

# The Strategic Review of Health and Medical Research: Baker IDI submission

Smart Investment  
Clever Innovation  
Better Health

# BAKER IDI HEART & DIABETES INSTITUTE

Baker IDI Heart and Diabetes Institute is a world-renowned medical research facility. Our work extends from the laboratory to hospital research and wide-scale national and international community studies with a focus on diagnosis, prevention and treatment of diabetes and cardiovascular disease. Our mission is to reduce death and disability from cardiovascular disease, diabetes and related disorders; two insidious and complex diseases responsible for the most deaths and the highest costs in the world in terms of treatments and hospitalisation.

Our main facilities located on the Alfred Medical Research and Education Precinct (AMREP) in Melbourne are complemented by a network that includes a research facility in Alice Springs dedicated to Indigenous health, a research hub in South Australia with a focus on nutrition and community intervention research as well as expanding research operations in Singapore.

The Institute's work covers five broad themes of research, each of which supports groups of scientists who work in a laboratory setting as well as researchers who work in the community. This integration of basic scientists with epidemiologists, clinicians and public health professionals is central to Baker IDI's strategy to perform research that is directly informed by community needs and to translate discoveries into everyday clinical practice.

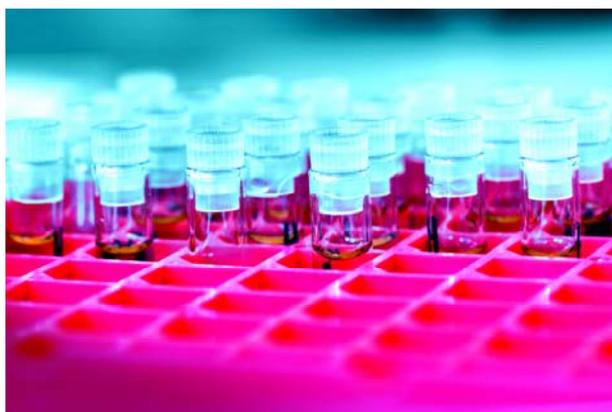


**Our mission is to reduce death and disability from cardiovascular disease, diabetes and related disorders.**

A photograph of laboratory glassware, including a beaker and a test tube, with a soft blue and white color palette.

Baker IDI's research agenda is based on the notion of a disease continuum from birth to death, with the opportunity of preventing the progression of disease at any stage; and the activities arising from this agenda span the health system involving health policy and guidelines, hospital networks, Medicare Locals and the community. These themes encompass our activities ranging from cellular and molecular biology, to integrative physiology, population studies, preventative health initiatives and clinical services focussed on:

- **Early life:** and the experiences during pregnancy and infancy that may be a determinant of an individual's propensity to develop diabetes, metabolic syndrome and subsequently cardiovascular disease in middle age.
- **Childhood and adolescence:** with a view to informing policy and developing novel ways of altering the balance in an individual between energy expenditure, food intake and nutrient density, as well as providing better information on optimal diets and physical activity programs.
- **Adults with risk factors:** including assessment of cardiac and metabolic risk; the causes and treatment of the major cardiovascular risk factors particularly diabetes, hypertension and abnormalities of blood fats; and risk factor clusters such as the metabolic syndrome.
- **Sub-clinical organ damage:** with a focus on the time in life when asymptomatic risk factors cause measurable changes in the body particularly the arteries of the heart, brain, kidneys and eyes
- **Acute complications:** heart attack, stroke and sudden death; with a focus on understanding the mechanisms underlying the development and rupture of unstable plaques.
- **Clinical complications:** angina, kidney failure, dementia; with a focus on the development of disease management programs, particularly in high-risk communities such as the Australian Indigenous community.
- **Heart failure and terminal disease:** including work ranging from fundamental research on maintaining the viability and function of heart cells in the context of advanced disease, the prevention of complications of a failing heart such as arrhythmia, the development of new devices to cure atrial fibrillation, and stem cell research to replace damaged heart muscle or help arteries heal.



## EXECUTIVE SUMMARY

Australia has a health and medical research sector of extraordinary breadth and quality, and the benefits that the sector has brought to the Australian healthcare system have been extensively documented. As the terms of reference for the current review note, it has 'meant less disease, better care and improved quality of life and longevity for Australians'. There have also been economic benefits both from the commercial development of drugs, devices and other clinical innovations, and their contribution to a healthier, longer lived workforce with reduced health costs and increased productivity benefits.

The Commonwealth Government makes a significant annual commitment to the national health and medical research effort through a number of mechanisms including, but not limited to, the National Health and Medical Research Council (NHMRC). Periodically, it is sensible that it should examine the returns on this investment, especially given its growth since 2003. Have returns been proportional to expenditure? If it spent more would it gain more? Could the efficiency of existing funding be improved to increase productivity? Should other parties with an interest and involvement in health and medical research be encouraged to spend more, thus enhancing the national research effort without further draining the public purse? From a strategic point of view it is also important to ask whether funding is being directed towards the right types of research, and in the right places, given the outcomes Government expects from the investment.

More broadly, this review comes at an important time in the evolution of the Australian health system. The national disease burden is changing and the health system is in many ways geared for the past. In particular:

- (i) We have an ageing community with more chronic disease, dementia, and ever increasing and more complex co- morbidities;
- (ii) There is a broad transition underway from communicable to non-communicable disease;
- (iii) Success in acute care has led to an increase in the number of long-term survivors of cancer, cardiovascular disease, HIV with disability etc. Thus progress is producing a cost and care burden we are not yet ready to deal with or adequately fund;
- (iv) Lifestyle diseases typified by diabetes are increasing dramatically and are already cited as the major cause for avoidable hospital admissions in Australia. The best intervention points for prevention are not yet clearly identified but the science is pointing towards early life and pregnancy. Death rates from cardiovascular disease are no longer falling and hospital admission rates are increasing as a consequence of escalating rates of obesity, diabetes and associated consequences;
- (v) Treatments are moving from the acute hospital setting to the community accompanied by widening treatment gaps especially in disadvantaged groups;
- (vi) Drugs widely used to treat cancer, psychiatric illness, HIV and musculoskeletal disorders are increasingly causing cardiac and renal complications requiring long term care even after cure of the original illness. New disciplines such as 'cardio-oncology' are emerging;
- (vii) Immigration is bringing old diseases (TB) and new ones never seen before to Australia;
- (viii) Climate change is already affecting geographic patterns and prevalence of disease and this will continue; and

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- A photograph of laboratory glassware, including a beaker and test tubes, with a blue and red color overlay on the left side.
- (ix) The health system is manifestly failing the disadvantaged – in particular Baker IDI sees this with indigenous Australians through our extensive work in Central Australia. Also people with major psychoses and a number of other treatable chronic diseases have life expectancy 10-20 years less than the remainder of the population.

Health costs are therefore widely acknowledged to be on a trajectory to unaffordability. Health and medical research is clearly a tool to be used in addressing these issues, but the environment is one in which increased knowledge is sometimes feared as a double-edged sword, especially from the point of view of its financial implications. Many existing treatments have certainty about costs for example, but in the early stages of the development of new treatments, there is uncertainty about efficacy, especially acute intensive care.

In principle medical research offers treatments and tests that are both cheaper and better. In fact however, many new tests are added to the present workup of a given condition rather than replacing outdated or now unnecessary diagnostics. Incremental innovation is often seen to lead to incremental cost.

Clearly there is no single rule about medical innovation. It can be expensive and add little, cheap and add a great deal, or expensive but save considerably on downstream costs. In such an environment a national and well co-ordinated effort is necessary, as a lack of coordination places a significant human and economic cost burden on the community. As our submission to this review will identify, the current funding, management and governance system mitigates against the development of the necessary levels of co-ordination, and much can be done to improve on it.

In this submission, Baker IDI looks at the health and medical research sector through the lens of health sector performance and reform, and the aspirations the Government has articulated in the health reform process for a better-informed and 'self-improving' health system, in which we believe research will play a vital part. As in other countries, both public and private investors in Australian health and medical research need to meet the challenge of making best use of limited resources in the face of virtually limitless scientific possibilities.

*For health and medical research to continue being supported by government in the face of competing spending priorities, it must contribute in various ways to the task of extending the length and improving the quality of life and the productivity of Australians – not just through discoveries and innovations that are useful, but also by providing information which helps the health sector to adjust to fast changing disease circumstances.*



Baker IDI suggests that the challenge in the current review is to prepare the Australian health and medical research sector for a future in which it achieves these goals. This will necessarily involve enhancing Australia's already strong reputation for scientific excellence, and creating an environment in which other non-Government parties are encouraged to maximise their investment.

This submission is structured around the three key areas on which we believe Government should focus to build a stronger and more efficient future health and medical research sector, namely:

- Laying the long-term foundations for health and medical research, chiefly by setting out an agreed rationale for health and medical research and by supporting disciplinary breadth in research;
- Restructuring the health and medical research sector to promote integration and attract new (non-Government) funding, chiefly by changing the way the sector is governed; and
- Introducing efficiencies to the way current levels of funding are managed, including through reforms to indirect research funding, research student funding, and career fellowship funding mechanisms.

As part of this submission, Baker IDI has expressed support for the six key strategic recommendations of the submission of the Australian Association of Medical Research Institutes (AAMRI), based around the creation of a single, integrated suite of specialised funding agencies and simplification of the funding they distribute. Specifically the six recommendations entail:

- Creating a new Australian Health and Medical Research Board to oversee and provide the research governance resources for all agencies funding health and medical research;
- Creating a new Australian Health Research and Implementation Council (AHRIC) with a focus on research translation, and tasked with the role of co-ordinating research efforts across disease and population groups;
- Allowing the NHMRC to focus on biomedical research and reflecting this in a rebranding of the NHMRC as the Australian Biomedical Research Council (ABRC);
- Following in the footsteps of many OECD countries in setting in place a strategic goal of fully funding both the direct and the indirect costs of research in a transparent and efficient way;
- Transforming the resource base for research through exploring the potential for engaging philanthropic and other sources of funding in a manner that parallels the positive impact of organisations such as the Wellcome Trust and the Hughes Foundation; and
- Strengthening and enhancing Australia's capacity to undertake and support strategic, potentially breakthrough research by instituting a limited program of institutional grants to be awarded in a competitive process to the most productive health and medical research organisations and collaborative research groups.

These recommendations are also discussed as part of this submission, and are expanded on at certain points.

# 1. LAYING THE LONG TERM FOUNDATIONS FOR HEALTH AND MEDICAL RESEARCH

We believe there are four key priorities in seeking to lay the foundations for a successful and sustainable long-term health and medical research sector, namely:

- Establishing an agreed long-term rationale for health and medical research;
- Promoting an Australian health and medical research sector with disciplinary breadth across all relevant branches of science;
- Embedding research and innovation into every level of the health system; and
- Improving the attractiveness of research careers by means of a simplified grants system, and an increase in the flow between commercial and academic employment.

## 1.1 An agreed long-term rationale for health and medical research

The Australian national effort in health and medical research has taken many decades to build to its current levels of capability. The individuals, institutions, buildings, funding arrangements and bureaucratic systems within the sector will be better able to meet Commonwealth Government expectations if a higher degree of strategic stability is provided.

In the Australian debate on health and medical research, and in the State and Territory-level debates which have gone alongside the national discussion since the 1998 Wills Review, the rationale that Government has given for supporting a national research effort has been variously altruistic, academic, utilitarian, pragmatic and commercial. Each has its place in a multi-dimensional view of what health and medical research can produce, but as the emphasis has swayed between each rationale, the research sector has suffered from the resulting changes in Government perspective about what should be funded, to what extent and by whom, and what outcomes it is reasonable to expect as a result of funding.

A particular case in point over the past 15 years has been the approach Government and the sector has taken to the question of the extent to which the research done in Australia should target diseases prevalent in Australia, or whether instead Australian science should focus purely on excellence regardless of the translational relevance of the work being done for the local population. The 1998 Wills Review suggested that:

*Aligning research activity to, say, the burden of disease may make sense on a global scale but is inappropriate in the context of Australia's global share of research output. Australia should allocate its resources where they can be most effective in contributing to the global research effort.<sup>1</sup>*

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<sup>1</sup> Wills, P. 1998 *Health and Medical Research Strategic Review, the Virtuous Cycle - Working together for health and medical*



Whereas 10 years later the 2008 Nutbeam Review of the NHMRC sought aggressively to realign research spending at all levels to the specific disease environment and needs of the Australian population. Either position is defensible – although this submission recommends a closer alignment with local needs than envisaged by Wills – but a change in policy even over a relatively long period of 10 years is strategically unhelpful to the sector.

A clear and coherent strategic statement about the role Government sees for health and medical research is paramount for driving future growth and productivity in the sector and more broadly for the Australian people.

What then should this vision encompass, and how should it be expressed in order to win bipartisan political support?

*Baker IDI advocates that the Australian health and medical research effort should be regarded as the national resource which enables us to identify, quantify and adequately prepare for the future burden of disease in Australia.*

We should be able to turn to the research community for the information and resources it needs to respond effectively to changing disease trends. Specifically it should be funded and required by Government to:

- Identify future disease trends;
- Enable understanding of fundamental biological processes and be able to apply this knowledge to disease prevention, diagnostics and development of new therapeutics;
- Mount effective responses to anticipated disease and health impacts in our communities; and
- Translate and integrate health service innovations into therapies, tools, clinical practices and health policy for the more effective, efficient and productive health management of our diverse national community.

A photograph of laboratory glassware, including a beaker and a test tube, with a blue and red color overlay on the left side.

In articulating this vision, it should be acknowledged that a relatively small component of this response capacity will take the form of breakthrough discoveries leading to new therapies.

Equally significant is the maintenance of a research workforce able to work within and alongside clinical services which is able to augment those services' efforts through the conduct of research in clinical settings. This enhances quality of service, attracts higher calibre clinical staff, provides access to innovative therapies and cross-subsidises the cost of clinical staff and medications. This human capacity also forms the basis for our ability to mount a local response to emergencies such as SARS.

As part of this vision, it should be understood that Australia needs to retain a health and medical research workforce of its own and cannot rely on research activities undertaken in other countries if we are to reap the clinical practise, translational, commercial and social benefits that have been globally identified with research. There are many reasons for this but the most compelling is that it is the Australian research workforce that provides the Australian health system with a window on and access to the research output of the rest of the world, and the ability to translate its outputs into the local environment. Without this workforce, not only will Australia's small but important part in global medical research be lost, but the advances made elsewhere will be brought to Australia slowly if at all, and their adaptation to Australia needs will be held back.

**Recommendation 1**

*Develop an agreed long-term rationale for health and medical research which will survive successive governments.*

## 1.2 What research should the Australian health and medical research system support?

Baker IDI supports the maintenance of a broad capacity across the full range of scientific disciplines which comprise the national health and medical research effort, yet with an emphasis on clinical relevance to the anticipated needs of the Australian population.

We advocate this not only because each branch of science has a distinctive contribution to make. Our experience is that the environments of larger, disease or population-specialised medical research institutes, which can take an integrated approach to complex questions relating to identification, treatment, management and prevention of disease, has produced insights which discrete disciplines alone are not able to achieve.

Specifically, Baker IDI recommends the maintenance of a health and medical research system comprising five inter-related branches of scientific activity:

**1. 'Oriented basic research'** (OECD definition of fundamental research)<sup>2</sup> is essential for underpinning the national health and medical research effort and must continue to be supported by the Commonwealth as the principal funder. Baker IDI strongly advocates that Australia must retain its capacity in curiosity-driven, investigator-led fundamental discovery within the context of a disease / population focussed mission. As one of the foremost biomedical research institutes in Australia, our experience is that the only viable metric for determining what basic research to fund is research excellence (as defined by the traditional academic metrics of journal impact factor and citation rates), and that claims about translational potential should not influence funding for this kind of research as they are most likely to be inaccurate or misleading. However, without high quality fundamental basic research focussed on biological mechanisms, there is no foundation on which to build future health innovations.

**2. Pre-clinical research** is essential for feeding the therapeutic drug discovery pipeline in Australia in a way which increases the chances of Australian developed IP from all branches of science being commercialised in Australia and the returns being retained here. It also forms a basis for the human capital which will attract pharmaceutical and biotechnology industry players to Australia as employers and investors. The employment and commercial significance of these industries to Australia has been well documented since the Wills Review. A continued commitment to Government investment in pre-clinical research should be made in collaboration with the pharmaceutical industry with a view to leveraging greater commercial investment into Australian pre-clinical research.

**3. Clinical research** is a vital pre-requisite to clinical application and includes human physiology, pathophysiology, and intervention research with potential preventive and therapeutic applications. The latter encompasses lifestyle and behavioural research as well as early phase (I and II) drug and device trials. Clinical research has a bidirectional relationship with fundamental basic research being both a product and a driver. It is an important translational step in providing proof-of-concept to fundamental mechanisms / therapeutic targets prior to large scale clinical trials. In addition, clinical observation is an

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<sup>2</sup> *Oriented basic research is research carried out with the expectation that it will produce a broad base of knowledge likely to form the background to the solution of recognised or expected current or future problems or possibilities.*



important driver of fundamental and pre-clinical research to elucidate disease mechanisms and identify novel therapeutic targets. National Health Priorities should be an important mechanism for disbursement of Government funding in this area. In addition, mechanisms encouraging commercial partnerships are essential for larger clinical trials and eventual translation to practise.

**4. Commercially sponsored translation** – drug and device development / discovery should be promoted in Australia through the provision of tax and other incentives for venture capital and investment funds to focus on this sector. When commercially sponsored trials take place in the Australian health system it is effectively subsidised and patient access to innovative treatments is enhanced; thus a tax incentive to trial sponsors to bring such trials to Australia introduces a financial and quality improvement which should outweigh any tax foregone, also bringing investment and employment to the sector.

**5. Health services, public health and health economics research** should be expanded significantly, because of the potential medium term significance and applicability of its results. This category includes both research to provide the evidence base for effective and efficient health service delivery as well as evaluation research to assess the health impact of initiatives. A self-improving health system is thus inherently reliant on high quality medical research. However there is a risk that as national capacity in this kind of research grows, it will come to ‘crowd out’ basic, pre-clinical and clinical research project funding from the NHMRC budget. Baker IDI suggests that although they are part of a single research continuum and should therefore be governed by the same overarching authority, it is nonetheless inappropriate for these kinds of research to be funded from the same pool as competition between the branches of health and medical research is unhelpful and unproductive. Along with AAMRI, Baker IDI therefore recommends the establishment of the new Australian Health Research and Implementation Council, with a brief to sponsor the health services, public health and health economics research components of the national research effort (see section 2.2 of this submission).

### **Recommendation 2**

*Maintain a health and medical research system comprising five inter-related branches of scientific activity, which supports disciplinary breadth from fundamental science to population health and health economics.*



**RESEARCH IMPACT CASE STUDY:  
Lipid Profiling to Predict Future Risk of Heart Disease**

*Baker IDI researchers are working on a nurse-Led screening program (IMPRESS Study) which aims to track 800 people over three years to assess and manage their risk of cardiovascular disease. What is unique about the study is that it uses CIMT imaging technology to screen participant's carotid artery to determine if they show early signs of fatty deposits. CIMT imaging is not routinely performed on people with a family history of cardiac disease. GPs do offer the test but usually only to people who have other risk indicators such as high blood pressure or cholesterol.*

*The study is firmly focused on preventing future events (such as heart attack, stroke and even sudden death) by altering the risk profile of individuals whose close relatives have suffered a similar fate – particularly at a young age. Trial participants receive a report on their risk profile and are case managed with advice specific to their risk profile. eg. diet and exercise modification. A six month screening of participants revealed many are showing significant signs of improvement in their cardiovascular risk factors.*

*A major component of this “clinical research” is the addition of a “basic research” component that aims to screen the lipid profile of these patients to determine if there are any strong markers of existing atherosclerosis (given that lipids play a major role in the pathogenesis of this condition with subsequent strokes and heart attacks) and subsequent progression of atherosclerosis (and therefore increased risk of premature stroke and heart attack) in these high risk individuals. Ultimately, this collaboration between basic and clinical researchers has the potential to identify new markers of risk for those individuals most likely to develop premature forms of atherosclerosis and potentially fatal events at a young age.*

### 1.3 Embedding research and innovation into every level of the health system

Baker IDI advocates that research should be embedded into every level of the health system from prevention to primary care, and tertiary services. The new national health reform agenda provides the ideal opportunity to reassert health and medical research as a core activity within our public health systems.

Specific actions that could be taken to embed research include:

- The National Health Reform Agreement could be required to fund research that informs policy on prevention and evaluates initiatives;
- Medicare Locals could have research performance indicators that require them to support research;
- The National Health Funding Authority could include a moiety for research and development in hospital networks in all their prices;
- The National Health Performance Authority could include measure of research outputs in their assessment of quality; and
- The National Quality Council could be informed by research on quality etc.

The flow on effects of such a paradigm shift would be significant, with greatly enhanced clinical engagement in health and medical research. The broader health workforce would also benefit from more expanded interactions with research. Embedding research within the system would be expected to lead to:

- More sustainable health reform as the health sector has the ability to test, evaluate, implement or discard new products and services;
- A health workforce that is familiar with managing innovation, its evaluation and diffusion; and
- Lower health costs than presently projected, partly because a health workforce better trained and more experienced in evaluation of quality will get things right the first time, reducing avoidable complications and readmissions, partly because of the implementation of research on more effective methods of prevention, and partly because the use of newer biomarkers and other predictors will allow treatment interventions to move upstream before major complications have taken place.

#### **Recommendation 3**

*Formally embed health and medical research across every level of the health system from prevention to primary care, and tertiary services to inform clinical practice and evaluate outcomes.*

*“The close integration of research facilities with clinical service delivery on the Alfred Hospital Campus is fundamental to our character as a hospital. Baker IDI has been a partner in a number of outstanding developments for many years, and gives us access to resources, skills and ideas that substantially enhance the patient experience.”*

*Andrew Way, CEO, Alfred Health*

## 1.4 Improving the attractiveness of research careers

Employment in the Australian health and medical research sector is necessarily dominated by the funding and professional recognition systems of the NHMRC. During Baker IDI's internal consultations with its senior scientists in the process of compiling this submission, the inadequacy of these systems unsurprisingly became the major focus of attention and target for desired improvements in the system. Universally, Baker IDI scientists regarded the existing arrangements as unsustainable and unattractive to the next generation of scientists, and the feeling was often expressed that for those with the talent and drive to forge a career in health and medical research, the career structure the sector is presently able to offer is a major detraction. In brief, 'if my son or daughter is smart enough to do this, then s/he is smart enough to do something equally rewarded but better paid and that will offer a more reliable career'.

There are several aspects to this. First, lack of institutional funding for research (discussed further later in this submission) puts most medical research institutes in a situation in which the salaries for its lead investigators are granted through a process over which it has no control, and whose results are at best mercurial and unpredictable. Similarly the salaries for early career scientists and the necessary research support workforce that lead investigators need to adequately populate their laboratories are also not under the control of the employing institution but dependent on the fellowship and grant successes of their laboratory heads. Early career management is thereby taken out of the reach of any institutionalised process and is driven significantly by luck, personal relationships and patronage.

Second, the point is never reached at which a scientific career becomes stable in the same way as (for example) a medical specialist or other professional career becomes stable, with funding and therefore employment having become (within reason) predictable.

### *Scientists regard the existing arrangements as unsustainable and unattractive to the next generation of scientists*

Third, researchers at medical research institutes lack professional outlets and career options outside of the world of competitive research, particularly when compared to researchers at other institutes who have access to options such as undergraduate teaching (at universities) and clinical practice (at hospitals). This makes the achievement of fellowship funding or access to a research leader with funding to share much more urgent at MRIs. A person with a stalled research career in a university can be helped into another area of productive professional academic life such as teaching or administration. At an MRI one failed Fellowship application – even if brought about by circumstances the institutional leadership would consider understandable and capable of medium term rectification, such as family responsibilities or illness, can mean the effective end of a research career.

This state of affairs is discouraging at the front end of a career, unhelpful to medical research institutes keen to manage a balanced and productive workforce according to its own mission and objectives, and inefficient once careers have been firmly established. The establishment of a limited number of institution grants and a simplified combined grant system for researchers are two potential solutions



explored later in this submission to address this issue.

In addition, for many years prior to the Wills Review in 1998, and then in both the Wills and Grant Reviews, the point was made that academic employment and promotion focuses too narrowly on traditional academic metrics of success, and that given the importance of commercial translation for the health and medical research sector, greater weighting should be given to the involvement of academic researchers in commercial activities. Since then, it is fair to say that not much more than lip service has been paid to this idea, and the reasons for this are easy to identify. Academic employers such as universities live in an internationalised academic world in which publication output, journal impact, citation rates and the various indices that derive from these are the basis on which institutions compare themselves with each other for the purposes of comparative rankings and (for example) attractiveness to international full fee paying students. In this environment it is impractical to suggest that a single institution should take the lead in elevating the involvement of its academics in commercially sponsored translation above the traditional academic metrics that form the basis for international institutional comparison.



**Professor Karin Jandeleit-Dahm, Head, Diabetes and Kidney Disease**



An additional barrier to this is the uncompromising attitude that lies behind such academic metrics to the need for success. Academic excellence is in broad terms judged on the basis of comparative success, and the best output as judged by peers is rewarded (with funding, recognition and promotion). Commercial research, and certainly that funded by venture capital, is by contrast predicated on a completely opposite approach – that of ‘fail early’, so that funding can continue to be directed and redirected towards the end point most likely to achieve the desired practical outcome. Not only is this not investigator or curiosity-driven, but excellence alone is not a sufficient basis for an activity to be judged successful and failure itself is recognised as a valuable and worthwhile outcome. The academic world has difficulty recognising and rewarding the experience derived from failure, and so tends not to allow it in academic promotion processes. And because commercial translation so often leads to this kind of failure, the entire academic cultural process tends to mitigate against the involvement of academics in commercial translation.

Australian scientists also face a specific cultural issue which compounds this problem. We notice often in discussion with US academic scientist colleagues that the US commercial / academic culture tends to be much more comfortable with the idea of commercial failure – or more precisely commercial decisions not to continue down a certain research path – and to value the experience gained from commercial ventures that have not succeeded much more than do Australian academic employers. The notion that an academic scientist would be proud of a series of commercial start-up engagements that have not gone beyond early funding, and would present the experience gained through these as an asset to a future academic or commercial employer, is not as acceptable in Australia.

This points to two fundamental cultural divides which have for decades mitigated against closer academic / commercial ties and the inclusion of commercial engagement considerations in the promotion of academic scientists through academic institutions. Baker IDI proposes that if we facilitate the entry of non-Government funding to the Australian health and medical research sector, then there will naturally flow from this a greater emphasis in academic promotion and the opportunities that academic scientists are offered for promotion for commercially relevant output than currently exists. An important corollary would be the likelihood that greater flow would occur between the commercial and academic worlds in terms of employment opportunities, with the result that employment as an academic research scientists would become significantly more attractive than the present relatively limited academic world of employment opportunity provides.

#### **Recommendation 4**

*Promote a research culture that is positive toward commercial translation and the transfer of researchers between academic and industry contexts, including through stronger incorporation of commercialisation performance indicators in assessments of research excellence.*

## 2. STRUCTURING THE HEALTH AND MEDICAL RESEARCH SECTOR TO PROMOTE INTEGRATION AND ATTRACT NEW (NON-GOVERNMENT) FUNDING

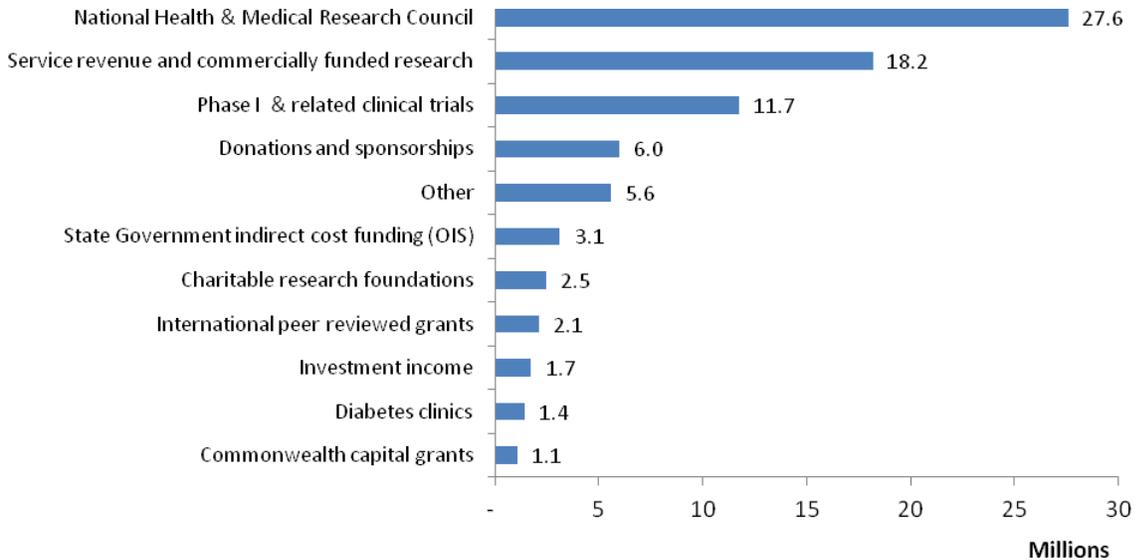
The vision outlined in the previous section describes an Australian health and medical research sector with disciplinary breadth across all relevant branches of science which is regarded by Government and the health services sector as a valuable resource in maintaining and improving the country's response to fast changing disease burden. In order to achieve this vision, Baker IDI advises certain changes must be made to the way the sector is presently managed and funded. The changes we recommend derive from our experience as one of the largest biomedical research institutes in Australia, with activities ranging from fundamental molecular biology funded by NHMRC grants, to collaborative research activities funded by big pharma, to medical device invention sponsored by venture capital and (most recently) public listings, to clinical research funded by Australian and international grants, biotech and pharma clients, as well as philanthropy. Baker IDI's activities, like its funding sources, are extraordinarily diverse and this gives us a perspective on the approach Government should take to shaping the sector in a way that greatly enhances its capacity to leverage financial contributions from investors and clients who can substantially enhance the sector's financial resources as well as its reach.

Like many of the larger MRIs in Australia, Baker IDI already receives substantial financial support from each of these broad sectors in the form of grants and commercial contracts, and without these the institute would be smaller, and able to achieve much less. It is also worth noting that without doubt the institute's ability to attract this funding and support is based on the Commonwealth funding that forms the basis for our work – thus Commonwealth funding leverages activity, employment and discovery which would otherwise either not happen at all or at best, happen overseas. As the following chart makes clear, this leverage is significant, and has produced an institute with a surprisingly diverse funding base:



**Professor Mark Febbraio, Head of Cellular & Molecular Metabolism, Baker IDI**

Figure 2.1 - Baker IDI Group Revenues (calendar year 2011)



Australian health and medical research is a resource that has significance not only for the Government-funded health sector and the academic world in which academic scientists receive their professional recognition. It also contributes significantly to Australia's commercial, academic and social resources, and as such is a national human resource and infrastructure capacity of enormous potential value to commercial, advocacy and philanthropic entities.

Baker IDI has a strong interest in ensuring that its capabilities are accessible by these wider, non-Commonwealth Government interests for many reasons. Aside from the obvious point that diversity of funding is an asset that contributes towards long term financial stability, the mission of the institute – to cure, prevent, treat and better manage diabetes and heart disease – is best served by ensuring that funding partnerships are established with the full range of entities that have an interest in applying the new knowledge generated in the course of our research activities. Research can create the knowledge which will lead to the development of new drugs and medical devices, to a better understanding of impediments to effective health service delivery, or to the creation of preventive programs at the local level which will reduce the incidence of certain diseases in the future. But the institute itself is powerless to ensure that any of this happens without the collaborative support and funding assistance of its many partners in translation.



Those with a commercial and/or policy interest in the application of the knowledge created through the process of research are not only an important source of funding to augment what the Commonwealth Government provides through the NHMRC, but also the means through which translation of that knowledge will be achieved. For the purposes of this review, Baker IDI recommends that aside from the obvious point that it will increase the financial resources available for research, active facilitation of the entry of non-Government funding into the health and medical research sector is the best way to optimise the translation of research findings into products, therapies and policies that will improve health and wellbeing.

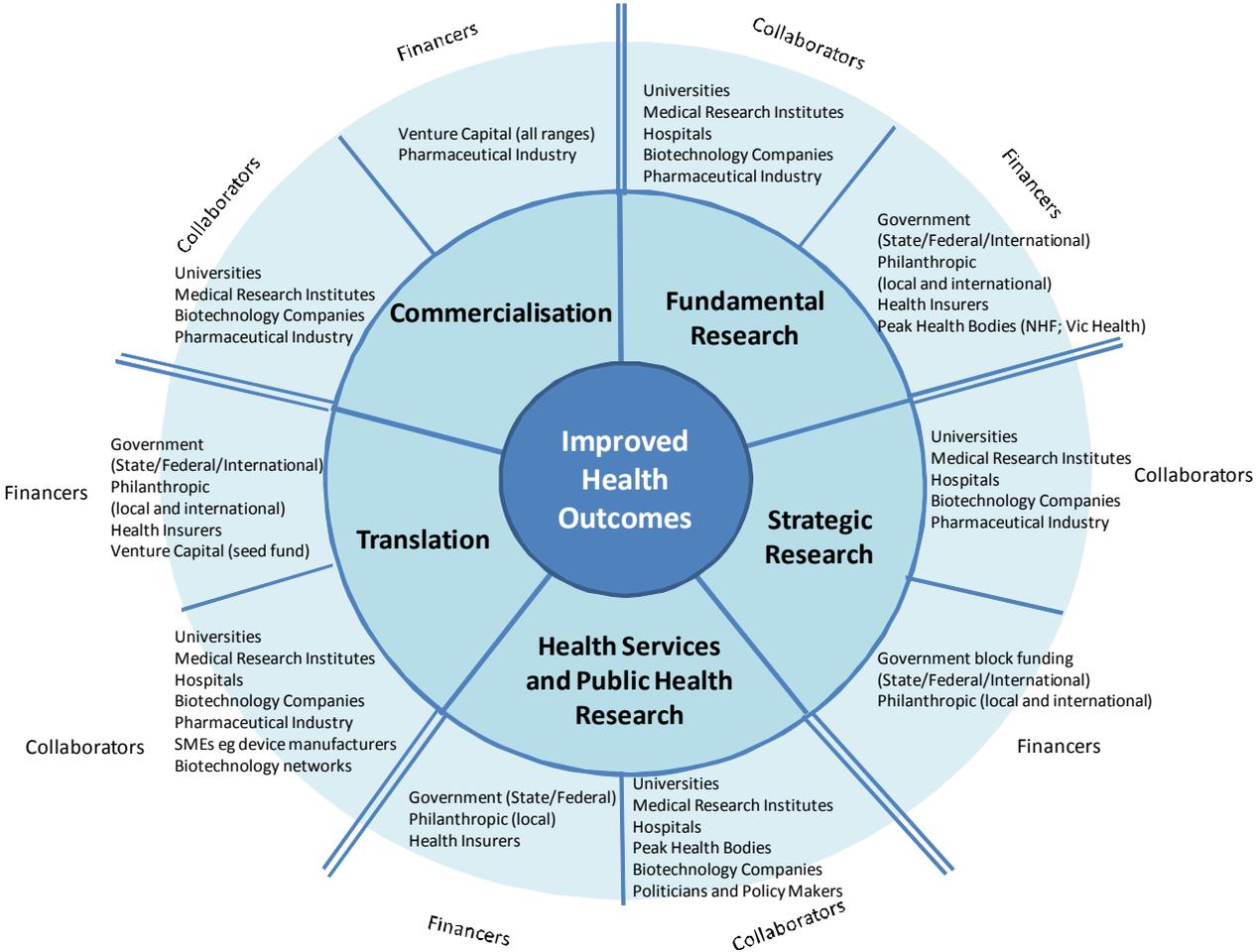
The sources of funding and translational partnership that we believe should be explored in the current review are:

- Commercial biotech, big and small pharma;
- Disease advocacy groups such as the National Heart Foundation and Diabetes Australia;
- Health insurance;
- Commercial investors ranging from venture capital to superannuation funds;
- Philanthropic donors including both individual and established Trusts and Foundations; and
- The potential for social impact bonds in the health and medical research sector.

Although research at all levels will continue to be substantially investigator-initiated, the expertise each of these holds, and the interest each has in accessing and using the outputs from health and medical research, should be harnessed. An enhanced system in which all those with an interest in funding research are brought together with Government, and with the institutions capable of providing an adequate home for the research activity, would underpin an integrated national research effort with both enhanced funding and management capabilities. In this scenario, Baker IDI suggests that it is even possible that opportunities for involvement in management and governance of research entities might also be offered in return for financial contributions to the research effort, so long as the academic credibility and charitable nature of the institute were not put at risk in the process – although how this might play out at the level of the individual institute is beyond the scope of this submission.

An integrated model for Australian health and medical research along these lines might be represented thus:

Figure 2.2 – Model for integrated Australian health and medical research:



In addition to promoting a health and medical research sector which can attract new (non-Government) funding into the sector, overarching governance structures should also aim to promote integration between research bodies and reduce fragmentation within the sector.

Much has recently been made of the ‘fragmentation’ within the health and medical research sector, in particular that between hospitals, MRIs and Universities. Baker IDI’s experience is that much useful collaborative work happens despite this apparent fragmentation, and that on a daily basis the integration of effort in particular between MRIs and hospitals is substantial. This is Baker IDI’s experience in the three major centres in which it has operations integrated within a hospital campus – at the Alfred Hospital in Melbourne, at Alice Springs Hospital in Central Australia, and at Singapore General Hospital in Singapore.

A photograph of laboratory glassware, including a beaker and test tubes, with a blue and red overlay on the left side.

What fragmentation does exist is caused by the diverse funding arrangements supporting the three types of institutions. At Baker IDI's main campus (the Alfred Hospital), Monash University, the Burnet institute and Baker IDI are funded from several different portfolios at both State and Federal levels, each of which requires different and sometimes conflicting performance. Diverse funding arrangements are then reflected in diverse governance and management structures working to diverse KPIs, which systematically pull the institutions apart, and which mitigate against collaboration between them. Integration therefore tends to happen much more at the level of the individual clinical investigator / academic – the people whose professional lives straddle all three entities; and in general such people have three employment relationships which can conflict with one another.

In this submission, in concert with the submission of the Australian Association of Medical Research Institutes and those put forward by a number of its members, Baker IDI puts forward four specific proposals to both reduce current levels of fragmentation and achieve leverage of non-Commonwealth Government funding and expertise into the Australian health and medical research sector at a national level, forming a coherent new structure for the sector. This would encompass:

- an overarching Australian Health and Medical Research Board, bringing together the currently disparate and somewhat fragmented Commonwealth / State interests in supporting research, as well as the confusion of portfolio interests that at present compete with one another at the Commonwealth level;
- a new Australian Health Research and Implementation Council sitting alongside the current NHMRC with a brief to support health systems, health economics and policy / preventive health research, to be run independently of the existing NHMRC;
- a refocussed NHMRC which would be re-established with a limited remit to support investigator-driven basic and early stage clinical and translational research, renamed to reflect this change as the Australian Biomedical Research Council; and
- an Australian equivalent to the UK based Wellcome Trust which would bring to the sector a new level of co-ordinated philanthropy leveraged by Government investment in the sector.

Figure 2.3 – Proposed structure for the Australian health and medical research sector



Each of these proposed new bodies is explored individually below.

## 2.1 Australian Health and Medical Research Board

With the creation of separate bodies for biomedical and public health research, there is a need for an overarching council or body to ensure that there is whole-of-Government, as well as inter-Government alignment between the proposed Australian Biomedical Research Council (ABRC) and Australian Health Research and Implementation Council (AHRIC) in respect of health and medical research policy, infrastructure funding, and the management of common resources. As such, Baker IDI supports the creation of an overarching Australian Health and Medical Research Board, bringing together the currently disparate and somewhat fragmented state and Commonwealth interests in supporting research, as well as the confusion of portfolio interests that at present compete with one another at the federal level.

A decorative header image showing laboratory glassware, including a beaker and test tubes, with a blue and red color scheme.

As noted above this would aim to deal with the issue of funding fragmentation that currently exists between the health and innovation portfolios at present, sponsoring as they do the interests of one type of institution over another in respect of the funding they are able to allocate, regardless of the excellence of the work being done. For this reason we recommend that the board overarching the ABRC and AHRIC would be a body that brings together the skills and knowledge of the major stakeholders that influence health and medical research, which could include for example, the Treasurer, Ministers for Health and Innovation, limited representation from State & Territory Health Departments, ABRC, AHRIC, ARC and the Australian National Preventive Health Agency.

We see this as a group that would bring together these skills rather than necessarily provide each major stakeholder or interest with representation. The aim of the entire exercise would be to better align Australia's research efforts with national health priorities, with ensuring that scientific excellence remains the driving force in relation to the specific projects and activities that are funded and supported.

## 2.2 Australian Health Research and Implementation Council

Baker IDI advocate that an Australian Health Research and Implementation Council (AHRIC) should be established with a brief to support health systems, policy, health economics and preventive / public health research.

AHRIC would comprise a group of disease or population focussed virtual institutes or networks modelled on similar entities in Canada and the UK, and its aim would be to bring about better alignment between research, health policy and medical commercial objectives.

Governed by the overarching Australian Health and Medical Research Board that will also have responsibility for the proposed ABRC, *we believe the establishment of the AHRIC would provide a unique opportunity to allow those non-government entities with an interest in enhancing Australia's health and medical research output and uptake to play a role in the development and articulation of research strategy and national research planning.* Indeed a major objective for the AHRIC and its sub-entities based on national health priorities would be to systematically partner the Commonwealth-funded research sector with commercial, advocacy and end-user research funders and collaborators as outlined in Diagram 2.2 above. In the three areas of national health priority in which Baker IDI is active for example (cardiovascular disease, diabetes and indigenous health), the partnerships such a national entity would facilitate might involve the major advocacy bodies (Diabetes Australia, the National Heart Foundation); health insurers with an interest in the reduction of cardiovascular risk; remote service employers such as mining companies with an interest in the improvement of health services delivery to indigenous people in remote Central Australian communities; pharmaceutical or medical device companies with a track record in the development of drugs and devices for people with heart disease; and major cardiovascular hospitals such as the Alfred Hospital in Melbourne. The point here though would be that Government, through the AHRIC, has a 'seat at the table' and is the co-ordinator of a collaborative venture rather than the primary or even sole funder.

A photograph of laboratory glassware, including a beaker and test tubes, is shown at the top of the page, partially obscured by a red and blue graphic element.

This mix of institutions, interests and expertise would collaborate in the development of strategic research plans and priorities which would not only align more closely with the diverse range of needs associated with the designated national health priority than Government alone is able to foresee, but which would also make it more likely that the resource developed in research institutions in response to those priorities would be attractive to funding by the non-Government entities involved.

Some existing programs which seek to achieve this or something like it – for example the NHRMC partnership programs and Centres of Excellence grants – should be considered for transition to the new AHRIC, to ensure that no inter-Government competition to support this kind of initiative arises. The AHRIC should be the whole-of-Government focus for the entry of non-Government funding to the health and medical research sector.

The AHRIC would provide funding for research on the basis of requests for proposal built around national health priorities, but only within the framework of funding also being made available by the non-Government sources of funding represented in each specialist agency. The criteria for funding would combine standard peer review mechanisms with the capacity of nominated projects and activities to attract non-Government funding, and the enthusiasm of the end users of research such as hospitals, health insurers and drug developers for involvement in the translation of research funded through the various mechanisms to which they have access. Through this inter-disciplinary collaborative process, AHRIC funding would be directed towards science that is excellent, relevant and highly likely to be taken up by end users.

### **2.3 Australian Biomedical Research Council**

As a second pillar in the model outlined in this submission, Baker IDI proposes a refocused NHMRC which would be re-established with a limited remit to support investigator-driven basic and early stage clinical and translational research, renamed to reflect this change as the Australian Biomedical Research Council (ABRC). The character of the new ABRC would (like the present NHMRC) remain investigator-driven as this is more appropriate for the fundamental, pre-clinical and early clinical research that would form the focus of this agency's role in the sector.

The peer-review system which underpins the existing NHMRC approach to the distribution of investigator-driven funding is currently the area in which the health and medical research system is least effective. Significant transaction costs are inherent in the way very small amounts of funding are distributed through a plethora of schemes funding salaries, specific projects, programs and collaborative ventures. No doubt each of the individual funding programs in the current NHMRC grant and fellowship system was once well thought through. That said, the sum total of these programs no longer appears to us to make coherent sense, and as such we believe that a fundamental overhaul of the way they work and the way funding to early stage science is distributed is overdue.

Our core proposal in this regard echoes the call by the Association of Australian Medical Research Institutes to move to a radically simplified scheme in which NHMRC (now ABRC) funding would be distributed as single, five-year grants to nominated investigators. These grants would combine project, program, fellowship and career development program funding and would enable identified research leaders to do what the current system denies them the opportunity to lead and build their own research groups.

## 2.4 The Australian Health Research Charitable Trust

A major difference between the Australian health and medical research environment and that in the three countries with which we most regularly compare ourselves – the UK, US and Canada – is the absence of a major philanthropic trust such as the UK-based Wellcome Trust. If it were possible to establish an Australian equivalent, this would bring to the sector a new level of co-ordinated philanthropy, leveraged by Government investment.

As the terms of reference for the present review make clear, philanthropy is a key driver of health and medical research in Australia and is likely to remain so, possibly even expanding in relevance, in coming years. In 2011, the Baker IDI group was highly dependent on the generosity of its donors, with approximately \$8.5m of our \$72m group revenues coming from our philanthropic supporters. Baker IDI donors range from people who buy \$2 raffle tickets, attend one of our various fundraising and awareness raising events, commit to donating monthly through a regular deduction from their credit card, make a one-off donation following a specific event that makes them consider our work, respond to a specific capital appeal, or make a substantial bequest. Our fundraising efforts are diverse and extensive, and regarded by Baker IDI management as essential both from the point of view of the net contribution they make to our funding, and the knowledge they spread about our work into the wider community.

Nonetheless, the institute is always concerned to ensure that our existing philanthropic support is not harmed or alienated when we try to extend the reach of our current donor program, and we see danger that aggressive attempts to expand already extensive philanthropic support to Australian health and medical research might do this at a national level. *The current system in Australia is one in which too often the call that is made on philanthropists is one based on the inadequacy of the research institution's existing funding* for its existing aspirations – taking the form of a plea to 'fill the gap' left by inadequate funding of research projects that are currently on foot, a situation brought about mostly by the inadequacy of current direct and indirect cost funding arrangements. Whilst at lower levels of donation this is manageable – most Australian donors will not reflect too much on such issues when committing to donations of \$50 per month or single annual donations of a few hundred dollars – for major philanthropists who increasingly make decisions about what to support in the same way as and using the same tools as financial investors, the 'funding gap' argument is a remarkably unattractive proposition. For institutes such as Baker IDI, this gives rise to a donor strategy in which the 'pitch' to donors too often highlights existing work which cannot continue unless philanthropic funding is won, and only in discussion with major donors is the issue of entirely new ventures discussed.

In such an environment, philanthropic funding to health and medical research can certainly be increased, but only if donors see increased leverage of Government and other funding resulting from their own contributions.



We do not advocate the involvement of philanthropic interests in the proposed Australian Health Research and Implementation Council as a mechanism to achieve this. Nonetheless we do believe that an opportunity exists to bring higher levels, indeed new types of philanthropy to medical research if a new, national entity is formed with the specific purpose of creating a national response to the issues with which health and medical research is concerned.

The key philanthropic initiative Baker IDI supports in the current review is the establishment of a new Government-sponsored philanthropic trust for medical research modelled on the UK Wellcome Trust. The trust, to be known as the Australian Health Research Charitable Trust, should become the primary means through which major research initiatives that have national relevance and are attractive to the philanthropic sector are promoted, with the aim being to provide the opportunity - over and above existing institutional level philanthropic support from major donors - to collaborate with Government in the development of initiatives of national significance. As noted above, philanthropic support to health and medical research is often at present focussed around a *frustration* with Government as opposed to a partnership with it, and as such the notion that philanthropy is leveraging Commonwealth funding is effectively turned on its head. The result of this is that Australian health and medical research is not yet in a position to provide philanthropists with the capacity to support truly nation-building initiatives with a vehicle for their aspirations. The suggestion made here of a major new philanthropic trust seeks to fill this gap, and bring new levels of philanthropy to the sector without harming current institutional level access to philanthropy.

#### **The Wellcome Trust: Supporting Careers in Research**

*“We believe passionately that breakthroughs emerge when the most talented researchers are given the resources and freedom they need to pursue their goals. This philosophy is embodied in our Investigator Awards and Fellowships, which support individuals who have the vision to innovate, take risks and explore the most challenging questions in their field of study. These personal support schemes are complemented by our Strategic Awards, which support cutting edge research and training programs that address our five challenges. We also work with expert advisory groups and the international research community to explore new research areas and develop targeted funding initiatives”*

Wellcome Trust Strategic Plan 2010-20, Extraordinary Opportunities.



**Professor Peter Meikle, Head, Metabolomics & Jacqui Weir, Research Assistant**

Establishing such an entity within Australia will require a once-off, massive investment incentive targeted directly at the nation's most wealthy individuals and corporations. The aim would be to establish an initial charitable trust fund of \$500m. In order to ensure minimal cannibalisation of existing philanthropic funding to medical research institutes, hospitals and universities, the trust should be restricted from accepting donations of less than \$10m, and should be launched with an initial \$50m contribution from the Commonwealth Government. Initial financial contributions should also be required from States and Territory Governments, given the significance of the research that will be done to State and Territory health system performance. The initial State and Territory Government financial contributions should start at \$50m for the larger States, reaching a total of \$200m across all States and Territories. Much of the research that would be sponsored by the Trust would feed into State and Territory health budget savings in the short term. For example, the conduct of research into the efficacy of interventions (including pharmaceuticals) clearly reduces costs by minimising the use of interventions that do not work, and enables the more judicious application of those that do work, thus improving health outcomes and efficiency.



We believe that the one-off investment incentive the Commonwealth Government could provide to establish the Trust should take the form of a tax incentive for charitable donations to health and medical research. A significant tax write-off for donations to the Trust (in the magnitude of 150-250%) would be necessary to ensure there is a sufficient incentive for individuals and corporations to donate within a short time period so that total funding could reach the level of endowment required to establish the Trust.

Such a mechanism would be easy to administer and could be in place for a limited time, restricting the liability for government while providing a significant short-term incentive for investment in the Trust. The tax incentive could also be structured to promote higher quantum donations to the Trust, with a higher rate of tax deductibility available for donations above \$50m. A high-profile wealthy champion should be appointed to work alongside government to approach potential funding sources and attract donations during the establishment phase.

Similar mechanisms have been implemented globally. For instance, Singapore has a significant tax write-off in place for charitable donations to health and medical research, which has proven very effective in both expanding the national interest in philanthropy in general (in a country like Australia where the cultural support for philanthropy is not as advanced as in the US), and in directing it towards health and medical research. In 2011, the Singaporean government announced that the existing tax deduction would be increased to 250% until 2015 to encourage greater charitable giving to ‘Institutions of a Public Character’, which include health and medical research institutions.<sup>3</sup>

The Australian Health Research Charitable Trust would (again, like the UK Wellcome Trust) sit alongside the primarily government-funded and administered system dominated by the AHRC and the ABRC, and whilst it would clearly make its own decisions on priority funding and support, it would draw on the peer review, research ethics and national strategy co-ordination capacity shared by these other entities, thus ensuring a level of co-ordination and efficiency between the philanthropic and Commonwealth funded components of a thus much expanded health and medical research sector.

The Trust would be governed by a board of high-profile individuals and business leaders, and could also feature government representation. However, it is important to note that the Trust would be fully independent of government, with funding to the Trust to remain in a separate account at arm’s length from government, to ensure it is not able to be diverted to other areas.

Prospective participants will require a mechanism to engage with the Trust - they will be more likely to engage with the Trust if there is a vehicle for their donation to be recognised and for their ongoing engagement in the health and medical research sector. Investment committees or distinct research advisory groups relevant to particular national health priorities could be established as vehicles for broader engagement with the Trust.

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<sup>3</sup> Inland Revenue Authority of Singapore (IRAS), Charities/PCs – Donations and Tax Deductions, ‘Tax Deduction of 2.5 Times the Amount of Donation made from 2009 to 2015’, available at: <http://www.iras.gov.sg/irasHome/page04.aspx?id=1274>.

### **Recommendation 5**

*Fundamentally reshape the health and medical research sector, through the establishment of:*

- a) an overarching Australian Health and Medical Research Board bringing together the currently disparate and somewhat fragmented State / Federal interests in supporting research, as well as the confusion of portfolio interests that at present compete with one another at the Federal level;*
- b) a new Australian Health Research and Implementation Council to be run independently of the current NHMRC with a brief to support health systems, health economics and policy/preventive health research conducted by a group of disease or population focused virtual institutes;*
- c) a refocussed NHMRC with a limited remit to support investigator-driven basic and early stage clinical and translational research, renamed as the Australian Biomedical Research Council; and*
- d) the Australian Health Research Charitable Trust, an Australian equivalent to the UK Wellcome Trust which would bring to the sector a new level of co-ordinated philanthropy leveraged by Government investment in the sector.*

### **Recommendation 6**

*The Australian Health Research and Implementation Council should provide research funding based on existing national health priority areas, with the aim to attract additional funding from non-government funding sources to the relevant disease or population focused virtual institute.*

### **Recommendation 7**

*Introduce a one-off tax incentive to establish the endowment for the proposed new Australian Health Research Charitable Trust, with a significant tax write-off available for charitable donations to the Trust.*

### **Recommendation 8**

*The Commonwealth Government should make an initial \$50m contribution to the Trust, with State/Territory Governments also required to make an initial contribution (totalling \$200m between all State/Territory Governments).*

### **Recommendation 9**

*The Trust should be restricted from accepting donations of less than \$10m to avoid competing with most existing sources of philanthropic funds.*

## RESEARCH IMPACT CASE STUDY:

### *Pin-pointing Cardiovascular Risk with a simple test*

*Atherosclerotic cardiovascular disease is responsible for 80 per cent of heart conditions - and the first sign of illness for many people is a fatal or near-fatal heart attack. There are no tests to screen for this disease. PROFESSOR Karlheinz Peter has dedicated his career to understanding atherosclerosis and his years of work have led to the pivotal finding that a specific group of proteins is present in the urine of people who later suffer atherosclerotic heart disease, but are not present in samples from healthy people.*

*THIS discovery has since been developed into a simple to administer urine test that, in early trials, detects those patients at risk of atherosclerotic cardiovascular disease with 84 per cent accuracy.*

## 2.5 Establish a limited number of Academic Health Science Centres with effective integration between the partners

As discussed above, there are significant levels of fragmentation within the health and medical research sector, in particular between hospitals, MRIs and universities. We believe that fragmentation of this kind will not be dealt with by way of overlaying structures such as the kind of 'light touch' Academic Health Science Centres (AHSCs) we have seen established (for example) in the UK, because they do not go to the root cause of the problem of fragmentation. Unless the three types of institution involved are brought together through merged funding arrangements, Baker IDI believes that AHSCs and similar entities that aim to encourage and support inter-institutional collaboration will most likely only create a layer of bureaucracy and a filter for funding that the AHSC's members would otherwise win directly. Increasingly the evidence from offshore experience is that the success of AHSCs is limited in direct proportion to how much governance integration was achieved between the parties when they were established.

Baker IDI therefore recommends the selection of a small number of deeply integrated AHSCs within Australia – at most 10. These should be geographically coherent, and have an established track record of partners already working together. Having been selected, in order to win funding in addition to what the existing institutional partners are able already to attract through their own efforts, the selected AHSCs should be required to propose integrated governance and management arrangements between the members which clearly indicate how transaction costs between them will reduce, and research output and its application in the clinical setting will increase. Funding for AHSCs should be drawn from the global health and ageing budget against reductions in clinical service costs identified in funding proposals that are achieved.

A photograph of laboratory glassware, including a beaker and a test tube, with a blue and red color overlay on the left side.

If this initiative is taken up, the process of requiring the component parties in aspirant AHSC groups to identify reduced transaction costs between them and increased translational output that would result from their work would itself be beneficial, in that many such initiatives identified would presumably be compelling for the partners whether or not additional funding is awarded.

**Recommendation 10**

*Establish a limited number (at most 10) of Academic Health Science Centres with deep governance integration. These should be geographically coherent, and have an established track record of partners already working together.*

*“Alice Springs hospital has benefited significantly from the presence of Baker IDI on the hospital campus. The institute supports us in the service of our community in Central Australia, and has become a key resource for us in enhancing the evidence base we use for our work.”*

*Mike Melino, Executive Director, Alice Springs Hospital*

### 3. IMPROVING THE EFFICIENCY WITH WHICH CURRENT FUNDING IS MANAGED

As outlined earlier, Baker IDI believes that the priority for Government in the current review should be: (i) to improve the efficiency with which the current budgets are spent; and (ii) to work on ways to bring new, non-Government money to the health and medical research sector.

Increases that are recommended below once these priorities have been actioned are consistent with the notion that health and medical research is an investment in the improvement of the health system's capacity to respond to a fast-changing disease burden, and wherever possible are represented as a function of that improved capacity – mostly in the form of savings from the health budget. This above all requires a whole-of-government view of income and expenditure, something the model proposed here is aiming to achieve.

In 2012, approximately \$140m of NHMRCs \$750m budget will be spent on public and population health, and health systems and health economics research. We recommend moving this funding to the AHRIC, with ABRC funding rising from \$606m to \$930m by 2022, including an allocation of \$90m for the proposed iconic centre grants to:

- (i) ensure our best and brightest minds are attracted to and retained in the sector;
- (ii) permit a modest expansion of the sector to take advantage of the major investment in new medical research buildings that has occurred over the last decade;<sup>4</sup> and
- (iii) allow our best research centres to compete with their counterparts overseas.

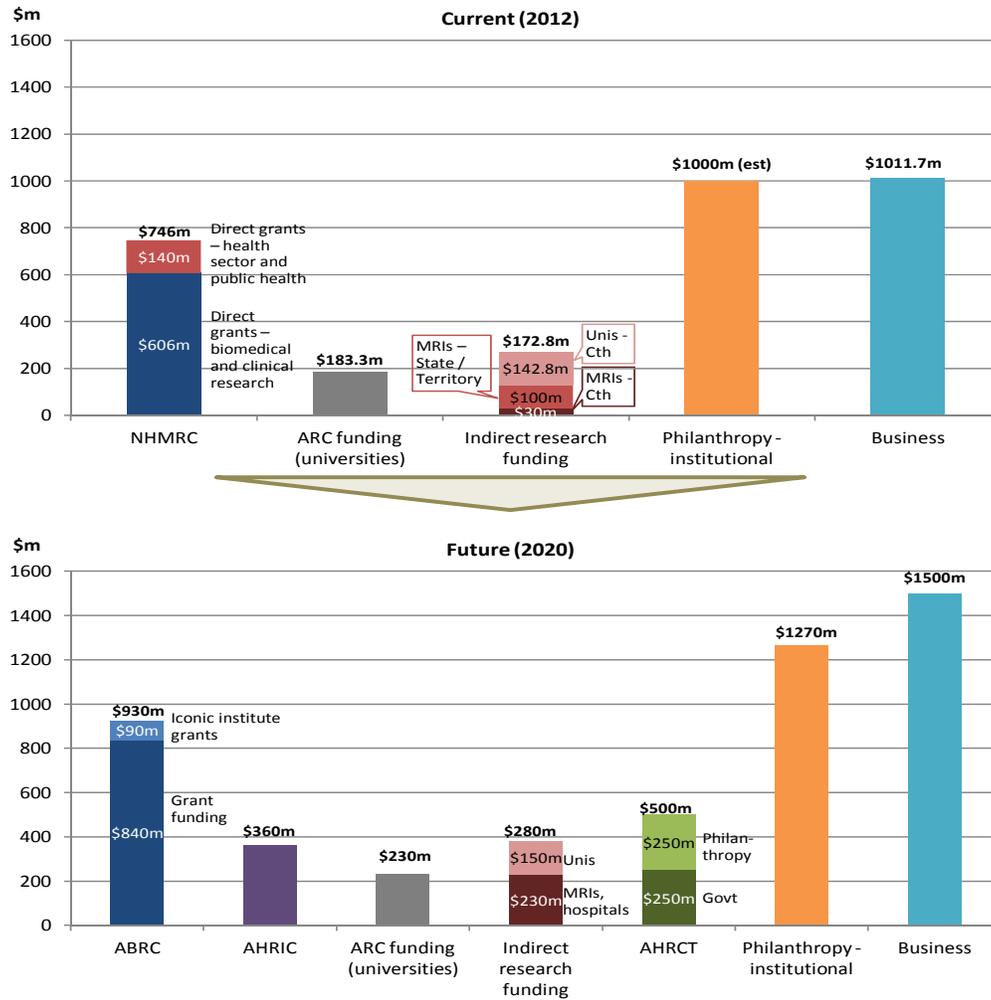
From 2015 we recommend a 3% annual increase in both the ABRC and AHRIC budgets to ensure our researchers can continue to perform innovative and cutting-edge experiments in the face of increased costs.

The diagram below provides a high-level illustration of how we foresee major elements of health and medical research funding in 2020, following the introduction of the new governance model discussed in the previous section:

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<sup>4</sup> For instance, new and expanded facilities at the WEHI, Melbourne Brain Centre, VCCC, Peter Doherty Institute and MCRI in Victoria; SAHMRI in SA; WAIMR and Telethon Institute in WA; QIMR and The Translational Research Institute in Queensland; The Lowy Institute, and The Kinghorn Cancer Centre in NSW and the Menzies Institute in Tasmania.

Figure 3.1 – Illustrative current and future funding for the Australian health and medical research sector<sup>5</sup>



<sup>5</sup> Estimates drawn from NHMRC Research Funding Fact Book 2011; Research Australia, 'Shaping Up: Trends and Statistics in Funding Health and Medical Research', Occasional Paper Series, July 2011; NHMRC Grants Funding Database 2002 to 2011; LEK Consulting, Costing Medical Research to Reform Health Outcomes: The case for increased indirect cost funding for Australian accredited medical research institutes, 2010; ABS cat. No. 8112.0, Research and Experimental Development, All Sector Summary, Australia, 2008-09; ARC Portfolio Budget Statement 2011-12.

### **Recommendation 11**

*From 2015, there should be a 3% annual increase in the health and medical research budget to ensure researchers can continue to perform innovative and cutting-edge experiments in the face of increased costs.*

In addition, Baker IDI recommends three specific initiatives to improve the efficiency of the current Commonwealth Government spend. We believe that implementation of these initiatives is essential before Commonwealth funding is increased, as it is clear that high transaction costs are currently limiting the benefits Australia derives from the current health and medical research sector. This section also recommends funding reforms to existing career systems and fellowship structures in order to make health and medical research a more attractive and stable career option.

### **RESEARCH IMPACT CASE STUDY: World first treatment for severe high blood pressure**

*It is estimated that 30 to 40 per cent of the population suffer from high blood pressure and of this group, about 15 per cent are resistant to traditional therapies. Hypertension often has no symptoms yet the patient could be at a significantly greater risk of heart attack and stroke.*

*Developed by researchers at Baker IDI, 'Renal denervation' is a minimally invasive day procedure, proven to be extremely effective in reducing blood pressure in patients with uncontrolled blood pressure.*

*During a 'Renal denervation' procedure, a catheter device is inserted into the upper thigh and threaded into the renal artery. Once in place, the device delivers an electric current to deactivate the surrounding renal sympathetic nerves which in turn reduces hyperactivity of the sympathetic nervous system, often the cause of uncontrolled blood pressure.*

*Following international trials and a paper published in *The Lancet*, the procedure has been approved by the relevant Therapeutic Goods Administrations in Europe and Australia.*

*The procedure builds on more than 30 years research by Professor Murray Esler AM and his team.*

### 3.1 The indirect costs of research should be fully funded with grants

The most significant initiative the Commonwealth Government could take to improve the efficiency of the health and medical research sector is to establish a rational and equitable regime for funding the indirect costs of research.

As is well known, NHMRC Project and Program Grants are awarded with a (usually inadequate) allocation of direct costs only. Grants are awarded with clearly insufficient costs for salaries, consumables such as research animal adjustment and equipment, in a process that has evolved simply to maintain what is perceived as an acceptable application success rate; institutions make up the difference with other sources of revenue, but more often, research plans suffer as a result. Compounding this, the indirect costs of research – the platform technologies, buildings, administration and other costs incurred – are funded by means of a variety of separate schemes run through either the Department of Industry, Innovation, Science, Research and Education (DIISRTE) for universities, or a combination of NHMRC and the relevant State/Territory Department of Health or Innovation (depending on the jurisdiction) for the MRI sector. Hospitals receive no indirect cost funding at all.

The absurdity of separating the indirect from the direct costs of research into separate applications made to different portfolios in different jurisdictions depending on the nature and location of the administering institute has been long recognised. The current review's predecessors (Wills and Grant) as well as the more recent and broader Cutler and Bradley reviews all noted the internationally accepted benchmark for indirect costs of research, and recommended that they be funded both adequately and seamlessly.

This has not happened, and a solution is widely acknowledged as long overdue.

Baker IDI suggests that the single most important structural change to the current system that the McKeon Review might achieve would be to establish a funding environment in which NHMRC grants were universally awarded at a level which would adequately fund both the direct and indirect costs of research.

This would bring about two considerable efficiencies.

First, the separate applications processes and bureaucracies around the allocation of indirect costs as a separate award would disappear. The many thousands of hours which go into the preparation of submissions for indirect cost funding of health and medical research would be given back to the performance and administration of science.

Second, it is clear that the current system encourages wasteful and unhelpful 'gaming', whereby institutions that are eligible for certain types of funding enter into agreements with institutions that are not (yet as administering institutions with successful investigators are able to hold direct grants). These agreements masquerade as collaborations but in reality are no more than bureaucratic arrangements built around the inefficiencies of the current system. They are cumbersome, misleading in respect of the attribution of output to institutions, and create a web of institutional employment and contractual arrangements which would not be established were the funding system more straightforward. A universal policy of fully funding grants would cause any such agreements which have been established simply as a work around the current funding system to be dismantled, leaving only those which have



been established for genuine scientific collaborative reasons.

Having the Commonwealth solely responsible for funding the indirect costs of Commonwealth funded research will promote greater funding certainty for health and medical research institutes and lead to clearer and more appropriate governance structures. This solution also avoids the 'blame game' and lack of responsibility that is associated with overlapping funding arrangements between different levels of government.

It must be noted however that the establishment of this system would have funding ramifications requiring COAG oversight. At present, State Governments, while acknowledging the inadequacy of the indirect cost funding they provide to MRIs, have broadly speaking been reluctant to move on the issue in the hope that the Commonwealth will 'move' first. Under this proposal, State/Territory Governments would no longer need to allocate funding towards supporting the indirect costs of research performed within their jurisdiction. Without subsequent changes, this would allow them to reap a windfall benefit equivalent to approximately \$100m across all State/Territory Governments.

The Commonwealth could recover the increased financial burden associated with taking sole responsibility for indirect research costs through changes in federal financial relations. This would most simply be achieved through a reduction in general health transfers from the Commonwealth to State/Territory Governments, matching the total amount equivalent to current State/Territory indirect research funding. Given the significant savings that accrue to State/Territory health budgets through advances in health and medical research, this relatively minor contribution towards the ongoing costs of research could be viewed as an investment towards future budget savings.

With control over all indirect research funding, the Commonwealth can then allocate a consistent level of indirect cost funding which attaches automatically to grants when awarded. The same level of funding should be made available to all NHMRC-recognised administering institutions.

**Recommendation 12**

*Establish a funding environment in which health and medical research grants are universally awarded at a level which funds both the direct and indirect costs of research.*

**Recommendation 13**

*To promote funding certainty, the Commonwealth Government should be solely responsible for meeting the indirect costs of research. Current health transfers to State/Territory Governments from the Commonwealth should be reduced by a level equivalent to current State/Territory indirect research funding given the longer-term State/Territory financial savings that are attributable to health and medical research.*

### 3.2 Institutional funding should be awarded to a limited number of iconic research centres that meet certain criteria

Baker IDI's experience is that significant knowledge and health service delivery breakthroughs are possible with the creation of clinically led teams which identify and explore questions relating to the cure, prevention, treatment and better management of disease. This is best achieved in the few specialised disease-focussed multi-disciplinary research environments that exist in Australia's unique medical research institute sector, where all the branches of science are co-located and interact in a clinically focussed environment. Nonetheless the project and program grant system as currently administered by the NHMRC struggles to fund such multi-disciplinary innovation, as being inherently risk averse it tends to favour incremental rather than potential breakthrough discovery. Whilst this is possibly unavoidable in relation to peer review of investigator driven research proposals, Baker IDI believes that the large communities of specialised scholarship housed in the major research institutes are a sound investment target for a level of more strategic funding, to be allocated to research initiatives on the advice only of the scientific community of that institute.

Like the other major medical research institutes that have evolved in Australia, Baker IDI employs a significant proportion of the country's most eminent researchers in its chosen fields. For Baker IDI, the fields of diabetes and heart disease research are represented across all disciplines, from oriented basic science to clinical/translational research, epidemiology and preventive health / health policy. The national cost of bringing such a group of specialists together from around the world into one institution, and then providing them with the physical infrastructure, platform technologies and administration they need to function, is very high. Yet having created this internationally renowned research community, the current funding system effectively provides it with no strategic freedom to determine its own scientific direction, requiring all direct Government funding to be won and held at the investigator level. The Baker IDI scientific community as a group has no freedom to determine and fund its own research initiatives, as all funding is determined through the competitive peer review system – that is, effectively, by Baker IDI's competitors.

In the context of any other industry, this lack of strategic freedom is absurd. The larger medical research institutes in Australia are a key national resource, yet their efficiency is reduced, their strategic flexibility limited, and their viability threatened by the funding mechanisms that currently exist, primarily through the NHMRC. These funding mechanisms should be recalibrated in order to support larger institutes to fulfil their potential contribution to the national response to disease burden.

Baker IDI proposes that a level of institutional funding should be provided to a number of institutions or groups of institutions within the health and medical research sector, on the basis of three conditions. They should be able to show that they are:

- (i) Able to bring together multidisciplinary teams to conduct research in the areas of national health priority;
- (ii) Able to show that they are efficiently run – ie with indirect costs lower than 60 cents in the dollar and administrations costing less than 20% of total revenue, and
- (iii) Have sufficient critical mass to make it worthwhile – ie with a staffing of over 400 and/or a turnover of more than \$40m

## RESEARCH IMPACT CASE STUDY:

### *Managing MARFAN Syndrome with tele-health*

*Marfan Syndrome is a genetic disorder characterised by abnormal gene function in a protein crucial to maintaining normal large artery elasticity. A major complication is gradual stiffening and expansion of the main artery from the heart. This can reach a point where the aorta ruptures often leading to death, predominantly at a young age. In a clinical trial conducted at Baker IDI and the Alfred Hospital, Dr Anna Ahimastos, Professor Bronwyn Kingwell and Professor Tony Dart found that treatment with drugs known as angiotensin receptor blockers were able to slow the progression of the aortic changes in these patients. This has led to the adoption of this management in clinical practice.*

*THERE are well accepted guidelines based on clinical end point studies for the appropriate management of patients with known coronary heart disease who have presented to hospital with acute coronary syndrome and/or required coronary angioplasty or bypass surgery. These include both pharmacotherapy and non pharmacological approaches, such as nutrition and physical activity. Despite the convincing evidence, compliance with guidelines is far from universal. In a study conducted in Australia and which included Alfred Hospital/Baker IDI, the effectiveness of a telephone "coaching" programme to improve compliance with recommended management was evaluated. Not only did this study demonstrate the efficacy of such an approach at subsequent follow up, it was established that the 'coaching' resulted in overall cost saving from reduced bed utilisation. From its origin as a collaborative research study between Baker IDI and the Alfred Hospital, the programme has now been adopted and funded by The Department of Health (Victoria) and is delivered in several metropolitan hospitals.*

A sensible benchmark for such institutional funding would amount to 10% of the rolling three-year average of competitive grant funding won by the recipient institute. This funding should be made available to any institution or combination of institutions that are able to put forward a credible proposal, including MRIs, Universities, and Hospitals.

The purpose of this funding will be to support strategic research identified by the scientific leadership of Australia's major research institutes, that is consistent with their National Health Priority focus and which has been identified as too 'early stage' or inconsistent with paradigms informing funding decisions made through the national peer review system to be funded through traditional mechanisms. Its aim will be to provide selected research teams with support for its own initiatives, and to support the major institutions in the development of cohesive and coherent research programs through the provision of funding which is allocated to the institution rather than the individual investigator.

As the institutions or collaborating groups chosen for this funding would be required to identify the population or disease theme focus, aligned with National Health Priorities, that will inform where and how it is spent, there should be at least one and at most three such entities designated as responding to each National Health Priority.



**Recommendation 14**

*Institutional funding should be awarded to a limited number of iconic health and medical research centres that meet certain criteria.*

### **3.3 Research student funding should be allocated to the institution managing the supervision**

Another area in which Commonwealth funding for research is effectively subverted because of these eligibility issues is in research student funding. Around 1200 PhD students each year are enrolled at Australian Universities yet placed at Medical Research Institutes, and their supervision and lab experience, daily costs and most forms of educational support are provided by the MRI. Depending on the size of the University and its averaged success in achieving timely PhD completion, Commonwealth funds to support PhD student enrolments averaging \$40-\$60,000 pa are provided to the enrolling/graduating university, around 10-15% of which is then passed on to the MRI providing the research supervision. Whilst the administrative support, matriculation and branding provided by Universities is important and must be funded, Baker IDI believes that in cases where it is clear that the supervision is provided by the MRI, a proportion of the funding commensurate with the level of activity taking place should be made available directly to the MRI, to support the process of education and supervision.

**Recommendation 15**

*Where supervision of a research student is provided by a medical research institute (MRI), a proportion of funding commensurate with the level of activity taking place there should be made available directly to the MRI.*

### 3.4 Establish a new combined grant structure for the ABRC that supports an attractive career structure

As discussed above in section 1.4, existing employment arrangements in the Australian health and medical research sector are regarded as unsustainable and unattractive to the next generation of scientists, with the current career structure offered through funding structures being a major detraction for those with the talent and drive to forge a career in health and medical research.

Baker IDI advocates that substantial improvements to this state of affairs would be achieved with the introduction of institutional grants as recommended above, as these would provide the MRIs awarded institutional funding to build careers for individuals it identifies as being worthy of support. More established researchers however would benefit from greater stability of funding than the existing Fellowship system is able to provide, and their efficiency in producing research outcomes would greatly benefit from being freed up from the career-long requirement to reapply for professional recognition from their peers. Baker IDI sees many examples from amongst its own senior scientists where individuals with over 20 years professional success in health and medical research, who must be regarded as 'a good bet' in relation to their future productivity, are required to submit to their peers for re-appointment in a time-wasting and unreliable process.

Baker IDI also suggests that the existing project, program, fellowship and career development grant processes, which systematically underfund the direct costs of research as noted above, could be substantially improved to address this issue by bringing all these different grant streams into a single investigator-held, five-year grant that is fully funded. We understand that this would result in fewer awards but consider this to be acceptable. This would enable the current generation of genuinely leading scientists in Australia to deal at the level of the individual laboratory with:

- (i) The provision of support for early career scientists;
- (ii) The management of the careers of research support staff whose interests are currently not well served in the existing system; and
- (iii) The management of gender- and family-equity at the level of the individual workplace.

#### **Recommendation 16**

*Introduce a radically simplified funding distribution scheme in which existing NHMRC project, program, fellowship and career development grant systems would be combined and distributed by the new ABRC as single investigator-held, five-year grants.*

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