MTPConnect

Australia's Life Sciences
Innovation Accelerator

Pulse Report

AUSTRALIA'S LIFE SCIENCES SECTOR SNAPSHOT

October 2024

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PREFACE

Welcome to the first of the MTPConnect Pulse Reports – a regular series providing the latest information and thought leadership on Australia's medical products sector, tailored for clients of the Industry Growth Program in the medical sciences.

This first edition is a Sector Snapshot, prepared in partnership with L.E.K. Consulting, highlighting innovation, productivity and competitiveness in Australia's medical technology, biotechnology and pharmaceuticals sector.

The latest analysis shows growth across all key economic, commercial and R&D metrics, with particular strength in job creation. The good news is medical products continue to be one of Australia's greatest value-add industries.

This positive growth trajectory indicates the valuable contribution that Australia's life sciences sector makes to the Australian economy.

These highlights tell the story!

- Gross value added from the medical products sector has grown at 6.3 per cent p.a. since 2016, peaking during the pandemic
- Medical product jobs continue to grow with industry driving most of the recent growth
- Medical products continue to be one of Australia's greatest value-add industries
- Medical product R&D activity in Australia continues to grow - and is led by industry

The medical product translation and commercialisation journey is challenging, and it's easy to get into trouble. Perhaps that's why Australia has traditionally underperformed when it comes to commercialisation of new products. While Australia is recognised as a global leader in research, ranking in the top 10 of the Global Innovation Index, we slip down to 30th for outputs from that research.

While we count the Gardasil vaccine, cochlear implants and the pacemaker among our commercialisation successes, we can do better.

Strategies for backing life sciences innovation and supporting startups and SMEs through the difficult early years of innovation are critical. Australia's investment in R&D is now around 1.8 per cent of Gross Domestic Product, well below the OECD average of 3 per cent.

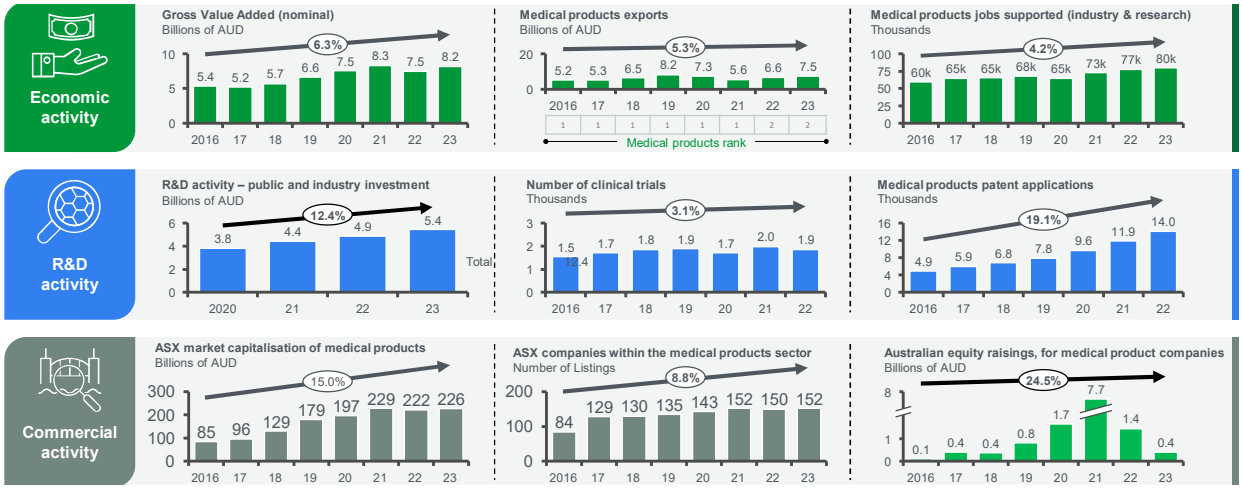
When the funding starts flowing, the $15 billion National Reconstruction Fund, with $1.5 billion earmarked for medical science, and the $400 million Industry Growth Program are set to turbo-charge levels of investment in startups and SMEs and support their scale-up. The $20 billion Medical Research Future Fund endowment is already playing a role, including through accelerator programs operated by MTPConnect.

It reinforces how critical it is to continue supporting the science, research, innovation and entrepreneurship that underpins Australia's medical products sector.

This investment is about creating more jobs, building resilient companies, increasing sovereign capability and more secure supply chains for vital medicines, and all the while moving Australia up the global innovation league table.

UPDATE ON SECTOR PERFORMANCE

Overall, the medical technology, biotechnology and pharmaceutical (MTP) sector has made robust progress across all economic, commercial, and R&D metrics from 2016-2023 as illustrated below.



Source: ABS; NHMRC; ANU; National Tertiary Education Union; MTPConnect Covid Impact Report, 2020; ARC; BTF; MRFF; DISR; ANZCTR Data; Australia IP Report, 2023; Marketline Deals Monitor

Economic metrics

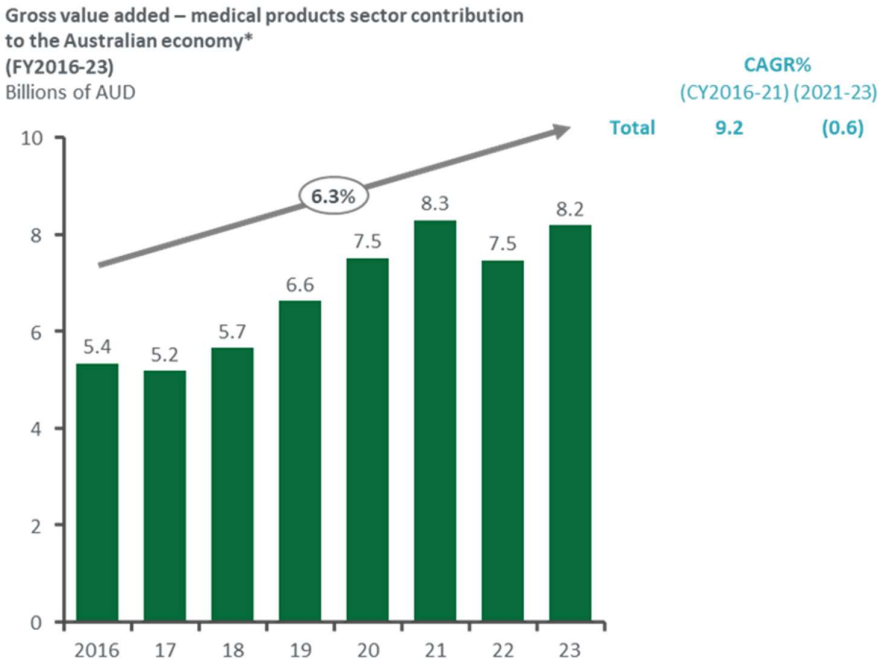
Gross Value Added

The economic contribution of the MTP sector as measured by GVA has grown at a rate of 6.3 per cent per annum since 2016, adding a cumulative $54 billion in GVA to the Australian economy between 2016 and 2023.

Medical product gross value added peaked in 2021, driven by elevated demand for pharmaceuticals during the pandemic.

The growth continues to be supported by growth in the medical and surgical equipment industry, which has grown at 10 per cent p.a. since 2016.

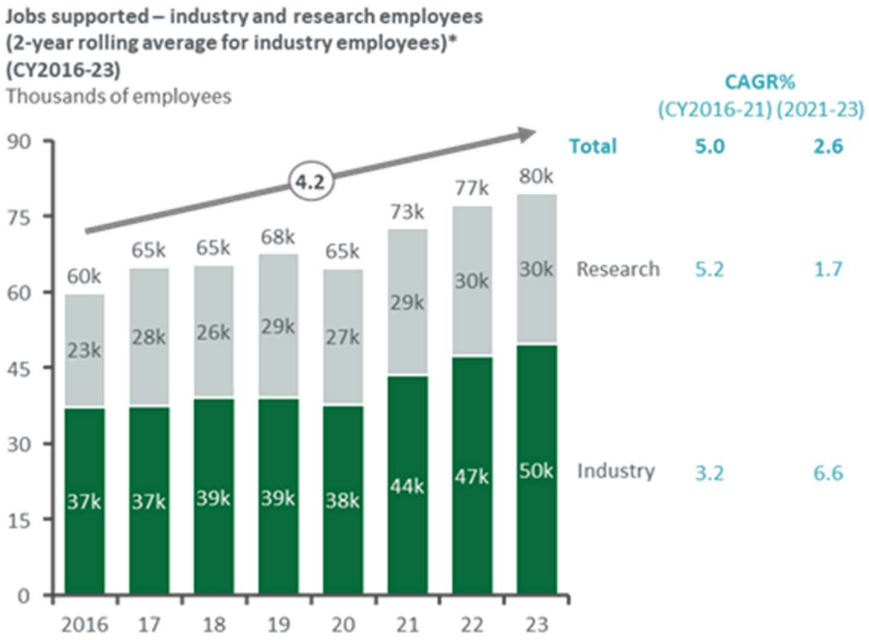
Medical and surgical equipment now accounts for 48 per cent of medical products sector gross value added, up from 38 per cent in 2016.



*Note: * Revised GVA calculations by DISR are done at industry sub-division level and benchmarked against ABS's GVA publications to enhance accuracy. Previously, the GVA estimates were benchmarked at a less granular division level. See appendix for ANZSIC industry code breakdown.*
Source: DISR; L.E.K. research and analysis

Job creation

Medical product jobs continue to grow with industry driving most of the recent growth. This is expected to continue as global pharma companies operationalise manufacturing capabilities in Australia.



*Note: * Two year rolling average calculated for industry jobs, research jobs calculated by calculating ratio of research employees to NHMRC funding, by institution*
Source: ABS; NHMRC; National Tertiary Education Union; ANU; Investor presentations; Victorian Government; L.E.K. research and analysis

Medical products sector jobs have grown strongly at 4.2 per cent p.a. over the period 2016 to 2023, outstripping total jobs growth in Australia of 2.4 per cent in the same period.

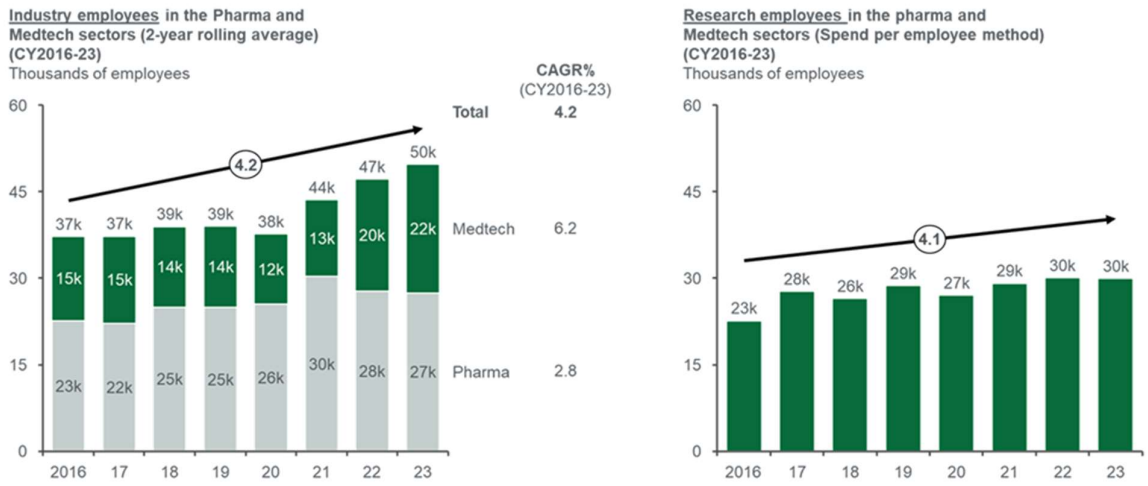
In the last two years, medical products sector jobs have grown at 2.6 per cent p.a., adding 7000 new jobs. Industry jobs have accounted for 6000 while research jobs grew by 1000 over the same period.

The medtech industry has been a key driver of the recent growth:

- Between FY2021 and FY2023, Cochlear and ResMed revenues have grown 14 per cent and 21 per cent, respectively - much of this growth has been supported by local manufacturing capabilities.
- In 2022, Stryker has opened an R&D lab in Brisbane, underscoring an increased push by international medtech companies to grow Australian operations.
- There is also an elevated demand for digital technology solutions across the healthcare value chain as organisations look to optimise operations in a higher-cost macroeconomic environment.

Pharmaceutical industry jobs growth has remained steady since 2021, previously elevated due to COVID vaccine production and distribution. This could change as global pharma companies operationalise manufacturing capabilities in Australia. Moderna and BioNTech manufacturing facilities are expected to become operational in CY2024-2026, while CSL's Seqirus facility will open in 2026.

Research jobs growth was supported by elevated grant spending during the pandemic however it has remained flat since.

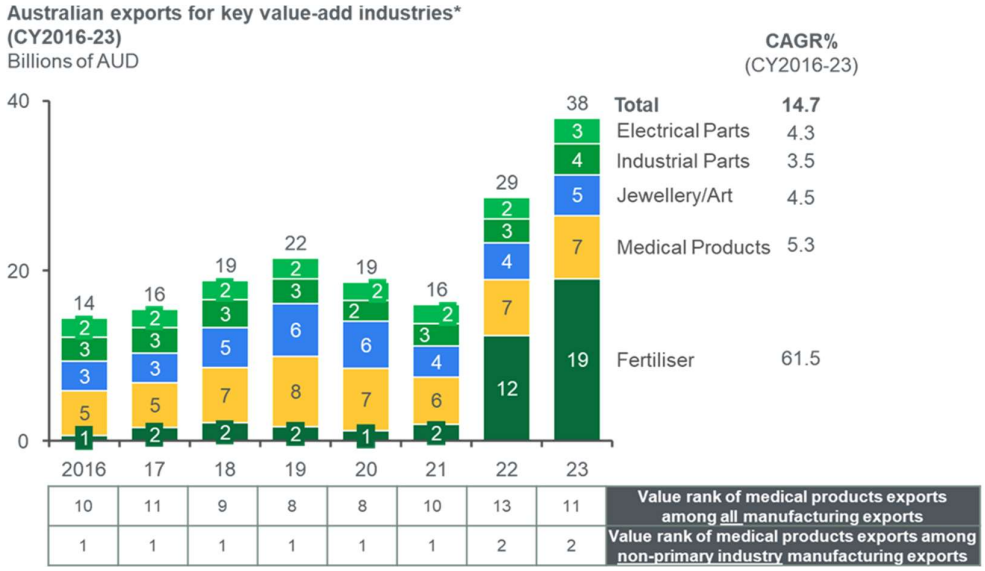


*Note: *Two year rolling average calculate for industry jobs, research jobs calculated by calculating ratio of research employees to NHMRC funding, by institution. Source: ABS; NHMRC; L.E.K. research and analysis*

Manufacturing exports

Despite the turbulence in exports through the pandemic, medical products continue to be one of Australia's greatest value-add industries growing significantly at 14.7 per cent p.a. since 2016. Since 2022, fertiliser exports have been driven by the rising ammonia prices and sanctions following the war in Ukraine.

It is noted that the $22.7 billion Future Made in Australia policy does not currently focus investment into medical product manufacturing, highlighting a critical opportunity to support this significant value-add industry for Australia's future.



*Note: * Key value add industries are the top 5 industries by exports which produce some form of manufactured good, excluding basic refining operation and primary industries Source: ABS; L.E.K. analysis*

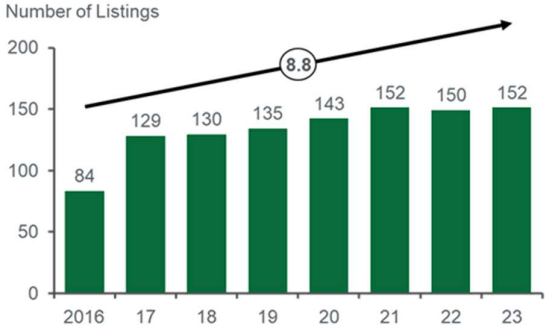
Commercial activity metrics

MTP sector companies

The number of ASX listed medical product companies has remained unchanged since 2021 due to increasingly challenging public markets. Medical listings rose by 4.2 per cent p.a. from 2017-21, supported by interest low rates and favourable valuations; however, post-COVID the ASX has struggled to maintain medical product listings growth due to unattractive capital markets dynamics.

- Bionomics and Kazia Therapeutics delisted from the ASX but maintained a listing on the NASDAQ for perceived better liquidity and reduced compliance costs.
- Five other startup medical product companies delisted with a common issue being an inability to access sufficient capital to continue operations.

ASX companies within the medical products sector (CY2016-23)
Number of Listings



CAGR%	(CY2016-21)	(2021-23)
Total	12.6	0.0

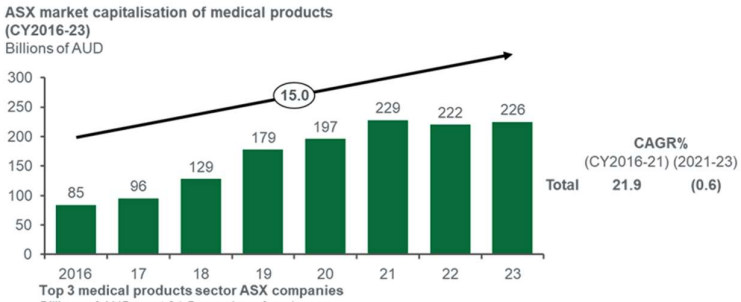
2022	2023	Year
3	5	IPO
0	7	Changed Name
5	3	Delisted
(2)	2	Net Change
150	152	End of Period

Source: ASX; S&P global; University of Queensland; Brandon Capital Partners; Australian Investment Council; Refinitiv; PwC; Pitchbook; L.E.K. research and analysis

As public listings for early-stage medical product startups have fallen, Australian venture capital has stepped up to fill the gap with VC investment in healthcare growing from approximately $230 million across 48 deals in 2016 to approximately $870 million across 78 deals in 2023.

- ASX underperformed other markets with global Healthcare/Medtech IPO numbers dropping 65 per cent compared to Australia's 81 per cent from 2021-2023.
- Australian medical products startups are continuing to pivot away from the ASX towards other exchanges like the NASDAQ, trade sales to multinationals like Pfizer.
- As the ASX continues to be a difficult and costly exchange to raise money on, venture capital and private equity have started holding onto their investments longer with the view to exit later when market conditions are more favourable.

Market capitalisation of MTP companies



Top 3 medical products sector ASX companies

Billions of AUD as at 31 December of each year

2016	2017	2018	2019	2020	2021	2022	2023	Company
46	62	85	116	123	134	139	138	CSL
12	14	21	31	41	48	45	37*	Resmed
7	9	10	12	12	14	13	20	Cochlear
65	**85**	**116**	**159**	**176**	**196**	**197**	**195**	**Total**
69.4%	88.5%	90.1%	89.2%	89.3%	85.5%	88.8%	86.3%	% of total

*Note: * ResMed's capitalisation fell in 2023 due to investor concerns about the impact of Ozempic which may affect ResMed's sleep apnoea technology – ResMed's capitalisation has since recovered and was $48bn as at 16 May 2024*
Source: ASX; S&P global; L.E.K. research and analysis

The market capitalisation of ASX listed medical product companies has remained relatively flat since 2021 due to challenging macroeconomic conditions.

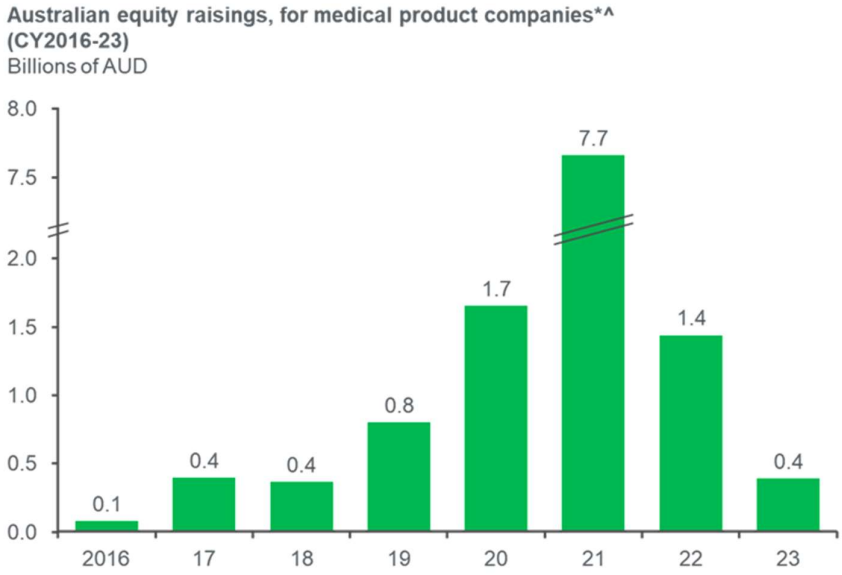
The medical products sector market capitalisation increased 22 per cent p.a. between 2016 and 2021; $134 billion was added to the ASX during that time.

- Global healthcare IPOs during the first quarter of 2021 more than doubled year on year as the COVID-19 pandemic highlighted the need for innovative therapies and diagnostics.
- Lockdown measures were a tailwind for digital healthcare and low interest rates incentivised capital raisings and IPOs.

Market capitalisation has declined slightly since 2021 due to high inflation, high interest rates, and depressed equity valuations.

- CSL, ResMed, and Cochlear maintained or even grew their valuations over this period, buoying the medical product market.

Capital raised



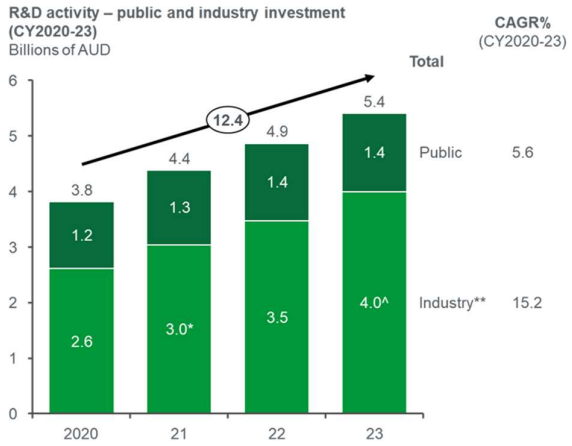
*Note: * Medical product companies include those categories as drug manufacturers, medical device and product manufacturers and those in medical and diagnostic laboratories and research services; ^Deal values published in USD and have been converted using an exchange rate of USD/AUD=1.50; ** When data provider Dealogic began collecting the figures*
Source: Marketline Deals Monitor; AFR; L.E.K. research and analysis

The capital raised in the medical projects market grew considerable between 2016 and 2021 but has stagnated as investors navigate difficult macroeconomic conditions. There was a substantial increase in equity raisings since 2016, peaking in 2021 with a A$6 billion+ raise by CSL. Since 2021, medical product equity raises have fallen considerably, with 2023 cumulative raise value equal to that of 2018 and 2017 values.

This downward trend in equity raises was not unique to the medical products sector – Australian IPOs raised A$1 billion in 2023. This made 2023 the worst on record since at least 1995**.

R&D activity metrics

R&D funding

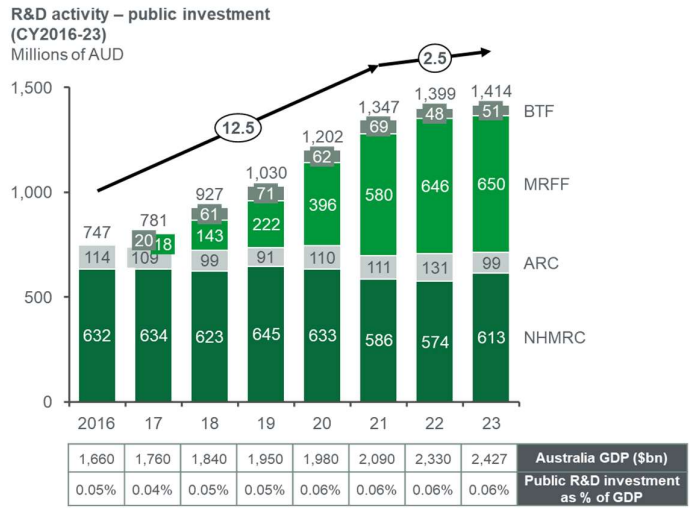


Medical product R&D activity in Australia continues to grow and is led by industry. R&D investment from industry has been carrying the medical product sector since 2020, growing at 15.2 per cent p.a., representing 70 per cent of the R&D expenditure.

The public R&D investment only includes grants from BTF, MRFF, and NHMRC and excludes other grant or direct investment from state and federal governments.

*Note: * Interpolated as the average of FY20 and FY22 figures; ^ Value extrapolated using industry R&D growth rate from 2020-22 of 15.2 per cent p.a.*
*** Industry figures reported in financial years*
Source: NHMRC; ARC; BTF; MRFF; DISR; L.E.K. research and analysis

Public R&D investment has near doubled since 2016 driven by the ramp up of the MRFF. In 2022-23, public R&D funding has levelled off as the MRFF funding has matured.



While public R&D investment has near doubled from $750 million in 2016 to $1.4 billion in 2023, funding is expected to flatline as MRFF contributions cease to grow.

MRFF is expected to disperse circa $650 million each year until 2032. All other funding sources have remained relatively flat since 2016. University sponsored research, which makes up circa 35 per cent of R&D in Australia, is also expected to decline as international student numbers stagnate.

Source: Federal Budget 2024-5; NHMRC; ARC; BTF; MRFF 10-year Investment Plan (2023); DISR; World Bank; CSIRO, 2021; Guardian, 2024, L.E.K. research and analysis

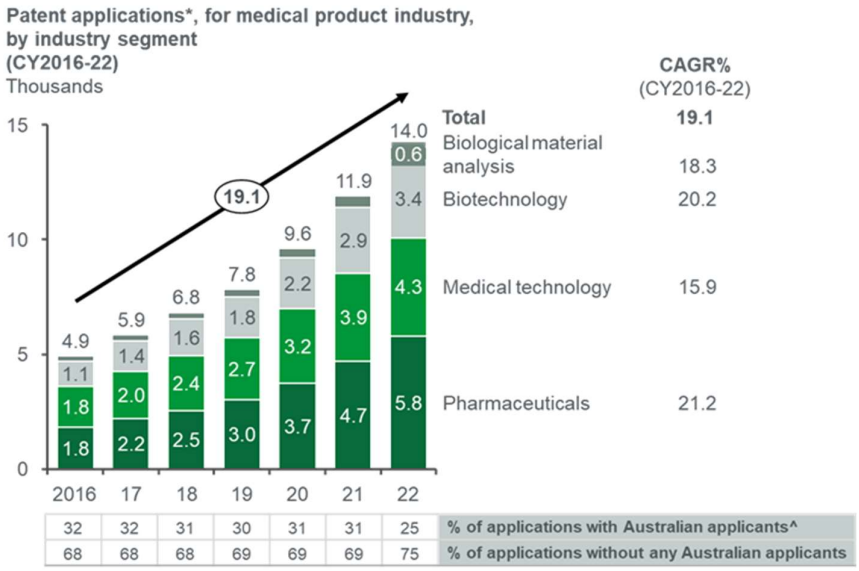
Australia lags other advanced economies on R&D spend benchmarks and does not appear to be trending towards advanced economy averages.

- Australia's GERD (Gross Expenditure on R&D) is 1.7 per cent of GDP compared to the OECD's 2.6 per cent, Germany's 3.1 per cent, USA's 3.5 per cent or South Korea's 4.9 per cent.
- Australia's GERD percentage of GDP has deteriorated by 0.2 per cent since 2016.

Included in the 2023-4 Federal Budget's Future Made in Australia package is a strategic examination of Australia's R&D system to determine how to get more value from every taxpayer dollar invested in research and maximise the contribution of science and R&D to the broader economy.

- In 2021, CSIRO estimated that every $1 of research and development investment creates an average of $3.50 in economy-wide benefits in today's dollars, and a 10 per cent average annual return for Australia.

Patenting activity



*Note: * Patent applications include innovation and standard complete patents for filed, certified, accepted, granted and converted open for public inspection applications*
^Applications with Australian applicants includes those with at least one Australian applicant
Source: Australian IP Report (2023); IP Australia (IP Rapid May 2024); L.E.K. research and analysis

Medical product patent applications in Australia have grown at 19 per cent p.a. from 2016-22 but this is mainly driven by applications filed by overseas applicants.

Patent application volumes in Australia are at long term highs and medical technology, biotechnology and pharmaceuticals are in the top five categories of patent applications in Australia, representing 45 per cent of all applications in 2022.

Patent applications originating from Australia have grown but lag relative to applications originating from other major countries, particularly China. As a result, the percentage of patent applications with Australian applicants has declined from approx. 32 per cent to approx. 25 per cent between 2016 and 2022.

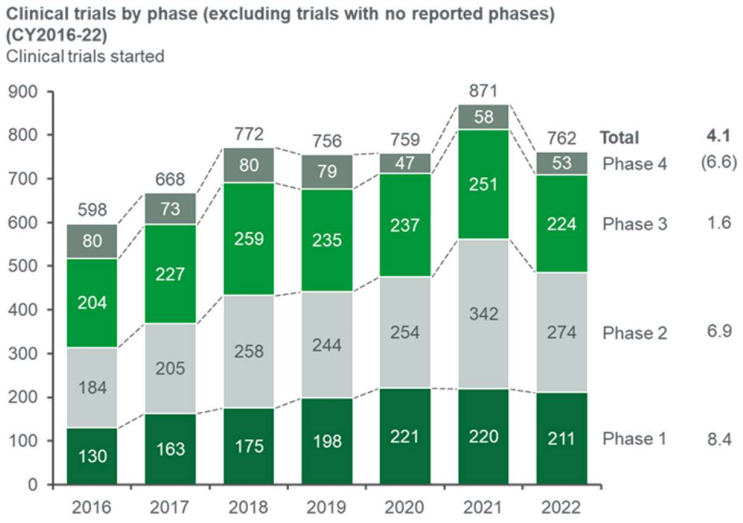
Global entities make up most medical product patent applications filed in Australia:

- Leading global entities include Fisher & Paykel, Novartis, Becton Dickinson, Regeneron, Medtronic, and Amgen in addition to universities like Harvard, Stanford, and University of Pennsylvania.
- CSIRO, ResMed, Monash University and CSL lead the Australian based applicants since 2016.

Clinical trials

Early phase (Phase 1 and 2) trials have driven growth in clinical trials in Australia since 2016.

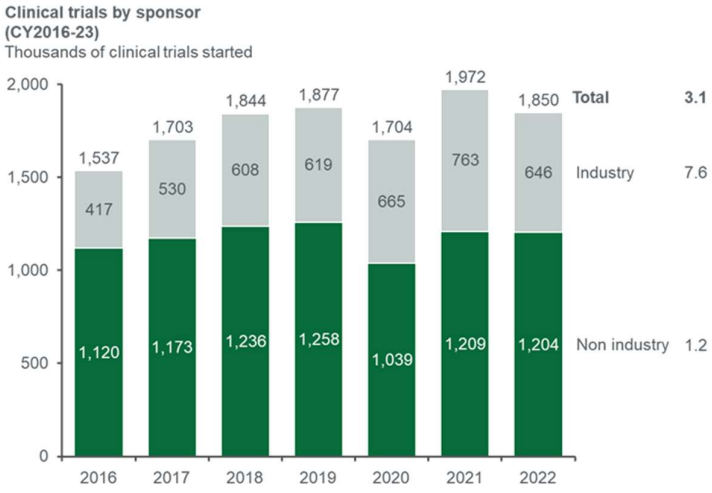
Phase1 and 2 trials have grown the fastest since 2016 with Australia's advantages in efficiency created by the Clinical Trials Notification (CTN) scheme, which offers quicker trial start-up timelines than other countries, particularly for early-phase (Phase 1 and 2) trials.



Source: ANZCTR Data (14 Nov 2023); L.E.K. analysis

The decline seen in later-phase trials is most likely due to an increasingly crowded global market for Phase 3 trials, coupled with Australia's relative weaknesses in later-phase trials.

- Australia has historically had a lower market share of late-stage trials.
- Phase 3 and 4 trials tend to involve multiple sites.
- There is a lack of uniformity and consistency in ethics and site governance approval processes across sites in Australia, particularly across jurisdictions, which hampers Australia's ability to offer efficient trial start-up for late phase trials.
- Australia's small population size and geographic spread also pose challenges to efficient patient recruitment for later phase trials which tend to enrol more patients.



Source: ANZCTR Data (14 Nov 2023); L.E.K. analysis

R&D activity as measured by clinical trial starts has grown by approx. 3 per cent p.a. since 2016, this has been driven mainly by industry sponsored trials.

- Industry sponsors continue to drive growth as Australia's strong clinical trial environment continues to attract international and domestic testing. Industry clinical trials have grown at a rate of 7.6 per cent p.a. from 2016 to 2022.
- Non-industry sponsored trials, predominantly trials sponsored by government, universities, and charities, have grown at approx. 1.2 per cent p.a. over the same period.
- Clinical trial starts are returning to a historical trajectory after the volatility experienced during the COVID-19 pandemic (2020-21).
- Clinical trials contributed approximately $1.6 billion to the Australian economy through direct expenditure or investment in 2022, up by 13 per cent from $1.4 billion in 2019.

CONCLUSION

The medical products sector continues to grow and is one of Australia's greatest value-add industries.

With an ageing population and the need to lift Australia's value-add complexity, there is great potential to capitalise on this strength and support and foster the growth of Australia's second most valuable value-add export.

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