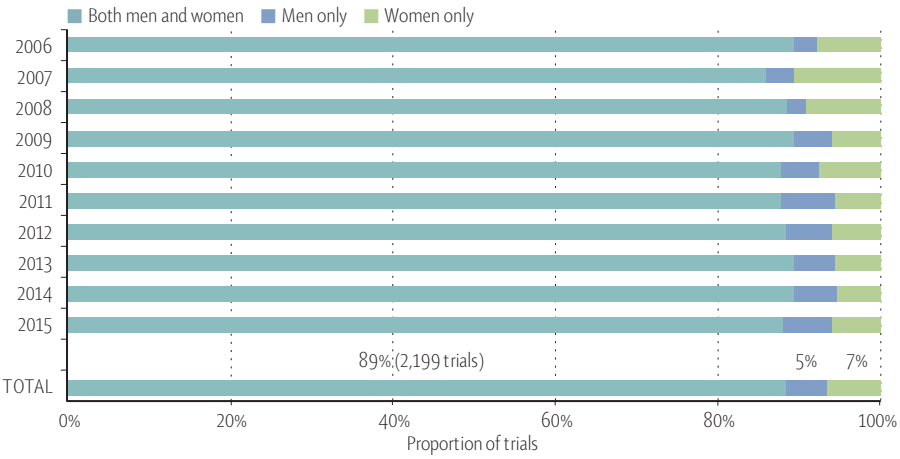


Table 23. Number and proportion of New Zealand clinical trials registered each year, 2006–2015, by eligible sex

	BOTH MEN AND WOMEN		MEN ONLY		WOMEN ONLY	
	NO.	PROPORTION	NO.	PROPORTION	NO.	PROPORTION
2006	151	89.3%	5	3.0%	13	7.7%
2007	129	86.0%	5	3.3%	16	10.7%
2008	157	88.7%	4	2.3%	16	9.0%
2009	211	89.4%	11	4.7%	14	5.9%
2010	223	87.8%	12	4.7%	19	7.5%
2011	224	87.8%	17	6.7%	14	5.5%
2012	244	88.4%	16	5.8%	16	5.8%
2013	276	89.3%	16	5.2%	17	5.5%
2014	285	89.3%	17	5.3%	17	5.3%
2015	299	87.9%	21	6.2%	20	5.9%
TOTAL	2,199	88.5%	124	5.0%	162	6.5%

DATA NOTES

Selecting sex of participants eligible for a trial is mandatory for both the ANZCTR and ClinicalTrials.gov.

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 83 per cent of New Zealand clinical trials registered each year are randomised controlled trials and this proportion has declined slightly from a high of 89 per cent in 2007 to a low of 79 per cent in 2013. A higher proportion of drug trials have used randomised allocation (88%) compared to non-drug trials (78%).

Figure 29. Trends in randomised controlled trials as a proportion of total trials (where allocation method has been specified), for drug and non-drug trials, 2006–2015

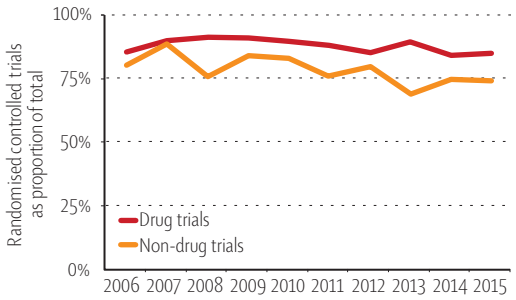


Table 24. Number of New Zealand drug trials and non-drug trials registered each year, 2006–2015, by participant allocation method

	DRUG TRIALS			NON-DRUG TRIALS		
	RANDOMISED	NON-RANDOMISED	NOT SPECIFIED	RANDOMISED	NON-RANDOMISED	NOT SPECIFIED
2006	82	14	8	51	13	1
2007	70	8	7	54	7	4
2008	89	8	10	50	16	4
2009	112	10	3	88	17	6
2010	114	13	11	92	18	6
2011	111	15	12	83	26	8
2012	107	18	14	101	25	11
2013	121	14	9	108	47	10
2014	117	21	8	118	39	16
2015	139	25	11	114	39	12
TOTAL	1,062 (88%)	146 (12%)	93	859 (78%)	247 (22%)	78

DATA NOTES

The allocation method field is mandatory on the ANZCTR but optional for ClinicalTrials.gov; a total of 93 drug trials and 78 non-drug trials registered on ClinicalTrials.gov provided no information on participant allocation (listed as 'Not specified' above). Proportions are of trials where allocation method has been specified (a total of 1,208 drug trials and 1,106 non-drug trials).

3.5 Intervention assignment method

This indicator reflects the way interventions are assigned to trial participants.

The main methods are:

- **Parallel** assignment, where different groups of participants receive different interventions during the same time period. This is the most common assignment method for registered New Zealand clinical trials, used by 67 per cent of those specifying a method.
- **Single group** assignment, where all participants receive the same intervention. This is the second most common method, accounting for 18 per cent of trials.

Less common assignment methods, which together account for 16 per cent 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 trials by assignment type has been fairly consistent over the 10-year period from 2006 to 2015 with the exception of a slight increase in trials using crossover assignment in 2014-2015 period.

DATA NOTES

Specifying which assignment method is used is optional for both the ANZCTR and ClinicalTrials.gov.
A total of 138 trials did not provide information on assignment; these are listed as 'Not specified'.
Proportions are of trials specifying an assignment method (a total of 2,347 trials).

Figure 30. Trends in methods of assigning interventions to participants for registered New Zealand clinical trials, 2006–2015

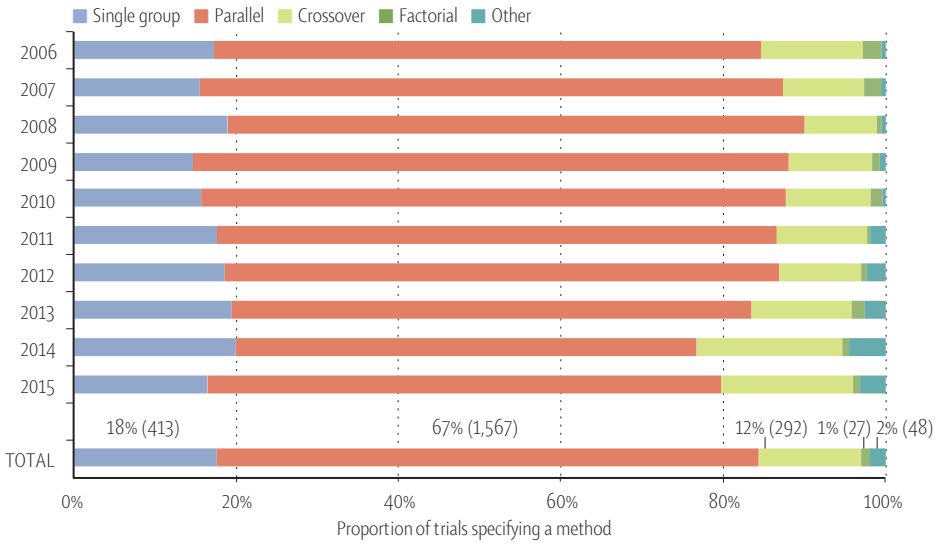


Table 25. Number of New Zealand clinical trials registered each year, 2006–2015, by assignment method

	SINGLE GROUP	PARALLEL	CROSSOVER	FACTORIAL	OTHER	NOT SPECIFIED
2006	29	113	21	4	1	1
2007	23	106	15	3	1	2
2008	32	120	15	1	1	8
2009	33	163	23	2	2	13
2010	38	173	25	4	1	13
2011	43	167	27	1	5	12
2012	48	176	26	2	6	18
2013	55	181	35	4	8	26
2014	59	166	53	3	13	25
2015	53	202	52	3	10	20
TOTAL	413 (18%)	1,567 (67%)	292 (12%)	27 (1%)	48 (2%)	138

Part 4: Trial registration

Timing of registration and ethics approval status

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.

Ideally, registration should be completed prospectively – before enrolment of the first participant.

This section uses data on New Zealand clinical trials registered on the ANZCTR only.

Equivalent analysis is not possible for ClinicalTrials.gov, as it only collects data on the month, not the specific date, that recruitment starts.

'Year' refers to year of trial registration.

4.1 Key findings

- The proportion of New Zealand studies **registered prospectively** on the ANZCTR each year increased from 52 per cent in 2006 to a peak of 80 per cent in 2013, and has since plateaued at around 75 per cent.
- For prospectively registered studies, the median number of **days between trial registration and start of enrolment** ranged from 30 days for trials registered in 2015 up to 111 days for trials registered in 2009. For trials registering retrospectively, the median time between start of enrolment and registration has ranged from 47 days for trials registered in 2015 up to 467 days for trials registered in 2012.
- Among the trials registered prospectively between 2006 and 2015, 50 per cent had **ethics approval** at time of registration.

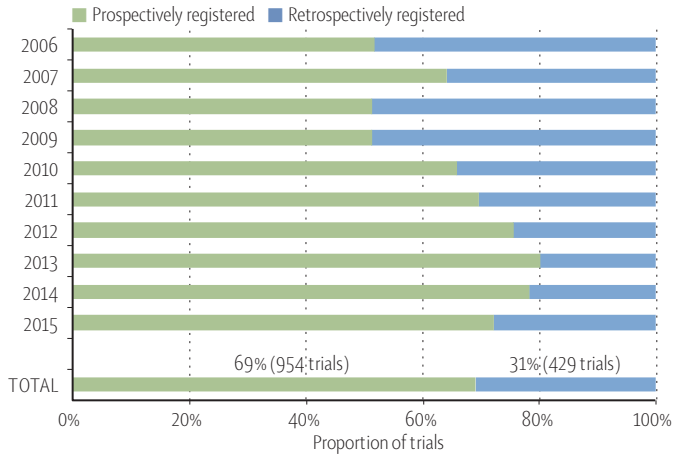
4.2 Prospective versus retrospective registration on the ANZCTR

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

Prospective registration means the process is complete and a registration number has been allocated *before* the first participant is enrolled. Prospective registration is supported and encouraged by numerous organisations nationally and internationally. For example, the International Committee of Medical Journals Editors (ICMJE) declared that from 1 July 2005, they would not consider a trial for publication without evidence that it had been registered in a publicly accessible trials registry prior to enrolment of the first participant.[11] The Declaration of Helsinki now also explicitly states that 'every clinical trial must be registered in a publicly accessible database before recruitment of the first subject'.[10]

The proportion of New Zealand trials registered prospectively on the ANZCTR each year increased from 52 per cent in 2006 to a peak of 80 per cent in 2013, and has since plateaued at around 75 per cent.

Figure 31. Trends in prospective versus retrospective registration of New Zealand clinical trials on the ANZCTR, 2006–2015



DATA NOTES

A prospective/retrospective label is automatically generated by the ANZCTR system based on the registration date and the actual date of first participant enrolment provided by the registrant, or the anticipated date of first participant enrolment if the actual date is not provided. If the registration date occurs after the listed start date the record is labelled as retrospectively registered. If registration occurs prior to the start date the trial is labelled as prospectively registered.

Table 26. Number and proportion of New Zealand clinical trials registered on the ANZCTR, 2006–2015, by prospective versus retrospective registration

	PROSPECTIVELY REGISTERED		RETROSPECTIVELY REGISTERED		
	NO.	PROPORTION	NO.	PROPORTION	TOTAL
2006	32	52%	30	48%	62
2007	41	64%	23	36%	64
2008	41	51%	39	49%	80
2009	70	51%	67	49%	137
2010	96	66%	50	34%	146
2011	99	70%	43	30%	142
2012	120	75%	39	25%	159
2013	153	80%	38	20%	191
2014	154	78%	43	22%	197
2015	148	72%	57	28%	205
TOTAL	954	69%	429	31%	1,383

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 ranged from 30 days for trials registered in 2015 up to 111 days for trials registered in 2009. For trials registering retrospectively, the median time between start of enrolment and registration has ranged from 47 days for trials registered in 2015 up to 467 days for trials registered in 2012.

Figure 32. Trends in the median number of days between trial registration and enrolment of the first participant, for New Zealand trials registered on the ANZCTR 2006–2015

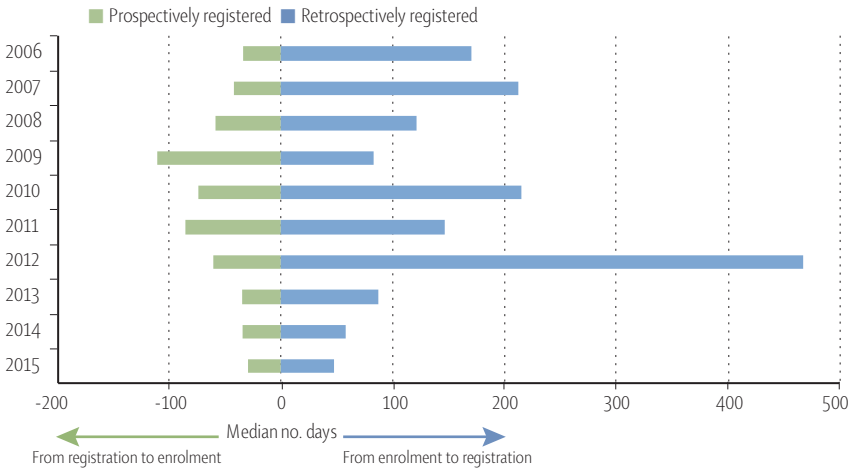


Table 27. Time between registration on the ANZCTR and enrolment of the first participant, for prospectively and retrospectively registered New Zealand clinical trials, 2006–2015

	MEDIAN NUMBER OF DAYS	
	PROSPECTIVELY REGISTERED TRIALS	RETROSPECTIVELY REGISTERED TRIALS
2006	34	171
2007	42	212
2008	59	121
2009	111	83
2010	75	215
2011	86	146
2012	61	467
2013	35	87
2014	35	58
2015	30	47

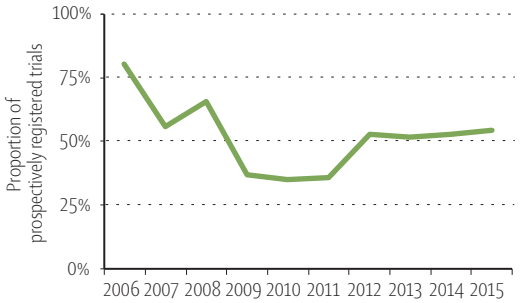
4.4 Ethics approval status

Ethics approval is not specifically required at the time of registration unless recruitment has already commenced.

Among the 954 New Zealand trials registered prospectively on the ANZCTR between 2006 and 2015, 50 per cent had ethics approval in place at time of registration. This proportion has varied from a low of 35 per cent in 2010 to a high of 81 per cent in 2006.

As of the end of 2015, there were only 4 New Zealand trials on the ANZCTR where recruitment had begun but there was no ethics approval recorded. All of these had been registered before 2015, when logic rules were implemented to prevent registrants from indicating that a trial had commenced without ethics approval.

Figure 33. Trends in the proportion of New Zealand clinical trials registered prospectively with ethics approval in place, 2006–2015



DATA NOTES
Ethics application status is provided by the registrant for each study record at the time of registration and can then be updated at any point, for example if the ethics application is approved after allocation of the ANZCTR registration number.

Table 28. Number and proportion of New Zealand clinical trials registered prospectively on the ANZCTR with ethics approved at registration, 2006–2015

	NO. TRIALS PROSPECTIVELY REGISTERED	TRIALS WITH ETHICS APPROVED	
		NO.	PROPORTION
2006	32	26	81%
2007	41	23	56%
2008	41	27	66%
2009	70	26	37%
2010	96	34	35%
2011	99	36	36%
2012	120	63	53%
2013	153	79	52%
2014	154	81	53%
2015	148	81	55%
TOTAL	954	476	50%

Table 29. Ethics approval and recruitment status of New Zealand clinical trials registered on the ANZCTR 2006–2015

ETHICS STATUS	RECRUITMENT STATUS	
	NOT YET COMMENCED: 381	COMMENCED: 1,002
Not yet approved: 182 trials	Still planning (or not updated): 178	Recruiting but no ethics approval: 4 (all registered before 2015)
Approved: 1,201 trials	Ethics approved and ready to start recruiting: 203	Recruiting with ethics approval: 998

Appendices

Appendix 1: Trial registration in New Zealand

In New Zealand 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 to a Health and Disability Ethics Committee (HDEC); and
- (where applicable) submit an application to Medsafe, the Medicines and Medical Devices Regulatory Authority for New Zealand.

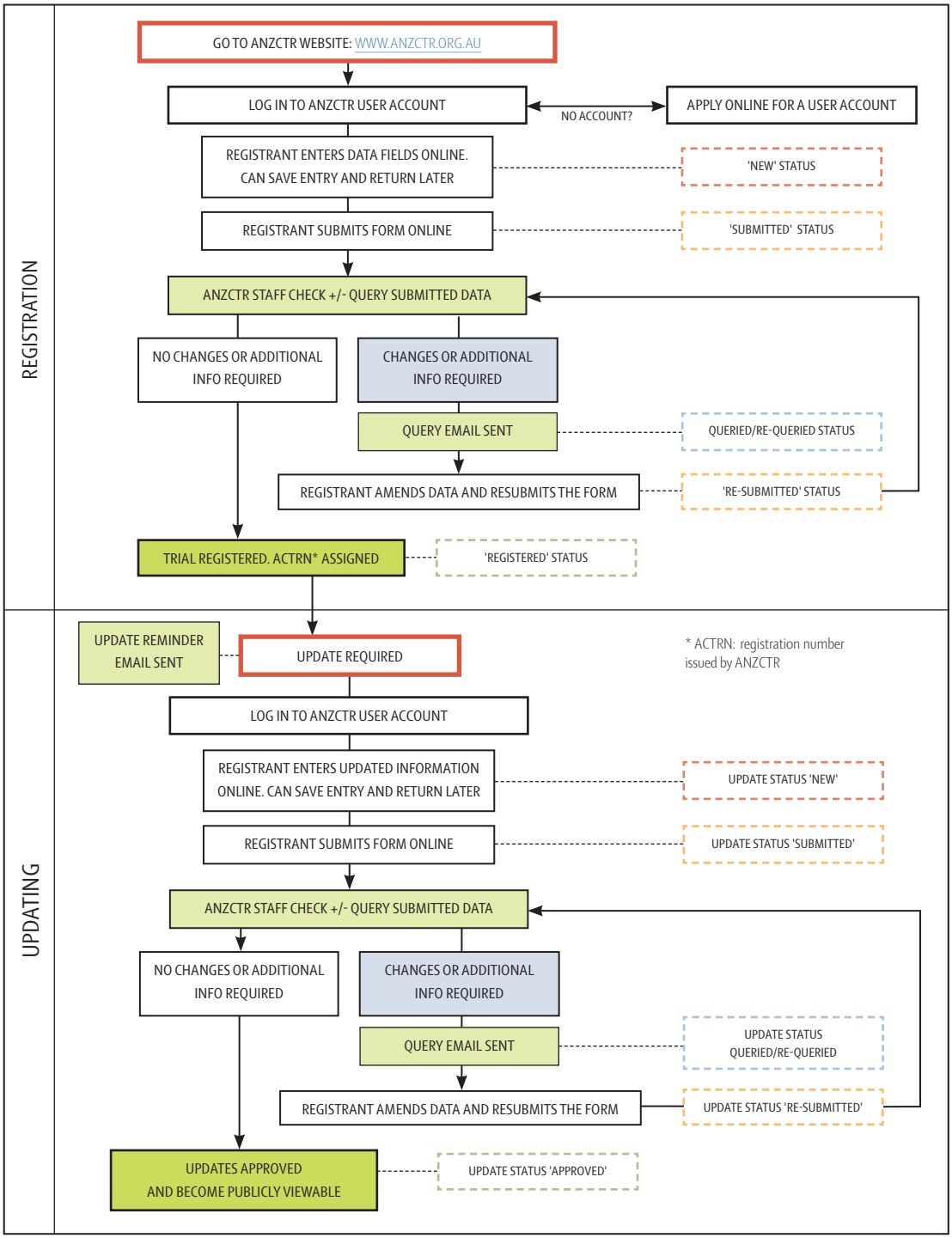
Data entry for these three agencies is currently not fully harmonised nor is data exchanged. Data lodged with Medsafe and HDECs are not publicly available.

Figure 34 provides an overview of the process of registering and updating a study on the ANZCTR.

Key characteristics of the registration process 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 34. ANZCTR trial registration and updating processes



ANZCTR online

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

- the ability to search both the ANZCTR and ClinicalTrials.gov registries for New Zealand 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.

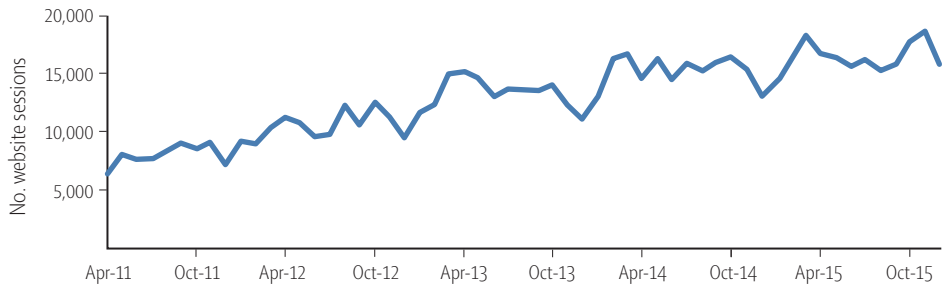
Website usage has been measured using a Google Analytics account since April 2011.

A total of 408,245 unique visitors used the site to 31 December 2015, with an average of 236 visitors per day (for 1,733 days inclusive). There were 4,210,727 page views during this period (approximately 73,872 page views per month), suggesting that approximately 10 pages were viewed per user.

A total of 738,180 sessions (total visits) were recorded during this period, with an average duration of approximately 6 minutes and 6 pages viewed per session. A 53 per cent 'bounce rate' for these visits indicates the proportion of people who visited a single page before leaving.

Figure 35 shows monthly visits to the ANZCTR website from April 2011 to December 2015 (inclusive). The overall number of monthly visits has progressively increased since monitoring with Google Analytics started, with dips occurring during December/January periods.

Figure 35. Trends in monthly visits to the ANZCTR website



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, unique identification, technical capacity and administration.

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 a registry approved by the International Committee of Medical Journal Editors (ICMJE).

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.[17]

Table 30. 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.org	Primary registry, Data provider
Japan Primary Registries Network (JPRN)	Primary registry, Data provider
Pan African Clinical Trial Registry (PACTR)	Primary registry, Data provider
Peruvian Clinical Trial 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 New Zealand recruitment sites in other registries

The majority of registered studies recruiting in New Zealand are registered on the ANZCTR (approximately 48 per cent) or ClinicalTrials.gov (approximately 35 per cent). Around 18 per cent of all registered studies recruiting in New Zealand are registered on other WHO primary registries.

Some studies counted are registered on multiple registries, and are thus duplicated in Table 31. The number of New Zealand studies registered on both the ANZCTR and ClinicalTrials.gov is estimated to be approximately 50 as at December 2015, 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. Around 290 New Zealand studies are registered on both ClinicalTrials.gov and EU-CTR.

Table 31. Numbers of New Zealand studies* registered 2006–2015 on different clinical trials registries

REGISTRY	TOTAL
ANZCTR	1,597
ClinicalTrials.gov	1,158
EU-CTR	461
German CTR (DRKS)	71
ISRCTN.org	29
The Peruvian Clinical Trial Registry (REPEC)	19
Clinical Trials Registry - India (CTRI)	5
Japan Primary Registries Network (JPRN)	2
Brazilian CTR (ReBec)	1
Sri Lanka CTR (SLCTR)	0
Chinese CTR (ChiCTR)	0
Clinical Research Information Service (CRiS), Republic of Korea	0
Cuban Public Registry of Clinical Trials (RPCEC)	0
Iranian Registry of Clinical Trials (IRCT)	0
The Netherlands National Trial Register (NTR)	0
Pan African Clinical Trials Register (PACTR)	0
Thai Clinical Trials Registry (TCTR)	0

* includes both interventional and observational studies

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 2005 and 2006)	Educational/counselling/training
-	Supportive care (n=10) Screening (n=0) Basic science (n=15) Health service research (n=2)	Other

Intervention code/Intervention type

ANZCTR	CLINICALTRIALS.GOV	DISPLAY AS...
Diagnosis/prognosis	-	Diagnosis/prognosis
Early detection/screening	-	Early detection/screening
Prevention	-	Prevention
Treatment: drugs	Drug	Treatment: drugs
Treatment: devices	Device	Treatment: devices
Treatment: surgery	Procedure/surgery	Treatment: surgery
Treatment: other	Radiation	Treatment: other
Lifestyle	-	Lifestyle
Behaviour	Behavioural	Behaviour
Rehabilitation	-	Rehabilitation
Other interventions	Other	Other interventions
None/not applicable	-	None/not applicable
-	Biological/vaccine (n=121) Genetic (n=1) Dietary supplement (n=9)	[NOT DISPLAYED]

Appendix 3 continued ...

Phase/Study phase

ANZCTR	CLINICALTRIALS.GOV	DISPLAY AS...
Not applicable	Not applicable	Not applicable
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 U.S. 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, organizations)	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

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

Appendix 4: ANZCTR data field definitions

This table 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 International Committee of Medical Journal Editors (ICMJE) and the World Health Organization (WHO) Trial Registration Data Set.

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

The following are ANZCTR data field definitions V12 (November 2015).

DATA ITEM	DEFINITION / EXPLANATION
STEP 1: TITLES & IDS	
1. 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 2 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.
2. 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.
3. 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 2 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.
4. UTN	The Universal Trial Number (UTN) is a unique number that 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.
5. 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.

DATA ITEM	DEFINITION / EXPLANATION
STEP 2: HEALTH CONDITION	
6. 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).
7. 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 3 sets of entries.
STEP 3: INTERVENTION/EXPOSURE	
8. 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).
9. Patient registry (only available when **Observational** is selected for '**8. Study type**')	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 on-going data collection programs that address one or more questions.
10. Target follow-up duration * (only available when **Patient registry** is selected for 9.)	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).

DATA ITEM	DEFINITION / EXPLANATION
11. Description of intervention(s) / exposure *	Briefly describe the specific intervention(s) being studied. 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)). Please provide sufficient detail so that information will be meaningful to ANZCTR users. 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 other non-drug trials: For each intervention, briefly describe: • what it involves; • the frequency and duration of administration, e.g. 1 x 1 hour session per week for 4 weeks; • the mode of administration, e.g. one-on-one consultation, group workshop, online program; • who will be administering the intervention, e.g. dietician, nurse. For all trials: A brief description of any strategies used to monitor adherence to the intervention needs to be included where applicable, e.g. drug tablet return, laboratory tests, daily food diary. Intervention names should be consistent throughout the form. Avoid using alternative intervention names for clarity. For observational studies: Provide a brief description of the condition observed and/or the exposure. The duration of observation must also be described.
12. Intervention code *	Choose the most appropriate intervention code(s) from the list. The form allows a maximum of 3 entries. Click 'Add new Intervention code' to add more boxes. **Note** that only the first 3 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.

DATA ITEM	DEFINITION / EXPLANATION
*Intervention code * continued*	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.
13. 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. placebo, 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 other details as applicable (dose, duration, mode of administration, etc). If the study is uncontrolled then please enter the text 'No control group' or similar.

DATA ITEM	DEFINITION / EXPLANATION
14. 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 trials. 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.
STEP 4: OUTCOMES	
15. 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'. 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 3 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, and at 6 and 12 weeks after intervention commencement

DATA ITEM	DEFINITION / EXPLANATION
16. 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). 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
STEP 5: ELIGIBILITY	
17. Key inclusion criteria *	Summary of key inclusion criteria of patient characteristics that determine eligibility for participation in the study.
18. 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
19. 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

DATA ITEM	DEFINITION / EXPLANATION
20. Gender *	Choose the appropriate selection for gender of the study's participants. ☐ Males ☐ Females ☐ Both males and females
21. Can healthy volunteers participate? *	Indicate whether healthy volunteers may participate in this study. ☐ Yes ☐ No
22. 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	
23. Purpose of the study * (only available when Interventional is selected for '8. Study type')	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.
24. Allocation to intervention * (only available when Interventional is selected for '8. Study type')	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.
25. Allocation concealment (only available when Interventional is selected for '8. Study type')	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.

DATA ITEM	DEFINITION / EXPLANATION
26. Sequence generation (only available when **Interventional** is selected for '**8. Study type**')	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.
27. Masking / blinding (only available when **Interventional** is selected for '**8. Study type**')	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)
28. Assignment (only available when **Interventional** is selected for '**8. Study type**')	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.

DATA ITEM	DEFINITION / EXPLANATION
29. Other design features (only available when **Interventional** is selected for '**8. Study type**')	Briefly describe other design features if 'Other' is selected for Assignment above.
30. Phase	Phases of investigation, usually applied to a drug trial. 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.
31. Type of endpoint(s) (only available when **Interventional** is selected for '**8. Study type**')	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

DATA ITEM	DEFINITION / EXPLANATION
32. 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.
33. Purpose (only available when **Observational** is selected for '**8. Study type**')	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 '**8. Study type**')	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.
Selection (only available when **Observational** is selected for '**8. Study type**')	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 '**8. Study type**')	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

DATA ITEM	DEFINITION / EXPLANATION
STEP 7: RECRUITMENT	
34. **Recruitment status** *	Choose the most appropriate description of the study's recruitment status at the time of registration from the list. Not yet recruiting: participants are not yet being recruited Recruiting: open for recruitment and the first participant has been enrolled Enrolling by invitation: participants were/are being/will be invited to participate from a predetermined population Active, not recruiting: study is ongoing (i.e. participants are being treated or examined), but participants are not currently being recruited or enrolled Closed: follow-up continuing: closed to recruitment of participants and follow-up is still continuing Closed: follow-up complete: closed to recruitment of participants and follow-up is complete Completed: closed to recruitment of participants and data analysis 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 Terminated: recruiting or enrolling participants has halted prematurely and will not resume; participants are no longer being examined or treated
35. **Anticipated date of first participant enrolment** *	Estimated enrolment date (dd/mm/yyyy) of the first participant. For studies involving secondary analysis of data (e.g. meta-analysis), please specify the anticipated start date of data collection.
36. Date of first participant enrolment	Actual enrolment date (dd/mm/yyyy) of the first participant. For studies involving secondary analysis of data (e.g. meta-analysis), please specify the actual start date of data collection.
37. Anticipated date of last participant enrolment	The anticipated date (dd/mm/yyyy) that recruitment into the study will cease. For studies involving secondary analysis of data (e.g. meta-analysis), please specify the anticipated date that data collection will cease.
38. Actual date of last participant enrolment	The actual date (dd/mm/yyyy) that the final participant was enrolled into the study. For studies involving secondary analysis of data (e.g. meta-analysis), please specify the actual date that data collection ceased.
39. **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.
40. Actual sample size	The total number of participants actually enrolled into the study. This is mandatory for studies which have completed recruitment. *Note:* This is a 'number only' field.
41. Recruiting in Australia	Tick this box if your study is/was or will be recruiting from within Australia.
42. **Recruitment states** * **(mandatory when 'Recruiting in Australia' is selected for 41)**	Tick the boxes corresponding to all recruiting states within Australia. ☐ NSW ☐ VIC ☐ QLD ☐ ACT ☐ NT ☐ SA ☐ TAS ☐ WA

DATA ITEM	DEFINITION / EXPLANATION
43. Recruitment hospitals (only available when '**Recruiting in Australia**' is selected for **41**)	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@actr.org.au.
44. Recruitment postcode(s) (only available when '**Recruiting in Australia**' is selected for **41**)	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.
45. Recruitment countries outside Australia	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 & SPONSORS	
46. Funding source(s) *	Major source(s) of monetary or material or infrastructure support for the study. 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
47. 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 principle 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/foundation ☐ 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.
48. 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 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
49. 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 & SUMMARY	
50. 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 on page 9 of the form.

DATA ITEM	DEFINITION / EXPLANATION
51. Ethics committee details	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 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 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. 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.
52. 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.
53. Trial website	If the study has a trial website, enter the web address/URL (Uniform Resource Locator) in this section. Otherwise, please leave blank.
54. Trial related presentations / publication list	If the study has a list of presentations/publications, enter the full citations in this section. Otherwise please leave blank. Example: Smith J. (2012) The effect of a very low energy diet on weight loss in obese women. *JAMA 3(12) 44-52.*
55. Public notes	This field is for any extra, miscellaneous text you'd like included within this trial registration which is not relevant elsewhere on this form. Anything placed here WILL be publicly viewable.
56. Private notes	This field is for any extra, miscellaneous text to be included within this trial registration not relevant elsewhere on this form. Anything placed here will NOT be publicly viewable, but will be available to ANZCTR staff.
57. Attachments	Use this optional section to upload any relevant documents (e.g. trial protocol, ethics approval forms, blank clinical record forms). Files must be in PDF or Word format and clearly labelled. Maximum size is 15MB per file. 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 your trial's ANZCTR registration record.

DATA ITEM	DEFINITION / EXPLANATION
STEP 10: CONTACTS	
Note: For each of the contact sections below: 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)	
58. Principal investigator *	Title, name, address, country, telephone number and email address of the principal investigator of the study. Professional contact details should be provided.
59. 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. Only professional contact details should be provided.
60. 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. Only professional contact details should be provided.
61. Contact person responsible for updating information	Title, name, address, telephone number and email address of the person to contact for updating trial information after registration with the ANZCTR. Only professional contact details should be provided.

Appendix 5. ANZCTR condition categories and codes

Categories and codes have been adapted to suit Australian and New Zealand needs from the Health Research Classification System developed by the UK Clinical Research Collaboration (see www.ukcrc.org/research-coordination/health-research-classification-system/).

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 & lymphoma
	Children's – other
	Head and neck
	Hodgkin's
	Kidney
	Leukaemia – acute leukaemia
	Leukaemia – chronic leukaemia
	Liver
	Lung – mesothelioma
	Lung – non small cell

CONDITION CATEGORY (LEVEL 1)	CONDITION CODE (LEVEL 2)
Cancer continued	Lung – small cell
	Lymphoma (non Hodgkin's lymphoma) – high grade lymphoma
	Lymphoma (non Hodgkin's lymphoma) – low grade lymphoma
	Malignant melanoma
	Myeloma
	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
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

CONDITION CATEGORY (LEVEL 1)	CONDITION CODE (LEVEL 2)
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
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

CONDITION CATEGORY (LEVEL 1)	CONDITION CODE (LEVEL 2)
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
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

CONDITION CATEGORY (LEVEL 1)	CONDITION CODE (LEVEL 2)
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
	Breast feeding
	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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