

Economic and social
contribution of
Menzies School of
Health Research to
the NT, Australia and
the Asia Pacific

Menzies School of Health
Research

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Executive Summary

This report was commissioned in order to determine the economic and social contribution of the Menzies School of Health Research (Menzies) to the Northern Territory (NT), Australia and to the Asia Pacific. Using quantitative methods, it also identifies Menzies' most vital areas of impact.

The report analyses and documents activity in the following fields, between 2002-2010:

- Economic contributions
- Health benefits and policy and program outcomes
- Knowledge and skill enhancement

Conducted during 2011, this analysis was supervised by a steering committee including economists from Charles Darwin University and the Northern Territory Treasury.

Economic contributions

The report found that Menzies made a net economic and social contribution of \$393 million to Australia and the Asia Pacific – including \$87m to the Northern Territory alone – from 2002-10.

This equates to a net benefit cost ratio of 3.12:1 thus, every dollar invested in Menzies returned \$3.12 in direct and indirect economic and health benefits.

In contrast, the benefit:cost (B/C) ratio for Australian health research and development as a whole is 2.17:1. As Menzies' figure is 44% higher, investment in its activities is demonstrated to deliver exceptional returns.

The net benefits and B/C ratio for Menzies' activities and research for Menzies' expenditure for the period 2002 to 2010 can be found in the Table below.

Table i: Net benefits and B/C ratio for Menzies' activities and research for Menzies' expenditure for the period 2002 to 2010

	NT NPV _{7%} \$2011m	Australia (excluding NT)* NPV _{7%} \$2011m	Asia Pacific (excluding Australia)* NPV _{7%} \$2011m
Costs	\$71.36	\$110.65	\$4.15
Benefits			
Direct economic contribution	\$90.88	\$3.19	-
Indirect economic contribution	\$37.55	\$1.45	-
Education	-	\$1.52	-
Health benefits			
Malaria	-	\$0.57	\$296.97
Meliodosis	\$1.25	\$5.66	-
Rheumatic heart disease	\$0.50	\$12.09	-
Oral disease	\$1.14	-	-
Quality improvement for primary care of chronic disease	\$15.22	\$99.16	-

	NT NPV _{7%} \$2011m	Australia (excluding NT)* NPV _{7%} \$2011m	Asia Pacific (excluding Australia)* NPV _{7%} \$2011m
Pyoderma	\$4.44	-	-
Mental health		Not quantified	
Diabetes		Not quantified	
Tobacco control		Not quantified	
Otitis media		Not quantified	
Commercialisation	\$7.77	-	-
Total benefits	\$158.75	\$123.64	\$296.97
Net benefit	\$87.38	\$12.99	\$292.83
Benefit cost ratio (ratio not \$m)	2.22	1.12	71.62

* Throughout the cost benefit analysis perspectives, 'Australia' refers to Australia other than the NT and 'Asia Pacific' refers to Asia Pacific excluding Australia.

From 2002-10, Menzies contributed a total of \$128, \$91m directly and \$37m indirectly, to the Northern Territory economy; and \$4.6m to the Australian economy.

The direct and indirect contributions of Menzies to the NT are summarised in the two tables below:

Table ii: Direct economic contribution of Menzies to the NT (\$,000), 2002 to 2010

Year	Gross output	GOS	Depreciation	Wages	Value added
2010	\$25,581	\$3,423	\$234	\$14,314	\$17,971
2009	\$22,522	\$2,895	\$298	\$12,506	\$15,700
2008	\$24,167	\$9,304	\$206	\$8,449	\$17,959
2007	\$13,804	\$1,770	\$164	\$7,218	\$9,151
2006	\$11,179	\$1,300	\$136	\$5,972	\$7,409
2005	\$11,526	\$26	\$147	\$5,955	\$6,128
2004	\$9,779	\$1,082	\$172	\$5,224	\$6,478
2003	\$8,504	\$1,295	\$206	\$4,314	\$5,815
2002	\$5,895	\$844	\$180	\$3,244	\$4,268
Total	\$132,957	\$21,940	\$1,743	\$67,196	\$90,879

Source: ABS Cat. No. 6401.0. Note: All figures are expressed in 2011 dollars.

*GOS = Gross Operating Surplus

Table iii: Indirect economic contribution of Menzies to the NT (\$,000), 2002 to 2010

Year	Gross output	GOS	Wages	Value added
2010	\$14,219	\$2,457	\$4,528	\$6,984
2009	\$12,766	\$2,189	\$4,100	\$6,289
2008	\$10,365	\$1,812	\$3,341	\$5,152
2007	\$8,391	\$1,473	\$2,687	\$4,160
2006	\$6,704	\$1,173	\$2,179	\$3,351

Z	\$9,915	\$1,685	\$3,237	\$4,922
2004	\$5,888	\$1,009	\$1,950	\$2,960
2003	\$4,601	\$778	\$1,538	\$2,316
2002	\$2,816	\$475	\$942	\$1,417
Total	\$75,666	\$13,050	\$24,502	\$37,552

Source: ABS Cat. No. 6401.0. Note: All figures are expressed in 2011 dollars.

Health benefits and policy and program outcomes

Quantifiable impacts of Menzies' research

Malaria

- The Global Health team, along with regional partners, demonstrated the benefits of treating severe malaria with intravenous *artesunate* in Indonesia. This resulted in changes to the National Treatment Policy in Indonesia and contributed to the revision of the World Health Organisation's (WHO) Global Malaria Treatment Guidelines.
- Based on the clinical trials by the Global Health team and regional partners showing effectiveness of *DHA-piperaquine* for uncomplicated malaria, this drug is increasingly used across the Asia-Pacific and has been endorsed as part of Indonesia's national policy on treating all species of malaria.
- The Global Health team, along with regional partners, was the first to demonstrate use of *DHA-piperaquine* as first-line treatment of malaria in the second and third trimesters of pregnancy. This discovery resulted in improved birth outcomes and changes to malaria-related national policy in Indonesia.

Economic benefit: \$298m forecasted value for the Asia Pacific region between 2011 and 2035, mostly attributable to changes in treatment regimens in Asia Pacific countries.

Melioidosis, a potentially fatal disease caused by bacteria found in wet soil and surface water in tropical areas.

- Contributed to improved early diagnosis and studied new treatment Granulocyte colony-stimulating factor (G-CSF) and improved antibiotics and Intensive Care Unit (ICU) management for severe cases, resulting in an 85% reduction in mortality – averting an estimated 230 deaths between 2011 and 2031.

Economic benefit: \$1.3m saved by the NT and \$5.7m saved by the rest of Australia.

Acute Rheumatic Fever and Rheumatic Heart Disease, a disease of childhood that damages the heart valves, leading to heart failure and often early death.

- Instrumental in introducing the Rheumatic Heart Disease (RHD) Control Program in the NT, which later led to the National Rheumatic Fever Strategy and the creation of a Menzies-run national coordination unit, RHD Australia.
- The RHD Control Program served as a model of best practice for similar programs in other countries.
- 1 in 10 extra lives saved from RHD in NT Aboriginal men from 1997 to 2005.

Economic benefit: \$12m value to communities in NT, WA and QLD as a result of reduced rates of RHD.

Oral Disease

Developed a community-oriented primary health care intervention to prevent dental decay among pre-school aged NT children, resulting in a 36% reduction in cavities.

The above initiative was named one of the '10 best research projects in Australia' by the National Health and Medical Research Council (NHMRC) in 2010.

Economic benefit: \$1m value to the NT Aboriginal communities from improvements in the oral health of children under the age of five.

Primary care

- Developed and instituted the Audit and Best Practice for Chronic Disease (ABCD) Project in 2002, a quality-improving initiative for Indigenous health services.
- Developed nationally-adopted tools – now used by 180 services nationwide – for the major chronic conditions; maternal and child health, mental health, rheumatic heart disease and health promotion.
- An improvement in health centre systems and in adherence to best practice guidelines (e.g. proportion of diabetic Indigenous people successfully controlling their blood glucose levels at either 'ideal' or 'acceptable' levels).

Economic benefit: \$15m value to the NT and \$99m value to the rest of Australia as a result of improved care.

Pyoderma, a superficial bacterial skin infection ("skin sores"), highly prevalent in children in remote Indigenous communities.

- 14.7% drop in Pyoderma prevalence among Indigenous children in the NT from 2004-7 during the course of a study recommending regular surveillance and routine service delivery by trained community workers.

Economic benefit: \$4m value from improvements in the treatment of Pyoderma among NT children under the age of 15.

Notes

Direct economic contributions are those linked with Menzies' activities, while indirect economic contributions represent the flow-on effect from the additional demand generated by Menzies' work.

Menzies' research activities have significantly expanded in recent years. This, in addition to the fact that research involves long lead times, meant it was not possible to quantify all of Menzies' areas of health investigation.

Qualitative impacts

Some research impacts that cannot be expressed in monetary terms are listed below. These refer to outcomes such as training and education, improved interventions and access to services and information.

Mental health

- Improved access to and engagement with mental health services for Aboriginal people, increased number of patients who receive full treatment, with reduced incidence of relapse and hospital readmission.
- The creation of education tools that provide an Aboriginal perspective on mental health – addressing issues such as the impact of petrol sniffing and attitudes towards gambling in remote communities.

Diabetes

- Identified the potential for increased use of insulin, leading to changes in the training of health staff in remote communities.
- Training support developed that led to the employment of the first Indigenous diabetes educator.
- Determined relationships between socio-economic disadvantage and rates of diabetes in the urban Indigenous population.

Tobacco control

- Developed mechanisms to routinely and consistently monitor tobacco sales in 25 remote Aboriginal communities. This methodology enabled rapid feedback and the use of results readily translatable to a whole of Northern Territory or Australia-wide approach.

Otitis Media, *an infection and inflammation of the middle ear*

- Ran high quality randomised controlled trials to test the efficacy of different interventions including antibiotics, drops and ear mopping.
- Identified the benefit of a number of these interventions (now included in official health practitioner guidelines) and other initiatives such as immunisation, family education, additional hygiene practices, appropriate antibiotic use and case management.

Job creation

Menzies directly supported 120 full-time jobs – many of them highly skilled – in the NT, largely as a result of its capacity to attract funding from outside the NT.

Menzies' expenditure created further employment opportunities nationwide. By 2010, Menzies' total indirect employment contribution was estimated at 431 full-time jobs.

Knowledge and skills

Menzies supported 45 candidates for Masters and PhD qualifications from 2002-10.

The total economic value of these completed degrees over the next 20 years is conservatively estimated at \$1.52m.

Menzies more than doubled its output of published academic peer reviewed articles between 2006 and 2010, from 91 to 148 articles. These publications generate value through adding to Australia and the Asia Pacific's body of knowledge, promoting knowledge transfer and promoting both Menzies and the NT as a thriving research hub.

Note on the report findings

It should be recognised that this analysis is partial at best and represents the absolute minimum lower boundary of Menzies' total contribution, which is likely to exceed our estimates because:

- it is highly likely that the application of some of the outcomes of research generated between 2002 and 2010 have yet to be identified; and
- many of the outputs cannot be expressed in monetary terms.

Aboriginal and Torres Strait Islander Australians experience the worst health of any one identifiable cultural group in Australia: they carry a disease burden 2.5 times greater than that experienced by mainstream society.

As the majority of Menzies' efforts are focused on improving the health outcomes of Aboriginal and Torres Strait Islander Australians, Menzies thus not only contributes economically, but also serves to address and tackle one of Australia's most pressing equity issues.

Methodology

Menzies was evaluated using cost benefit analysis (CBA). A CBA involves the estimation of costs and benefits over a number of years, with future benefits and costs discounted to the present using a discount rate. The NPV of the costs and benefits of a particular intervention program are compared to determine a net benefit (or cost) along with a Benefit/Cost (B/C) ratio. CBA has an internal benchmark – the 'breakeven point' (i.e. anything above this 'zero' benchmark is a net benefit). The B/C ratio was calculated as the ratio of the sum of the discounted benefits of Australian health R&D expenditure relative to the cost of Australian health R&D. The breakeven point for the B/C ratio is 1 (i.e. a B/C ratio between 0 and 1 represents net costs).

The benefits estimated are conservative as many of the future benefits of Menzies' work are yet to be realised. The methodology may also be conservative because it only includes the value of wellbeing gains that accrue to the individual as benefits. For example, other health sector benefits of averting DALYs accrue to governments (e.g., health expenditures saved), to firms (to the extent that they bear part of the productivity losses associated with disease and injury) and to the rest of the society (e.g. the value of informal care from family and friends).

A Monte Carlo analysis was applied to test the sensitivity of the net benefit to variation in key model inputs, such as the Value of a Statistical Life Year (VSLY) and time lags between expenditure and gains in wellbeing.

There are a number of assumptions in this analysis that require sensitivity testing. The Monte Carlo analysis used for this report makes it possible to vary all of the key assumptions simultaneously to explore the effect of their potential interactions on the impact of Menzies' activities.

*DALY = disability adjusted life year

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