EXECUTIVE SUMMARY

Investment in health R&D surpasses every other source of rising living standards in our time. Our 8-year (11.5%) gain in life expectancy as well as improved wellness over 1960-99 were worth $5.4 trillion to Australians – a figure more than 8 times larger than the entire national output last year. The gains associated with the prevention and treatment of cardiovascular disease alone totalled $1.7 trillion.

Improvements in lifespan account for almost half of the actual gain in Australian living standards in the past 40 years (46% of consumption). Health R&D that further reduced cancer deaths by just 20% would be worth $184bn to Australians, more than the entire annual Commonwealth spending budget.

While it is not always entirely possible to pin down cause and effect, the likely returns from health R&D are so extraordinarily high that the payoff from any strategic portfolio of investments is enormous. This paper estimates that half the historical gains in healthspan are attributable to global health R&D – as opposed to public health awareness, promotion and prevention programs and other factors. 2.5% – Australia's share of global R&D activity – is assumed attributable directly to Australian R&D. These assumptions lead to the conclusions that:

- Historically, annual rates of return to Australian health R&D were up to $5 for every $1 spent on R&D.
- Public sector returns were 72% for longevity and 62% for wellness, while private sector returns were 208% for longevity and 179% for wellness.
- Returns to cardiovascular R&D were 8-fold, to respiratory R&D 6-fold and to digestive system R&D 5-fold.

These stunning results are comparable with similar findings for the US by eminent American economists from Yale, Harvard, Stanford, Columbia and Chicago Universities, whose methodologies have been utilised here.

However, in 2000-01, Australia spent only $1.7bn on health R&D, 0.25% of GDP, low by OECD standards (0.15% to 1.1%). The public sector's share of financing and research activity fell over the 1990s by around 8%.

- With the reduction of public finance, the share of basic health R&D also fell from 47% to 43% of the total. Basic health R&D is an important underpinning for applied research and commercial development.
- The public sector's share of capital R&D investment also fell over the 1990s, further eroding the critical underpinnings of an optimal future Australian health R&D sector.

Initiatives flowing from the Wills Review have very recently stepped up Commonwealth investment in health R&D, in particular through the NHMRC. These welcome initiatives aim to make smarter health R&D investments primarily through enhanced collaboration and workforce measures. However, some key issues remain.

- State, Territory and local governments need to match and stay in line with the Commonwealth effort.
- Care needs to be taken that the erosion of basic research and of capital investment that accompanied the public sector decline of the 1990s are adequately reversed also.
- Continued boosts to investment in health R&D relative to GDP are still warranted given Australia's poor ranking relative to other OECD countries.

Moreover, Australia has a comparative advantage in health R&D given our levels of discovery, publications, citations and other evaluative criteria relative to our size in the global market.

- Australian discoveries save huge ongoing costs in the treatment of stomach ulcers, as well as reducing deaths from SIDS to one fifth of former levels, more cheaply and effectively treating bipolar disorder with lithium, and contributing to amazing reductions in cardiovascular and cancer mortality rates. Our eminent prize-winning health scientists include a major contributor to the founding of the global biotechnology industry.

In addition to the 'good international citizen' arguments, there are weighty economic reasons for enhancing our health R&D investment, in particular balance of payments and employment multiplier arguments, where Sweden

is an important comparator. These benefits, and the positive and negative lessons we have learned in the past from both domestic and international experience, should outweigh any tendencies that might still remain to seek a poorly-conceived 'free ride' on our OECD colleagues' research efforts.

Health R&D must be seen as an investment in wellness with exceptional returns. The corollary is that public finance should be strategically targeted to cost-effective high priority R&D areas.

- Priorities need to be balanced with risk in our R&D portfolio, so that promising lines of attack against minor sources of mortality and morbidity are included as well as higher risk investigations against major ones.
- Collaborative partnerships with the private sector should be carefully and strategically nurtured, particularly with a view to attracting ongoing high levels of funding growth from overseas sources.
- It is also vital that, due to 'critical mass' and serendipity, a broad coverage of fundamental research areas is maintained.

In the coming decades, the effects of demographic ageing will place unprecedented demands on the Australian health system in particular in relation to chronic conditions of ageing such as dementia, arthritis, cardiovascular disease and cancer. The projected direct and indirect costs of chronic illness are forecast to present a challenging burden whose greatest hope is new R&D discoveries.

- Direct health expenditures totalled $60.8bn in 2000-01, with 30% of these in the private sector and 70% in the public sector. National spending on health is projected, on the basis of what we know now, to increase from 9% to 17% GDP over coming decades, the subject of the 2002 Intergenerational Report.
- Although there are as yet no official data on the indirect costs of illness, Access Economics has estimated these as $77bn in 2000-01, 27% higher than direct costs, with 97% borne by the private sector.
- The 'burden of disease' – pain, suffering and premature death – in Australia already costs 13.7% of our healthspan. The forecast rise of burden from chronic disabling conditions such as dementia also looms large as measured in DALYs (Disability Adjusted Life Years), in the absence of R&D breakthroughs.

The past 40 years have witnessed an amazing epidemiological transition, riding on the technological wave. Our generation has benefited from standards of living never before experienced. In this country we now face a future full of promise and challenge for preventing and treating disease for ourselves and our children, by virtue of ethically applying recent dramatic advances in genetics, bioengineering, neuroscience and molecular and structural biology. The challenge is to translate the promise into the reality of new understanding, communication, collaboration and improved clinical outcomes.

This report has shown that every dollar invested in this challenge in Australia has historically been recouped as highly valued healthspan, even in the worst case scenario, and in most cases, many times over. The findings of this paper should change the way that Australian policy makers view health spending, in particular investments in health R&D. The conclusion for the future must be that Australian health R&D represents an exceptional investment, with exceptional returns.