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Mr Gerry McInally
Principal Research Officer
Standing Committee on Community Affairs
Department of the Senate
Canberra ACT 2600

Dear Mr McInally

Senate Community Affairs Committee – Rural Health Inquiry

As promised in our response to the additional questions asked by the Committee, enclosed please find a copy of our proposal "Growing the Next Generation of Rural Health Practitioners".

Yours sincerely

Professor Andrew Vann
Vice-Chancellor

Enc.

GROWING THE NEXT GENERATION OF RURAL HEALTH PRACTITIONERS

A proposal to establish an Integrated Health Education Precinct in rural Australia, including a new rurally based medical program.

CHARLES STURT UNIVERSITY

Poor health thrives on inequality, just as inequality thrives on poor health.

Integrated Health Education Precinct, Orange Campus

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Cover Page: Quote from Hon Nicola Roxon, *The Light on the Hill: History Repeating*, 2008 Light on Hill Address Bathurst

Community Primary Health Care Clinic, Bathurst Campus

EXECUTIVE SUMMARY

Proposal

Charles Sturt University (CSU) is seeking $98 million in Federal capital funding, and 80 commencing medical student places annually, to establish an Integrated Health Education Precinct in Orange to:

- address the chronic shortage of suitably trained health and medical practitioners across rural and regional Australia; and
- to prepare the next generation of health professionals for the demands of integrated health practice in a technology enabled environment.

The University will contribute up to $20 million to the recurrent startup cost of this initiative.

Background

The Australian Institute for Health and Welfare (AIHW) reports that 4,600 Australians die unnecessarily every year because they live in rural Australia. Deaths from coronary heart disease and diabetes are higher in rural and remote areas, while prostate cancer mortality in regional and rural areas is 21 per cent higher than in major cities.

Workforce shortages across the majority of health and medical disciplines in rural areas have contributed to this outcome. There are around half the number of health practitioners per head of population in rural areas compared to major cities across most professions. The Rural Doctors Association of Australia estimates that there is a current shortfall of 1800 rural doctors in Australia.

To meet the future needs of its citizens, the Australian Government has embarked on an ambitious program of reform to our health and hospital system, with a particular focus on improving the provision of primary health care with an emphasis on prevention.

This is particularly significant for rural communities that are more heavily reliant than people in major cities on quality primary health care because of limited access to specialist services.

Research has demonstrated that health systems that have a strong focus on primary health care are "... more efficient, have lower rates of hospitalisation, fewer health inequalities and better health outcomes including lower mortality." (Department of Health and Ageing, 2009, p. 8).

> "In 2004–2006, there were about 4,600 excess deaths in rural and regional Australia — that is, deaths above the number expected if these areas had the same death rates as Major cities."
>
> Australian Institute of Health and Welfare, *Australia's Health 2010*

However, effective primary health care relies on a sustainable supply of health professionals who are trained to work in multi-disciplinary teams. A recent report however notes that there is an undersupply of professionals educated for future interprofessional practice (Department of Health and Ageing, 2009, p. 117).

To respond to these imperatives, CSU proposes to establish an Integrated Health Education Precinct in Orange in rural Australia to expand the opportunities available for students across rural and regional Australia to enrol in health and medical education in a rural area, and to better prepare students for integrated rural practice in the future.

National evidence shows that rural students enrol in health and medical programs if they are available locally in rural areas. National and international research also proves that students from rural areas who are educated in rural areas are significantly more likely to enter professional practice in a rural area.

CSU's proposal is therefore directed at simultaneously addressing rural workforce shortages, and the need for more appropriate preparation of students for rural interprofessional practice. The unique features of this proposal include:

1. Doubling the number of health and related programs delivered in Orange (medicine, dentistry, oral health, pharmacy, practice nursing, physiotherapy, rehabilitation science, nutrition and dietetics, clinical science, social work) supported by the construction of a purpose built facility that promotes both formal and informal interactions among students in different disciplines, linked through CSU's unique multi-campus system to its other disciplines across rural NSW and Victoria.
2. The introduction of a six year undergraduate medical program within the Precinct, with the following features: an annual intake of 80 students; a Positive Rural Recruitment Program with 60% of students from a rural, regional or Indigenous background or disposed to rural practice; and, streaming of students from their fourth year to focus on providing those students committed to rural practice with procedural skills particularly suitable to rural practice.
3. Integration of curriculums across the represented disciplines through interprofessional education (IPE) to build the skills and capabilities of graduates for integrated health care - 'team learning for team health'.
4. Integration of specialised e-health curriculum to prepare students for future technology enabled health practice (e.g. telemedicine; electronic health records).

The University also proposes to construct a Community Primary Health Care Clinic (Mega GP Super Clinic) in Bathurst in the future, in cooperation with a number of existing medical and allied health providers, to provide a centre in which students can practise their skills in a collaborative team based environment. The University will

> The life expectancy at birth for an Indigenous man is 67 years and 73 years for Indigenous woman, compared to 79 years for non-Indigenous men and 83 years for non-Indigenous women.
>
> Australian Institute of Health and Welfare, 2010

develop this Centre to evaluate models of interprofessional clinical practice to support the Government's integrated primary health care strategy.

CSU's proposal will achieve two related goals:

1. Significantly increase the number of rural doctors, nurses and other health and human service professionals in rural practice; and
2. Better prepare the next generation of rural practitioners for integrated health care provision.

> Although the number of GPs continues to grow, this growth does not indicate increased availability of GPs over time, as the growth in the medical workforce has not kept pace with the rate of population growth.
>
> *Report on the Audit of Health Workforce in Rural and Regional Australia*, 2009

INTRODUCTION

Growing the next generation of health and medical professionals

The Australian health system is at a crossroads and requires urgent and proven solutions to persistent health workforce shortages and the increasing burden of chronic disease, particularly in rural Australia.

The Government projects that health and aged care costs will rise from around 9% of Gross Domestic Product (GDP) to 12.4% of GDP over the next two decades – from $85 billion in 2003 to $246 billion in 2033 (Department of Health and Ageing, 2010). This growth in expenditure is being driven by the ageing of the population and the increased burden of chronic disease in our communities. Without a major shift in policy to focus on good health and integrated management of care, spending across chronic disease groups– Type 2 Diabetes (+520%); Parkinson's Disease (+333%); Cancers (+190%); Musculoskeletal Diseases (+223%); Dementia (+364%); Respiratory Diseases (+205%); and, Cardiovascular Diseases (+142%) (Department of Health and Ageing, 2010) – is projected to increase rapidly.

At the same time, health and medical workforce shortages in rural Australia continue to limit the accessibility of primary health care services to rural populations, contributing to higher rates of chronic illness and 4,600 unnecessary deaths in rural Australia each year (Australian Institute of Health and Welfare, 2010, p. 248). Workforce shortages in primary care are particularly significant in rural areas given the limited availability of specialist services, making rural communities particularly reliant on access to high quality primary health care services to meet health needs.

The *National Primary Health Care Strategy* is the first attempt in Australia to define a comprehensive health care model focussed on community health and wellbeing. Research has shown that "... health systems with strong primary health care focus are more efficient, have lower rates of hospitalisation, fewer health inequalities and better health outcomes including lower mortality" (Department of Health and Ageing, 2009, p. 8).

According to the Australian Primary Health Care Research Institute (APHCRI), the delivery of effective primary health care services relies on a "... suitably trained workforce comprised of multi-disciplinary teams supported by integrated referral systems" (Australian Institute of Primary Health Care Research, 2009). A recent report by the Government however states that health education in Australia is characterised by a lack of " ... inter-disciplinary learning opportunities, or horizontal integration of

> "It is a well known fact that medical students who were born and bred in rural Australia are more likely to return there after graduation.
>
> Hon Dr Carmen Lawrence, Minister for Health (1996)

curriculum. In addition, there is still a heavy focus on preparing primary health care students to work in hospitals which does not encourage or prepare them to work in the primary health care setting should they choose this career path" (Department of Health and Ageing, 2009, p. 117).

Delivering on the goals set out in the *Primary Health Care Strategy*, and meeting the needs of rural and regional communities, will require:

1. significant increases in the rural primary health workforce to meet the basic health needs of rural communities, in particular addressing chronic shortages of medical practitioners; and
2. the development of new approaches to the way we educate and clinically prepare health, medical and behavioural science students for future primary health care practice.

The next generation of rural health professionals will require knowledge and skills that go beyond the traditional boundaries of medical, nursing, allied health and behavioural science education. They will need to be expert in preventing ill-health, as well as treating disease. They will need to recognise the early factors that lead to ill-health and chronic disease, and have the skills and knowledge to make effective and timely interventions. They will need to understand the different factors that influence, positively and negatively, the health of diverse populations including women, men, Indigenous Australians, older Australians, people with mental illness, and cultural and ethnic groups. They will also need to be confident and practised in the use of e-health technologies, such as telemedicine and electronic health records, and be able to adapt to new technologies as they emerge.

For prevention and early intervention to deliver on the promise of improved population health and wellbeing, and to reduce the cost of health service delivery, the next generation health professional will also need to be educated to work collaboratively in teams with other health and human service professionals, where care is clearly patient-focussed. They will need to have a deeper understanding and respect for the professional skills of others, and the knowledge of how to work with other health and human service professionals to manage health and wellness in community and non-hospital settings.

Universities have an important role to play in this reform. They will need to move beyond traditional models of education and delivery to drive innovation in curriculum, infrastructure and the use of modern technology, while breaking down discipline silos that hinder integrated primary health care. They will need to promote collaborative inter-professional learning across the health, human service and medical disciplines – 'team learning for team health'.

Universities will need to be open to new ways of preparing students for clinical practice, where the focus is on the quality of preparation and the attainment of competencies, rather than 'doing time'. They will need to have the knowledge and skills to implement new technologies and online learning systems, particularly with the roll out of the

> "... the answer is to make sure we build our capacity to train health professionals in rural areas, because we know that if you train someone in a rural area, they're more likely to stay in a rural area.
>
> Dr Andrew Pesce, President, Australian Medical Association, National Press Club, 8 December 2010

National Broadband Network (NBN). They will need to explore how students can be better prepared through clinical experiences that reflect the diverse career pathways that they will pursue in the public, community and private sectors. They will need to be open to new forms of international collaboration and the opportunity to adapt international experiences to local challenges.

Universities will need to significantly increase the number of health, medical and human service students from rural areas to ensure a long term sustainable solution to the rural health workforce crisis. They will need to focus on preparing graduates for work in smaller rural and remote settings where the need is greatest.

Universities will also need to engage in a new partnership with rural communities, the health system, government and other providers to meet diverse population needs. They will need to contribute to continuing health and medical education to maintain the currency of practitioner knowledge and skills in a rapidly evolving environment, and facilitate professional networks that in turn support quality decision making and care.

People living in rural and regional Australia understand that it is not possible to provide local access to a comprehensive range of specialist and hospital services in every rural community. The majority of rural communities are not big enough to sustain the range and depth of health and medical expertise compared to major cities. However, like all Australians, rural people expect to have local access to comprehensive primary health care services that are focussed on their needs, and the needs of their communities.

Moreover, they want health and medical professionals who *want* to practise in rural Australia – not 'fly in-fly out' health professionals; those who are forced to be in rural Australia; and those who are marking time on a journey to our major cities. They want e-health to enhance the quality of local services and care, not to become a substitute for access to local doctors or health professionals when they need it.

This proposal sets out an innovative approach to addressing health, medical and human service workforce shortages in rural areas, as well as preparing the next generation of graduates for successful rural practice delivering a new more appropriate and sustainable model of care to the one-third of Australians living outside our major cities.

> "Students who study in regional areas are much more likely to stay in those areas, providing a vital skilled workforce in the regions.
>
> Hon Julia Gillard, Prime Minister (2009)

NEEDS ANALYSIS

Growing and changing rural communities

There are more than 7.5 million people living in rural and regional Australia today. New South Wales is home to 34% of rural and regional Australians — the largest proportion of any State or Territory.

Yet, there is a common misconception that the population of rural Australia is in decline. An analysis published in the *ANZ Rural and Regional Quarterly* (June, 2009), for example, found that:

> ... only one of .. 19 regional and rural areas ... experienced net population decline between 2001-02 and 2007-08 ... 15 of the 19 regions experienced growth in excess of 5% (PhillipsKPA, 2009, p. 64).

As noted by Member for New England, Mr Tony Windsor, the Australian Bureau of Statistics (ABS) has " ... shown trends of positive growth in many country centres" (Parnell, 2010).

Further, the ABS projects significant growth in the total number of people living in rural and regional areas over the next 20 years. Using the ABS's mid-range projections, the population of rural and regional Australia is estimated to grow a further 26%, or by more than two million people, by 2025 (PhillipsKPA, 2009, p. 70).

As with metropolitan Australia, the proportion of people over the age of 65 years in rural and regional Australia is expected to grow. It is also expected that the distribution of population will continue to change within rural areas, with continued growth of larger Inner Regional cities. These patterns will place increased demands on rural health and hospital services over the next 20 years, particularly in smaller and more remote communities.

Growing and changing rural economies

Strong and growing rural and regional populations are essential to Australia's long term social and economic well-being. Trade in hard and soft commodities (minerals, agriculture) generate more than 60% of Australia's national export income — contributing to national food security, economic and employment growth, and Government tax revenues.

While the proportionate contribution of agriculture to Australia's economic income has receded over the last four decades as other sectors have grown, the Farm Dependent Economy (comprising farm supply, farm

> "The population of rural and regional Australia is projected to grow a further 26% or by over two million people by 2025
>
> Australian Bureau of Statistics, 2006

production and post-farm activities) contributes 12% of Gross Domestic Product, making it the largest sector of the Australian economy (Pratley, 2007, p. 2).

Agriculture will continue to have a central role in the social and economic health of the nation into the future. The Food and Agriculture Organisation projects worldwide demand for food will increase 1.6% a year to 2015 and then 1.4% between 2015 and 2030. In developing countries, growth in demand for food will be 3.7% to 2015 and then an average of 2% to 2030 (Food and Agriculture Organisation, 2002, p. 9). This is expected to contribute to further growth in Australian agricultural production and commodity prices into the future.

The growth of mining, and rapid increase in mineral prices, is also expected to contribute to the future growth of parts of rural and regional Australia, as well as expanding economic activity and Government revenues. For example, Newcrest Mining is investing $2 billion in the expansion of the Cadia Mine in Orange creating more than 2000 direct and indirect jobs in central western New South Wales (Cox, 2010). This expansion, alongside a massive expansion of minerals development activities across rural NSW and other parts of rural Australia, is expected to generate significant growth in employment, economic activity and population in rural and regional New South Wales over the coming decades.

A recent study by the Centre for Policy Studies at Monash University projected a 20% increase in demand for University graduates in rural and regional areas over the coming five years reflecting both the changing composition of rural labour markets, as well as their expanding needs generated by increased economic activity (PhillipsKPA, 2009, p. 40).

As recently noted by the Minister for Sustainability, Environment, Water, Population and Communities, Hon Tony Burke MP:

> The importance of rural and regional Australia is critical to the Australian economy ... Infrastructure in our regions is therefore a vital part of preparing the nation's economy for future challenges ... [T]he Government is working to ensure all Australians have access to world-class health care no matter where they live by ensuring funding reflects higher costs in rural and remote Australia; improving services in rural, remote or regional communities; and supporting the rural health workforce (Burke, 2010).

Sustaining and growing healthy rural and regional populations is not only critical to increasing Australia's export income and Government revenues, it will also be a component of managing national population growth and reducing the pressure of urbanisation on our major cities.

Higher death and disease rates in rural Australia

Rural Australians experience worse health outcomes than their metropolitan counterparts caused to a large extent by the inaccessibility of appropriate health and medical services. In *Australia's Health 2010* the Australian Institute

“... rural and regional Australia is critical to the Australian economy ... [T]he Government is working to ensure all Australians have access to world-class health care no matter where they live by ensuring funding reflects higher costs in rural and remote Australia; improving services in rural, remote or regional communities; and supporting the rural health workforce.

Hon Tony Burke (2010)

of Health and Welfare (AIHW) reported:

> "In 2004–2006, there were about 4,600 excess deaths annually outside *Major cities*—that is, deaths above the number expected if these areas had the same death rates as *Major cities*. The causes of death that contributed most to this excess were coronary heart disease (20% of excess deaths), 'other' circulatory disease (17%), chronic obstructive pulmonary disease (9%) and motor vehicle accidents (8%). Suicide, which is more common outside *Major cities*, contributed 4% of the excess, amounting to about 184 deaths. Injuries contributed 80% of excess deaths among 15–24 year olds outside *Major cities*, and 55% of excess deaths among 25–44 year olds" (Australian Institute of Health and Welfare, 2010, p. 248).

Health outcomes for Indigenous Australians, who comprise a significant portion of many rural and remote communities, are of particular concern. The AIHW reported:

> "For the period 2005–2007, the life expectancy at birth was estimated to be 67 years for Indigenous males and 73 years for Indigenous females. In contrast, life expectancy at birth for non-Indigenous Australians for the same period was 79 years for males and 83 years for females. This is a difference of 12 years for males and 10 years for females (Australian Institute of Health and Welfare, 2010, p. 233).

Inequitable distribution of health services

A contributing factor to the poorer health outcomes of rural Australians is the inaccessibility of primary and other health care services. A recent survey of more than 1,000 rural people by the Rural Doctors Association of Australia found that 62% of rural Australians are experiencing a significant shortage of health professionals in their area. The survey also found that:

- more than 52% of rural Australians are waiting one or more weeks for a routine appointment with their GP, while 18% are required to wait more than three weeks; and
- over 63% of rural Australians were not able to receive a variety of health services in the past year because of a shortage or absence of health professionals in their area (Rural Doctors Association of Australia, 12 August 2010).

The Hon Nicola Roxon, Minister for Health and Ageing, graphically illustrated the challenge in her 2008 *Light on the Hill* address:

> We know that health is a major indicator of inequity. If you want to judge how affluent a suburb is, you could check its tax returns – or you could look at its medical records. Rates of diabetes, of

"... 52% of rural Australians are waiting one or more weeks for a routine appointment with their GP, while 18% are required to wait more than three weeks."

Rural Doctors Association of Australia

heart disease, early deaths, infant mortality, how many teeth a person has left – all are clear markers of socio-economic status. We like to think that we left class back in the twentieth century, but inequality continues to stare us in the face ... For example, deaths from coronary heart disease and diabetes are higher in rural and remote areas. For prostate cancer, mortality in regional and rural areas is 21 per cent higher than in capital cities ... Poor health thrives on inequality, just as inequality thrives on poor health" (Roxon, The Light on the Hill: History Repeating, 2008).

Significant underspending on rural health services

The inaccessibility of health and medical services in rural and regional areas is also evident in the significantly lower levels of access to services under the Medicare Benefits Schedule in rural and remote Australia. According to Medicare data, in 2007/2008 people in 'Highly Accessible' areas received an average of $636 in Medicare Benefit payments, compared to $540 for people in 'Accessible' areas, $474 for people in 'Moderately Accessible' areas, $436 for people in 'Remote Areas' and $245 for people in 'Very Remote' areas (Department of Health and Ageing, 2010, p. 9). The Rural Doctors Association of Australia has found that there is a "significant under spend" on Medicare services in rural and remote Australia of slightly less than $1 billion (Rural Doctors Association of Australia, 2010, p. 1).

Chronic rural health workforce shortages

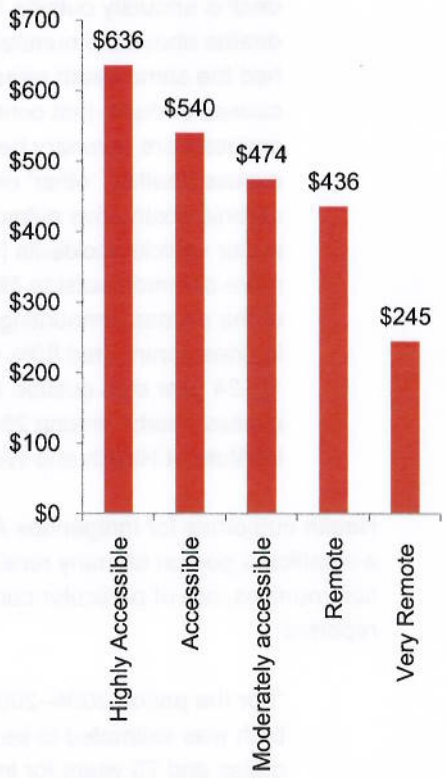
The number of health and human service professionals relative to population declines substantially with distance from a major city.

In a 2006 review of the Australian allied health workforce, the Australian Government found that rural and regional Australians had access to significantly fewer allied health and human service practitioners per 10,000 of population compared to our major cities (Australian Health Workforce Advisory Committee, 2006, p. 63).

Table A: Persons employed in allied health occupations: number per 10,000 population, Remoteness Areas (Australian Health Workforce Advisory Committee, 2006, p. 63)

Occupation	Major City	Inner Regional	Outer Regional	Remote	Very Remote
Audiology	0.51	0.33	0.12	0.18	0.00
Dietetics	1.21	0.78	0.76	0.61	0.59
Hospital pharmacy	1.09	0.62	0.48	0.18	0.15
Medical Imaging	5.05	3.62	2.52	2.02	0.78
Occupational Therapy	3.19	2.31	1.86	1.37	1.42
Orthoptics	0.31	0.12	0.03	0.00	0.00
Orthotics/prosthetics	0.23	0.14	0.06	0.00	0.00
Physiotherapy	6.14	4.35	3.58	3.65	1.57
Podiatry	1.06	0.78	0.53	0.44	0.00
Psychology	5.92	3.44	2.43	1.87	0.83
Social work	5.45	3.85	3.36	2.51	1.27
Speech pathology	1.73	1.42	1.16	1.23	0.59

Medicare Spending by Area



Similarly, the Australian Institute of Health and Welfare has found serious shortages in other health professions as shown in the table below.

Table B: Persons employed in health occupations: number per 100,000 population, Remoteness Areas, 2006 (Australian Institute of Health and Welfare, 2006), (Australian Institute of Health and Welfare, 2009, p. 20)

Occupation	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote
Dental workers	159	119	100	60	21
Nursing workers	1,058	1,177	1,016	857	665
Pharmacists	84	57	49	33	15
Complementary therapies	82	82	62	40	11
Optometrists	18	12	10	3	-

The number of medical professionals relative to population also declines substantially with distance from a major city.

The Australian Institute of Health and Welfare (AIHW) found in 2008 that there were 376 full time equivalent (FTE) medical practitioners per 100,000 of population in Major Cities, compared to only 217 FTE medical practitioners in Inner Regional and 187 in Outer Regional areas (Australian Institute of Health and Welfare, 2009).

Decline in medical graduates becoming GPs in rural areas

The trend in the supply of General Practitioners (GPs) and proceduralists is a cause for particular alarm. Primary health care services in rural Australia are dependent on the supply of GPs with procedural skills:

> General practitioners (GPs) are the cornerstone of primary care and are the first 'port of call' for most Australians seeking medical attention. In particular, small rural towns throughout Australia are dependent on the GP and GP proceduralist workforce for procedural and after-hours medical services in their hospital emergency rooms (Robinson, Slaney, Jones, & Robinson, 2010 No. 10 Article 1402).

GP proceduralists deliver a range of more complex surgical and medical procedures such as obstetrics and anaesthetics. This is critical in rural and remote communities where smaller populations, and lack of access to appropriate health infrastructure, make it impossible to maintain a viable specialist and surgical workforce.

Yet, there has been a shift away from general practice nationally among medical graduates encouraged by changes in government policy. "General Practice Education and Training Surveys show that only 13% of medical students said general practice was their first

> "General Practice Education and Training (GPET) surveys show that only 13% of medical students said general practice was their first preference as a career choice and only a small fraction of this 13% are likely to end up in rural medicine.
>
> Rural Doctors Association of Australia

preference as a career choice and only a small fraction of this 13% are likely to end up in rural medicine (Rural Doctors Association of Australia, 2010, p. 2).

In rural Australia, the *Report on the Audit of Health Workforce in Rural and Regional Australia* (2008) observed:

> "Although the number of GPs continues to grow, this growth does not indicate increased availability of GPs over time, as the growth in the medical workforce has not kept pace with the rate of population growth. Over the decade from 1996/7 to 2006/7 the FWE [Full-time Work Equivalent] of GPs increased by 10.9%, while the population increased by some 13.0% resulting in an overall decrease in the supply (Department of Health and Ageing, 2008, p. 27).

Reducing the cost of health service delivery, and improving health outcomes, in the rural population will require a significant turnaround in the current trend away from rural general practice.

Inequitable distribution of medical workforce between States and Territories

There is a mal-distribution between rural areas in different States and Territories. In 2008 Inner Regional areas in New South Wales had 195 full time equivalent medical practitioners per 100,000 of population compared to a national average for Inner Regional areas of 203. In Outer Regional areas of New South Wales there were 104 full time equivalent medical practitioners per 100,000 of population compared to a national average of 171 (Australian Institute of Health and Welfare, 2009). This is despite the fact that New South Wales has the highest proportion of people living in rural and regional areas compared to other States or Territories.

The Greater Western Area Health Service (a health service covering the central and far west of New South Wales) has reported that around 30% of its required medical workforce positions are vacant – about 100 medical posts (Greater Western Area Health Service, 2010, p. 5). In total, the Rural Doctors Association of Australia estimates that there is a current shortfall of 1800 rural doctors (Rural Doctors Association of Australia, 2010, p. 1).

> "There is a current shortfall of 1800 rural doctors.
>
> Rural Doctors Association of Australia

Insufficient number of university health places to supply future health workforce

The future outlook for rural health and medical services remains a source of particular concern for rural and regional communities, and the achievement of health and hospital reforms in Australia, having regard to the expected increase in the demand for health and medical professionals nationally over the next 20 years.

The National Health Workforce Taskforce (NHWT) projects significant future shortfalls of medical, nursing and allied health training professionals relative to projected demand for health services. It has advised the Government that Australia must create 356 extra medical places each year from 2010 to ensure supply meets demand by 2025 (National Health Workforce Taskforce, 2009, p. 9). This

assumes an intake of 1500 overseas trained doctors. Similarly, the Taskforce has projected a need for an extra 7131 nursing places, 80 extra dental places, 362 extra optometry places and 1412 extra paramedic places (see table opposite for further details).

No progress on health workforce self-sufficiency in rural areas

The Council of Australian Governments (COAG) committed in 2004 to the principle of health workforce self-sufficiency. A recent paper by the NHWT summarised the situation as follows:

> "It has been estimated that 37% of the 2002 aged care nursing workforce and 26% of the rest of the nursing workforce will retire by 2012, resulting in a loss of 65,000 nurses, while the number expected to enter the workforce will be substantially less. Doctors in rural areas are also ageing, and new medical students are increasingly female who on average work fewer hours once they are trained. Allied health disciplines show the same trend in declining hours. For example, the most recent data on Victoria's physiotherapist workforce, which is over 70% female, shows a decline in working hours of 4% since 2003 to 29.7 hours per week. More people will be required to fill equivalent full time positions as nearly 38% of Australia's health workforce work part-time and less than 35 hours per week.

The ageing of the Australian population is expected to increase the demand for health services over coming years driving a commensurate increase in demand for health workers. This will take place at the same time as the population of working age becomes comparatively smaller, and the health sector faces increasing competition from other sectors of the economy for staff. Between 1996 and 2001 the number of health professionals in Australia grew by over 11%, nearly double the growth rate of the population. This rate of growth will not be sustainable into the future.

Australia has in recent years relied on internationally trained health workers to supplement domestic supply. Increases in domestic training of health workers have not yet achieved self sufficiency" (Carver, 2009, p. 8)

Low participation of rural young people in university courses

Rural students trained in rural areas are significantly more likely to commence employment in rural areas. Yet, rural young people participate in higher education at about half the rate of metropolitan students. In 2009 the Bradley *Review of Australian Higher Education* found that the:

> ".. most under-represented groups [in higher education] are students from remote parts of

Occupation	Extra Student Places Required annually
Medical	356
Nursing	7131
Dental	80
Paramedics	1421
Optometry	362
Podiatry	271
Social Work	1323
Physiotherapy	808
Speech Pathology & Audiology	298
Radiography	473
Occupational Therapy	167
Psychology	1359

> Australia, Indigenous students and students from low socio-economic backgrounds. In 2007, only 1.1 per cent of people from remote areas participated in higher education, while the proportion of people from remote areas in the general population was 2.5 per cent. Participation of Indigenous people was 1.3 per cent (compared with representation in the population of 2.2 per cent); participation of people from a low socio-economic background was 15 per cent (compared with 25 per cent) and participation of rural and regional students was 18.1 per cent (compared with 25.4 per cent)" (Bradley, 2008, p. 10).

While there has been an improvement in rural health student enrolments as a result of the expansion of health science and human service education programs delivered at rurally based universities, rural student enrolments in medical education are significantly lower. As noted recently by the Member for Lyne, Mr Rob Oakeshott: "... if there is a crisis of confidence on our hands right now it is from regional students and their inability to access, for whatever reasons, education pathways within Australia" (Oakeshott, 2010).

Medical enrolment targets not matched to population or need

The Federal Government funds medical schools under the Rural Undergraduate Support and Coordination Program to undertake a number of activities to increase the number of graduates entering rural practice. Medical schools accepting funding under the scheme "... must maintain measures to increase the number of rural origin students selected for entry into the medical degree to, or maintain the number at, at least 25% of Commonwealth-supported places (CSPs)" (Urbis, 2008, Appendix 4).

Yet, the 2010 report of the Federal Government's Medical Training Review Panel found that only six medical programs met the intake requirement for which they receive funding (Medical Training Review Panel, 2010, p. 9). In the context of chronic health and medical workforce shortages, the failure to meet minimum rural intake targets is a matter of concern in rural communities.

While the establishment of targets is important, rural and regional Australians constitute 36% of the population, yet medical schools are only required to enrol 25% of their students from rural and regional areas. It remains unclear why rural intake targets are lower than the proportion of the population comprised of rural and regional Australians.

It is also unclear whether enrolment targets are based on an assessment of the number of rural students needed to address rural medical workforce need. Rural Australia has around half the doctors per head of population compared to metropolitan areas. Yet, more than 75% of medical students are drawn from metropolitan Australia and are therefore significantly more likely to locate to practice in more highly serviced metropolitan markets. In most cases rural students undertake the majority of their medical training in a metropolitan area, significantly increasing the likelihood that these graduates will also remain in metropolitan Australia to practise.

> "... the most under-represented groups [in higher education] are students from remote parts of Australia, Indigenous students and students from low socio-economic backgrounds.
>
> Bradley Review of Australian Higher Education (2009)

Over-reliance on overseas trained doctors

Overseas trained doctors now constitute 41% of doctors working in rural and regional Australia (Department of Health and Ageing, 2008, p. 27). Rural Health Workforce Australia reported a 10% increase in the number of overseas trained doctors working in rural and regional Australia between 1995/6 and 2006/7 (Leveratt, 2008, p. 7). It has conceded: "An examination of the profile of rural GPs over the past 11 years demonstrates that the growth in rural and remote GP numbers has come almost exclusively from international medical graduates" (Leveratt, 2008, p. 11). With increased retirements of rural doctors, on current trends overseas trained doctors will make up more than 50% of the rural medical workforce within the next few years.

Australia's reliance on overseas trained doctors and overseas fee paying medical graduates for rural medical workforce planning is problematic for a number of reasons:

- The international market for overseas trained doctors is highly competitive and a failure to diversify our approach will result in rural Australians being reliant on a potentially unstable supply into the future. The World Health Organisation (WHO) estimates that there is a global shortage of more than 2.3 million doctors, nurses and midwives, requiring a 70% increase in the supply worldwide to meet demand (Hawthorne, 2007, p. 43).
- The mandatory requirement for a period of rural practice raises concerns in rural communities that some overseas-trained doctors will not remain in rural practice in the long term.
- The cost of attracting and retaining overseas trained doctors in rural practice draws funds away from Australian medical programs and innovations in medical training. A recent report found that New South Wales alone spent $59 million in 12 months recruiting short term locums from overseas to keep emergency departments operational in rural areas (Herbert, 2010). On 7 July 2010 the ABC reported that "Port Macquarie, like most regional hospitals across the country, cannot get enough doctors. At the hospital a team of Kiwi locums help keep the emergency room in operation 24 hours a day, seven days a week" (Herbert, 2010).
- The Rural Doctors Association of Australia argues that reliance on overseas trained doctors is problematic "... due to cultural and geographical isolation and limited opportunities for supervision and training" (Rural Doctors Association of Australia, 2010).
- There are ethical issues associated with the recruitment of doctors and health practitioners from developing countries that are also facing chronic shortages of professionals to serve the needs of local populations.

> "An examination of the profile of rural GPs over the past 11 years demonstrates that the growth in rural and remote GP numbers has come almost exclusively from international medical graduates.
>
> Rural Health Workforce Australia (2008)

Increase of Overseas Students in Rural Pathway Programs

Rural Health Workforce Australia has found that while " ... Australian medical graduates (AMGs) studying to become GPs in 2008 have declined as a proportion of acceptances relative to 2007 (down from 447 to 411) .. they have increased their representation in relation to the rural pathway. However, this increase is somewhat misleading as it needs to be borne in mind that not all Australian medical graduates are *domestic* graduates – the figure also includes fee-paying international students who have stayed on to complete their training" (Leveratt, 2008, p. 12). It found that in 2008 of the "... 236 rural pathway places accepted, 148 were taken up by doctors from overseas. Domestic medical graduates therefore represented only 38% of rural pathway acceptances, with the remainder of 62% being taken up by doctors [from overseas]" (Leveratt, 2008, p. 12). There is no research yet on whether this increase is based on a genuine long term intention for rural practice, or to meet mandatory requirement for overseas doctors to practise in a rural area.

Lack of verified data on effectiveness of current rural health workforce strategies

The lack of independent monitoring of the performance of various schemes in increasing the supply of Australian medical graduates in rural practice continues to be a source of serious concern in rural communities. Rural Health Workforce Australia recently commented:

> Without any effective evaluation it is impossible to say whether these schemes are working and whether this is the best way to spend public money. However, it can be said with certainty that domestic graduates have demonstrated an extreme reluctance to go bush and merely increasing their numbers will not necessarily change this outcome (Leveratt, 2008, p. 13)

The data that is publicly available supports the view that, notwithstanding the hundreds of millions of dollars of investment in these schemes, the number of Australian domestically trained doctors is continuing to decline.

An independent review by Rural Health Workforce Australia found that between 1995/6 and 2006/7 there was a 4% decrease in the number of Australian GPs in rural and regional practice (Leveratt, 2008, p. 11). A review by Urbis cites evidence from Health Workforce Queensland that only 4.29% of former medical students from the two Queensland universities located to work in rural or remote areas (Urbis, 2008, p. 66).

The Rural Clinical School scheme is one example. A recent review of the first 10 years of operation of the Rural Clinical Schools (RCS) concluded that, despite multi-million dollar investments, there is "... no definitive answers to whether RCSs in Australia have (or have not) yielded higher rates of rural practice among participating students" (Urbis, 2008, p. 66).

> Domestic medical graduates [represent] only 38% of rural pathway acceptances, with the remainder of 62% being taken up by doctors [from overseas].
>
> Rural Health Workforce Australia (2008)

The absence of consistent reporting on workforce outcomes from existing schemes is a matter of genuine concern in rural communities. It makes it impossible to properly test claims about these schemes, or to independently compare existing approaches with alternatives for which there is a stronger national and international evidence base.

While many of these schemes are undoubtedly having some impact on workforce supply, to be genuinely successful they must increase the supply of medical and health professionals above historic levels.

The available evidence tells us that current strategies are not resulting in an increase in Australian domestic medical graduates at the levels required to replace those leaving the rural health workforce, or building the rural medical workforce to appropriate levels to meet current and future demand.

In the absence of independently verifiable data, and the uncertainty about the effectiveness of existing schemes, it might be reasonable to look to additional approaches that have a more substantial base of evidence demonstrating retention of graduates in rural employment.

> "... between 1995/6 and 2006/7 there was a 4% decrease in the number of Australian trained GPs in rural practice.
>
> Rural Health Workforce Australia (2008)

CAPABILITY STATEMENT

CSU's mission, as stated in its *Inland Health Strategy*, is to ensure that there is a comprehensive range of highly qualified health professionals available to meet the health service needs of inland communities and to conduct research and develop strategies to promote healthy inland communities and lifestyles.

The objectives set out in the Strategy include:

Help to Address Inland Health Labour Force Needs
Deliver the most comprehensive range of high quality health education programs possible in areas of identified labour force need across inland Australia.

Expand Access for Inland Students
Develop flexible entry pathways, and innovate with new technology in our distance and clinical education, to expand the participation of students from regional, smaller regional and remote communities in University health programs.

Support the Retention of Health Professionals in Inland Australia
Integrate into the design and delivery of our programs strategies that support the retention of qualified health graduates and professionals in inland Australia.

Prepare Graduates for Clinical Practice in Inland Communities
Ensure students are employment ready by maximising clinical experience opportunities and innovating in clinical simulation; develop and implement learning approaches that prepare students for rural practice, including the promotion of inter-professional learning, and; equip our health graduates with the knowledge, understanding, and skills they require to operate as culturally sensitive practitioners across Aboriginal, Torres Strait Islander and other cultures.

Promote Innovative Approaches to Practice
Support health career pathways, paraprofessional health careers and appropriate opportunities for

> "... medical education undertaken in non-metropolitan settings, with a broad-based curriculum, is the best vehicle for increasing the rural medical workforce.
>
> James Cook University
> Veitch, C, Underhill, A, Hays, RB (2006) The career aspirations and location intentions of James Cook University's first cohort of medical students: a longitudinal study at course entry and graduation, *Rural and Remote Health* p1-8

expanded scope of practice to address health labour force needs.

Help to Address Health Services Needs
Identify opportunities in the delivery of teaching and research for the University to provide, or support, clinical services in areas of labour force shortage in inland communities.

Conduct Research that Addresses the Health Needs of Inland Australia
Conduct research that addresses key health issues for inland communities, including the development of programs to promote healthy lifestyles, deepen community resilience, prevent ill-health and support early diagnosis and intervention.

Work with Our Communities and Professions for a Healthy Future
Develop strategic relationships with key stakeholders to share information, improve coordination, reduce waste and duplication, empower inland communities and promote professional networks that support quality delivery and retention of health practitioners.

Expanding Access, Supporting Retention in Rural Australia

National and international research establishes that students from rural areas who are educated in rural areas are significantly more likely to enter professional practice in a rural area.

Over the last decade, substantial progress has been made by rurally based universities to expand the range of health and human services courses available to rural students in rural locations, leading to an increase in the number of graduates retained in rural employment.

CSU has been at the forefront of these efforts, developing one of the most comprehensive suites of health and human service programs focussed on areas of rural health workforce shortage of any University in the country. CSU today delivers programs covering almost the entire spectrum of health and human service professions including: paramedics, nurses, pharmacists, dentists, oral health therapists, physiotherapists, radiographers, nuclear medicine technologists, midwives, podiatrists, dieticians and nutritionists, speech pathologists, occupational therapists, pathologists, clinical physiologists, psychologists, clinical neurophysiologists, exercise physiologists, health services managers, aged care managers, counsellors and social workers.

CSU's enrolment and graduate destination surveys have demonstrated two consistent patterns:

(1) very high rates of enrolment by rural and regional students in on-campus health and human services programs when these programs are available locally in rural Australia; and

> "70% of rural origin health and human services graduates at Charles Sturt University commenced employment in a rural or regional area after graduation, rising to 90% in some disciplines.
>
> Charles Sturt University, *Graduate Destinations – Health and Human Services* (2010)

(2) very high rates of retention of rural graduates (and metropolitan graduates) in rural employment when rural (and metropolitan) students have the choice to study in rural areas.

The most recent analysis of student enrolments found that 69.2% of CSU's on-campus health and human services student between 2007 and 2009 were from a rural or regional home location (using the ARIA+ classification, 34.6% Inner Regional; 31.1% Outer Regional; 3.5% Remote/Very Remote). The CSU courses that attract the highest proportion of students from a rural or regional area were: Occupational Therapy (89.6%); Speech Pathology (86.8%); Podiatry (82.8%); Medical Imaging (79.1%); and Nursing (78.5%) (Charles Sturt University, 2010).

Analysis of graduate destination over the same period revealed that more than 70% of rural origin graduates commenced employment in a rural or regional area after graduation, rising to 90% in some disciplines. The courses that retained the highest proportion of rural and regional students in initial employment in a rural and regional area were: Psychology (91.7%); Nutrition and Dietetics (90.5%); Podiatry (88.9%); Nuclear Medicine Technology (85.7%); Pharmacy (83.1%); and Social Work (80%) (Charles Sturt University, 2010).

Metropolitan origin students comprised around 30% of on-campus enrolments over the same period. The analysis found that when metropolitan students complete the whole of their health or human service education on-campus in a rural area, more than 40% commence employment in a rural area (Charles Sturt University, 2010).

Despite the demonstrated success of rural recruitment and education strategies in the health and human service fields, the supply of Australian medical graduates in rural practice continues to lag well behind the success of other health disciplines. In CSU's view, this is caused by the low rates of enrolment of rural students in medical education programs nationally, and the lack of opportunities to undertake a full medical education program predominantly in a rural area.

The currently available evidence demonstrates that the most successful strategy to substantially increase the supply of medical professionals in rural areas is to increase the availability of medical education for rural students in rural areas. This is widely acknowledged within Government.

The nexus between rural origin, education and employment has informed previous Government decisions to establish medical schools in areas experiencing doctor shortages.

In 2009, the then Deputy Prime Minister, Hon Julia Gillard, observed that:

Charles Sturt University	Percentage	
Degree	Rural Enrolments	Rural Jobs
Paramedics	56.4%	75%
Nutrition and Dietetics	77%	90.5%
Occupational Therapy	89.6%	74.2%
Podiatry	82.8%	88.9%
Speech Pathology	86.8%	68.2%
Radiography	79.1%	50%
Nuclear Medicine Technology	75.4%	85.7%
Pathology	59.2%	73.7%
Nursing	78.5%	73.5%
Pharmacy	55.5%	83.1%
Physiotherapy	75.8%	73.7%
Psychology	56.8%	91.7%
Social Work	65.1%	80%

Students who study in regional areas are much more likely to stay in those areas, providing a vital skilled workforce in the regions.

In 1996, the former Federal Health Minister Dr Carmen Lawrence stated when announcing funding for James Cook University's medical school in northern Queensland: "It is a well known fact that medical students who were born and bred in rural Australia are more likely to return there after graduation. That is the reason for this new medical school" (Lawrence, 1996).

Similar comments were made by the then Deputy Prime Minister when commenting on the establishment of the University of Western Sydney Medical School at Westmead on 17 November 2008: "... it's going to give young people who grow up in the West of Sydney a real opportunity to go and study medicine, to go to the university down the road in their region and study medicine locally; and a great day for people in the West of Sydney generally because the students who study here are far more likely to stay and work in Sydney's West. This is an area that has faced medical shortages. This Medical School will make a long term difference for health care in this region - home grown doctors to meet home grown needs" (Gillard, 2008)

In 2009, the Minister for Health and Ageing, Hon Nicola Roxon, stated when announcing funding to establish a full time medical education program in Darwin: "This funding provides a welcome change for medical students who previously had to travel interstate to study. It will also encourage medical professionals nationally to study and work locally, with obvious benefit to health service delivery" (Roxon, Funding to Keep Medical Students in NT, 2009).

CSU's mission is to provide high quality educational programs that meet the needs of the rural communities we serve. Research demonstrates a track record of success in recruiting rural students to complex health and science disciplines (veterinary science, pharmacy, dentistry, physiotherapy, nursing etc); providing a high quality educational program; graduate employment rates consistent with the national university average; and, the retention of highly skilled health professionals in rural practice.

CSU has demonstrated over many years the capacity to construct world-class health and science infrastructure; design innovative curriculum; deploy cutting edge technology to support learning; attract quality academic and professional staff (including in areas of severe workforce shortage); build clinical placement networks; and, develop graduates that are in professional demand.

Consistent with its objectives set out in the *Inland Health Strategy,* CSU is of the view that a new medical school is required in rural NSW to substantially increase the number of Australian medical graduates in rural practice.

Preparing Graduates for Rural Practice

As a modern and progressive institution, CSU has had a long commitment to innovation in health and behavioural science education including interprofessional education

> "The veterinary profession in rural Australia has embraced the CSU students ... The students themselves are confident, understand their strengths and limitations and will be a great resource for rural communities ... The facilities that have been built to support student learning are exceptional.
>
> Australasian Veterinary Boards Council Inc. (AVBC)

(IPE); problem based learning (PBL); and, the application of technology to learning (e-health education).

It is widely acknowledged that student perceptions of professional identity are formed well before starting health and medical studies. However, research also suggests that students are generally more open to IPE at the commencement of their studies providing an important point at which to build student understanding and engagement with integrated and collaborative health practice necessary to achieve the Government's *Primary Health Care Strategy* objectives. CSU's experience supports research that the introduction of IPE at the commencement of undergraduate training in health sciences "... prevent(s) the formation of negative interprofessional attitudes which hamper future interprofessional collaboration" (Coster, et al., 2008, p. 1667). Interprofessional education across health disciplines has therefore been adopted as a core strategic goal of the University in its *Inland Health Strategy*.

This extends to the development of interprofessional clinical education (ICE) programs to allow students to model learning outcomes and build competencies in a real practice environment. For example, CSU's Allied Health Clinic in Albury-Wodonga has been operating since 2003 providing 6,100 consultations annually to rural patients in the Murray River and Riverina regions, and clinical practice experience for health students. The Clinic has successfully piloted and implemented a number of ICE programs including:

- a musculoskeletal ICE involving podiatry and physiotherapy students and targeted at managing biomechanical issues affecting movement particularly in children, adolescents and younger patients;
- an ICE focussed on the early identification of issues that impact on the quality of life for high risk complex clients (e.g., stroke clients) involving podiatry and occupational therapy students. This ICEP was delivered under a partnership with Greater Southern Area Health Service.

Building on this success CSU is currently constructing, with Federal Government assistance, an expanded Community Primary Health Clinic in Albury-Wodonga that will involve podiatry, nursing, dietetics, medical, physiotherapy, dentistry and oral health, pharmacy and exercise physiology students in an integrated practice. This will include a Wellness Clinic (focussed on asthma management, diabetes, lymphodema prevention, falls and exercise), Preventative Oral Health Clinic, Medication Review Clinic, Wound Clinic and innovative Tele-Health Clinic.

CSU's experience also supports the use of PBL to engage students in health science education, particularly those from rural areas, and provide the skills for high quality

> "[Interprofessional education prevents] the formation of negative interprofessional attitudes which hamper future interprofessional collaboration.
>
> Coster et al (2008)

professional practice. PBL in particular is an existing feature of some of CSU's health courses, where a spiral curriculum with elements presented in first year and re-presented in later years are deployed to develop understanding, knowledge and skills and significant integration of material across subjects. PBL characterises the approach to learning used by the majority of medical schools around the world.

As Australia's largest multi-campus university, and largest online and distance education provider, CSU also has significant experience and skills in the deployment of technology in educational programs. For example, CSU uses simulation to complement the clinical training of its students and for the maintenance of competencies of clinical staff. It also uses these resources and expertise to support the continuing professional development of health professionals in hospitals, health authorities and private practice. Coupled with its extensive Interactive Video Technology (IVT) facilities and expertise, CSU also provides continuing professional development for rural practitioners, for example the rural and remote pharmacists in weekend workshops. By combining the IVT access with the use of simulation (such as a virtual dispensary) practitioners can develop their knowledge and experience in specific scenarios.

The Regional Interprofessional Clinical Simulation Laboratory, currently being built at CSU's Bathurst campus, will provide even more opportunity to teaching using simulated hospital, community and emergency scenarios.

CSU has intentionally applied innovative approaches, based on national and international evidence, in the development of its health and behavioural science programs consistent with its goal of educating the next generation of health and human service practitioners for rural practice. This commitment is incorporated into the University's *Inland Health Strategy* and demonstrated through tangible actions to deliver innovative programs focussed on addressing contemporary and future challenges and opportunities for rural and national health service delivery.

Integrated Health Education Precinct Orange
Existing Dental Building (right); Planned Medical and Health Building (left)

PROPOSAL

An integrated approach to health, medical and human services education for rural Australia

CSU is seeking Federal funding of $98 million to develop an Integrated Health Education Precinct in Orange that will provide the physical infrastructure needed to educate the next generation of health, medical and human service professionals for rural Australia. Space definitions and costings are set out in Appendix A.

The Precinct will incorporate CSU's existing health science programs in Orange (dentistry, physiotherapy, pharmacy, clinical science and rehabilitation) to which will be added new student places for social work, occupational therapy, nutrition and dietetics, practice nursing, oral health and medicine. This development will enable the University to double the number of health care related programs offered at the Orange Campus, and design a new integrated inter-professional problem based curriculum across these health, medical and human service disciplines.

The proposed disciplines have been identified by the National Health Workforce Taskforce as areas where additional student places will be required to meet current and future demand, or are important to maximising the benefits of inter-professional learning for rural practice.

The Precinct will be a centre of excellence for CSU's existing and planned health and human service programs in Albury-Wodonga, Bathurst, Deniliquin, Dubbo, Griffith, Port Macquarie and Wagga Wagga using the University's extensive Interactive Video Technology (IVT) and Online Learning Systems (OLS).

Program	Planned Intake per Annum
Medicine	80 students*
Practice Nursing	40 students*
Dentistry and Oral Health	Increase of 20 students to 60 students
Occupational Therapy	25 students*
Nutrition and Dietetics	30 students*
Social Work	30 students*
Clinical Science	20 students
Physiotherapy	40 students
Pharmacy	40 students
Health and Rehabilitation Science	30 students

* proposed new programs indicated with an asterix

Addressing National Strategies and Regional Priorities

The proposal addresses the following seven national strategies and regional priorities:

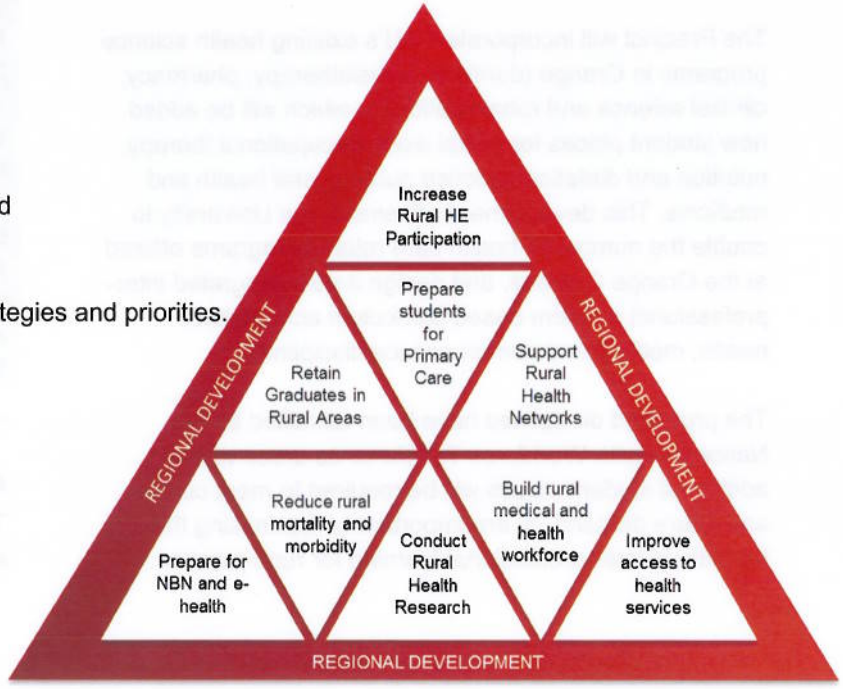
> "With demographic trends against us, even with the number of doctors graduating, we'll be hard pressed to meet the needs of the community ... There is absolutely plenty of work for everybody in the foreseeable future ...
>
> Hon Nicola Roxon, Minister for Health and Ageing, ABC Radio—The Health Report (September 2010)

1. expanding choice and opportunity for rural and remote students to participate in university level health education, and to increase the rate of retention of graduates in the rural health workforce, aligned to *Transforming Australian Higher Education;*
2. developing a genuinely inter-professional approach to health and medical education that develops and grows the next generation of rural doctors, nurses, allied health and human service professionals to work collaboratively as a team focussed on patient care aligned to the *National Primary Health Care Strategy;*
3. equipping the next generation of rural health professionals with the knowledge and skills to confidently use e-health systems to advance patient care and maintain professional skills over large distances aligned to the *E-Health Strategy;*
4. targeting programs to contribute to health workforce self-sufficiency and the equitable distribution of workforce in rural areas aligned with the Government's *Health Workforce Strategic Framework;*
5. maximising the quality and range of services available to rural communities through innovative use of broadband for education, learning, health and delivery of government services and to improve processes, access new opportunities and deliver enhanced services to rural communities aligned with the *National Broadband Strategy;*
6. improving the health of all Australians aligned to the *National Research Priorities;* and
7. developing rural regions by maximising current Government investments to achieve better outcomes in rural health workforce development aligned to the *Framework for Cooperation on Regional Development.*

The following sections address key strategies under the headings:

- Student Recruitment;
- Curriculum;
- Staffing;
- Clinical Training;
- Infrastructure ;
- Research;
- Graduate Retention; and
- Regional Development;

and alignment with national strategies and priorities.



INFRASTRUCTURE

Aim

Construct a state of the art health physical and virtual education precinct in rural Australia that facilitates interprofessional learning and the formation of social and professional networks.

Strategy

- create a physical environment that promotes formal and informal interactions across disciplines;
- support virtual interactions across campuses and students, clinicians and staff.

Performance Target

Construction completed for initial intake within 2 years of funding approval and finalised within 3 years of funding approval.

Alignment with National Priorities and Strategies

National Primary Health Care Strategy – develop professional skills for integrated primary health care.
E-Health Strategy – prepare graduates for professional practice using electronic records and telemedicine.

Discussion

CSU in Orange has undergone significant expansion and improvement since it was transferred to CSU by the University of Sydney in 2005. Focus of the campus course profile has shifted towards health sciences, with a number of new specialist courses including dentistry, clinical science, rehabilitation science and physiotherapy introduced in the last three years. In 2009, the new CSU Dental and Oral Health Clinic and new Clinical Science Experiential Learning Centre were opened on the campus, providing students with tailored facilities to ensure they develop the necessary professional skills to work in rural communities. Development of a new specialist physiotherapy facility is currently underway, with construction scheduled for completion in mid-2011.

Reflecting CSU's leadership in educational technologies, the new Dental and Oral Health Clinic, which includes public dental clinics and specialist simulation facilities, is the first fully digital clinical teaching environment in Australia. Procedures undertaken in the Clinic can be captured in high definition video and broadcast to other campuses or locations in Australia or the world. The Clinic and the Experiential Learning Centre is highly regarded as an exemplar facility among professional organisations, accreditation bodies and other education institutions and is regularly used out of session by rural hospitals and health services for training and staff development.

Create a physical environment that promotes formal and informal interactions across disciplines

Consistent with the Master Planning for the Orange Campus, the Integrated Health Education Precinct will be developed around a central interaction spine including food, recreation and social spaces, and a learning common/library. Motor vehicles will circulate on a ring

> "Facilities will be designed to promote both formal and informal engagement across health and human services disciplines to break down the professional barriers that hinder collaborative health practice in the future."
>
> Charles Sturt University

road around the perimeter of the Precinct allowing the expansion of existing walkways and bikepaths radiating from the spine to the perimeter, and cross-connecting education, research and community health facilities. The existing café/bistro and recreation area will be expanded and refurbished to meet the expanded demands. The library and 24-hour Learning Commons, which underwent significant redevelopment in 2009, will be further expanded to house additional collection material and provide further informal learning spaces for students. A new gym and sports courts will be constructed and will also provide, at appropriate times of the year, flat floor space for examinations and graduations, and can be used by students within their program.

The planned Precinct will involve the construction of new general teaching facilities for use by all health and human services disciplines, including large lecture theatres ranging in capacity from 100 to 250 seats to complement existing lecture theatre facilities and support large group and cross-disciplinary teaching sessions. Additional case study rooms and flat floor seminar spaces, for smaller group teaching, presentations, breakout sessions and workshops, will also be constructed to ensure that current and emerging pedagogies are fully supported by the new infrastructure. All general teaching rooms will be furnished with full multimedia equipment as standard to enhance the learning experience, with interactive telecommunication and video technology providing opportunities for synchronous cross-campus teaching and interaction with external clinicians and experts, and high definition storage of lectures, seminars and workshops for asynchronous access. Increasing the number of general teaching facilities on campus will enable greater flexibility of timetabling and allow the University to respond to the changing course delivery methods and learning requirements of students. Common classrooms, lecture theatres, laboratories and problem based learning spaces will create formal learning environments that will be shared across disciplines. New general and specialist teaching facilities will be grouped around the campus 'spine', within walking distance of all other facilities.

Specialist teaching facilities to support the introduction of new courses, and expansion of existing courses, will include pre-clinical facilities to enhance students' theoretical understanding of subjects, and clinical facilities to enable students to apply clinical knowledge into practice. New wet science teaching laboratories and anatomy and pathology laboratories, all to PC2 standards, with support spaces such as preparation areas and storage areas will be constructed. Other specialist facilities will be constructed to meet worldwide accreditation standards and will include a PBL (problem-based learning) suite for medicine and other courses; a clinical skills laboratory with patient examination and diagnostic space; a virtual practice environment (VPE) leveraging off the NBN and CSU's extensive IT infrastructure network for immersive teaching of pharmacy, telemedicine, and related subjects; a laboratory incorporating spaces for practical and instructor-lead teaching; simulated and role play environments; and clinical evaluation spaces for cross-disciplinary clinical teaching, case study review and Grand Rounds. All teaching spaces will incorporate the most up-

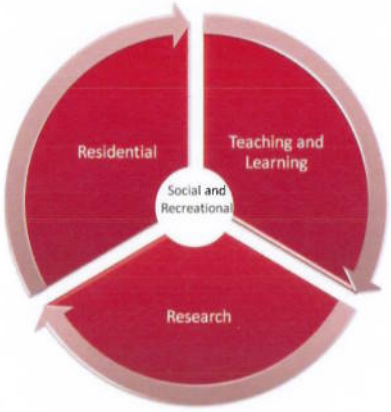
to-date specialist equipment and technology, including high fidelity simulation manikins, diagnostic simulators and full Interactive Video Technology and will be fully supported by the latest medical software and case management systems to prepare students for the workplace.

To support the increased numbers of staff at the campus, further office accommodation and support spaces will be constructed, including flexible workspaces which can adapt to changing staff numbers and requirements, research and postgraduate workspace, and staff meeting rooms and social spaces.

To further enhance research opportunities on the Orange and central western campuses, new research laboratories and support spaces including dry research space, write-up areas, and an animal house will also be constructed. Casual interactions will be facilitated as students walk through the Precinct, as well as in informal learning and social spaces at the heart of the Precinct. The use of walking and bicycle paths will promote and reinforce healthy behaviours, and link to the extensive network of regional bicycle and walking paths using the newly completed pedestrian and bicycle ways linked to the entry to the Precinct. The established and significant sustainability principles of the University will be embedded at all levels of the new development.

The existing campus infrastructure will also be upgraded to support the new buildings, and will include upgrading of services including fire protection services, communications and stormwater harnessing; new car parking; improved travel routes around campus and between buildings; new walking and bicycle paths; increased lighting and security; and new landscaping.

The University has completed construction of 100 additional student residences in 2009 and intends to increase accommodation over the coming years as student numbers expand. The proposal includes a request for funding to construct an additional 60 student residences to specifically support students from rural and remote areas studying on-campus.



Support virtual interactions across campuses and students, clinicians and staff.
As Australia's largest distance education provider, and leading provider of technology enabled learning, the virtual environment will link the Precinct to other CSU campuses, health services and to student homes, facilitating broader interactions in both formal classroom environments and facilitating online collaboration across large distances.

One of the most recently completed health facilities at CSU is the ERICC (Education and Research Into Communication Centre), which is used by academics and students to capture case-studies and teaching materials for allied health projects that are shared—often in real time—across distributed classrooms or among collaborating health researchers. These approaches are not just excellent opportunities for Learning and Teaching, but provide research collaborations and access to remote and otherwise isolated health professionals around Australia. Importantly, these technologies and attitudes are embedded into CSU's undergraduate teaching, to ensure that our students graduate with exposure to and experience of employing state-of-the-art methods and equipment to provide remote care, support and mentor colleagues, collaborate inter-professionally, and support isolated communities and individuals.

STUDENT RECRUITMENT

Aim

Increase rural student enrolments in health, medical and human services.

Strategy

- increase local availability of health, medical and behavioural sciences courses in rural areas;
- increase rural student attraction by increasing scale of program delivery; and
- target recruitment of rural students, Indigenous students and students with a strong disposition for rural practice, to new programs.

Performance Target

- At least 70% of students enrolled on-campus in nursing, allied health and human services, and 60% of students enrolled on-campus in dentistry and medicine, across the University to be from a rural or Indigenous background or have a demonstrated commitment to rural Australia, rural practice and rural health.

Alignment with National Priorities and Strategies

Transforming Australian Higher Education – increase participation of rural students in health, medical and human services programs.

Strategic Framework for Health Workforce – health workforce self-sufficiency and improved distribution of workforce in rural and regional areas.

Discussion

National and international research comprehensively demonstrates that students from rural areas who are educated in rural areas are significantly more likely to enter professional practice in rural areas. Yet young rural and regional Australians (15-24 year olds) are about half as likely as those in metropolitan areas to participate in higher education, impacting on the overall supply of graduates to rural labour markets. Increasing the participation of rural and regional students in health and human services programs delivered from rural campuses is therefore critical to growing the professional health and human service workforce in rural Australia.

Increased local availability of health, medical and behavioural sciences courses in rural areas

The local provision of higher education in rural areas has been shown to have an appreciable impact on higher education participation among rural and regional students. A recent Report by PhillipsKPA found that local provision of higher education courses and programs have a "... potentially significant impact on first generation students and their families by making access and participation less daunting and more affordable" (PhillipsKPA, 2009, p. 17).

> At least 70% of health and human service enrolments, and 60% of medical and dentistry student enrolments, will be from a rural, regional or Indigenous background or have a demonstrated predisposition for rural practice.
>
> Charles Sturt University

In addition to the direct impact of a university presence in a rural area, the Report notes a range of indirect impacts:

- proximity influences perception of attainability feeding higher education aspiration;
- partnerships with schools, particularly in the earlier formative years, have a significant effect on the general level of aspiration of students to pursue higher education and on the encouragement provided by teachers and peers;
- improved linkages between teaching, students and university reinforce perception of opportunity and accessibility;
- extension programs of varying kinds broaden and sustain the lifelong learning experiences of communities and raise the general level of cultural capital and aspirations (PhillipsKPA, 2009, p. 17).

CSU's own data demonstrates a substantial increase in participation linked to the physical presence of a University campus in a rural area. Increases in participation are supported by the provision of low cost student residential accommodation to reduce affordability barriers to enrolment, particularly for Outer Regional and Remote students. As the largest accommodation provider in rural Australia, CSU also has the capacity to attract students from across rural and regional Australia. In the health sciences and human services disciplines, more than 30% of students are from Outer Regional areas and 3.5% from Remote/Very Remote areas.

Increasing rural student attraction by increasing scale of program delivery

The PhillipsKPA report notes the importance of the scale of programs offered at a campus in attracting rural and regional students to study. It noted that "... the scale of the campus (perhaps reflecting the breadth of offerings at a campus) also has an impact on participation, with participation rates in smaller regional or single purpose campus locations lower than in centres with major campuses offering a broad range of courses" (PhillipsKPA, 2009, p. 18).

CSU has focussed on building a critical mass of related health disciplines on each of its major rural campuses to build aspiration and participation aligned to rural labour market needs. Critical mass is also essential to attracting qualified staff that can teach across related courses, and to generate the income necessary for investment in curriculum development and course quality.

CSU now delivers programs covering almost the entire spectrum of health and human service professions including: paramedics, nurses, pharmacists, dentists, oral health therapists, physiotherapists, radiographers, nuclear medicine technologists, midwives, podiatrists, dieticians and nutritionists, speech pathologists, occupational therapists, pathologists, clinical physiologists, psychologists, clinical neurophysiologists, exercise physiologists, health services managers, aged care managers, counsellors and social workers.

The proposal will double the number of primary health related courses available in the Orange Precinct and provide the necessary foundations for a sustainable and integrated health and behavioural science education program.

Unlocking Local Talent

CSU will extend its Positive Rural Recruitment program to the selection of medical students to study within the new Health Education Precinct. CSU has a demonstrated track record of recruiting high numbers of rural origin students to its on-campus programs, and retaining graduates in rural employment across Australia.

Positively selecting students on the basis of rural origin, and predisposition for rural employment, has been demonstrated to significantly improve participation of rural students in complex disciplines and the retention of graduates in rural practice.

As an example of this approach, CSU introduced a Positive Rural Recruitment process for veterinary science students in 2004. The program was developed to address a serious shortage of veterinary scientists in rural Australia and to build the skill base of practitioners in the management of herd population health, biosecurity and the treatment of large production animals. CSU developed a set of specific criteria to identify students with the qualities and predisposition for successful rural practice including academic ability; a demonstrated interest in and commitment to rural Australia, veterinary science and animal production; and understanding of the unique ethical and practical issues that confront veterinarians concerned with rural practices and animal production; and the capacity to communicate effectively, both orally and in writing. Applicants completed a written submission and attended interviews as part of the recruitment process.

A study of the effect of different recruitment approaches on veterinary science intakes was undertaken by CSU and Sydney University to determine the effect of selection methods on the propensity of graduates towards rural practice (Heath, Hyams, Baguley, & Abbott, 2006). The study made a number of important findings about the effect of positive recruitment approaches:

- 46% of the CSU students, but 7% of the Sydney students, finished high school in a country town;
- a majority of students in both the CSU and Sydney program were from NSW, but CSU recruited students from a substantially broader geographic catchment (e.g. 25% of CSU students were from Victoria compared to 7% at Sydney);
- 72% of the Sydney students attended non-government and private schools, but only 31% of CSU students;
- the average educational level of both fathers and mothers of Sydney students was substantially higher than those from CSU;

- the 'desire to live and work in a rural area' was very important for 84% of CSU students, but only 17% of those from Sydney;
- the method of selection of students was the most important consideration in choosing CSU for 91% of students, but was important for only 28% of those at Sydney. Factors that were more important for Sydney than CSU students included reputation of the university, facilities and location;
- there were major differences in the work each group hoped to be doing in each of the first, fifth and tenth year after graduation. In the first year, for example, 67% of CSU students planned to be in mixed rural practice compared to 32% of Sydney students.

The first graduating cohort of students from CSU's veterinary program completed their course in August 2010. Demonstrating the success of the CSU approach, at the completion of the program 100% of CSU's veterinary graduates had accepted an offer of employment in a rural or regional area. Consistent with the pattern for other CSU programs, graduates located to practise across a broad geographic area stretching from rural central Queensland to rural South Australia.

In addition to the veterinary program, Charles Sturt University utilises the Positive Rural Recruitment model for dentistry, pharmacy and physiotherapy, and will extend this approach to other programs as appropriate.

Graphic A: Origin and Destination of CSU Veterinary Science Students

* Student origin shown by white dot and graduate destination shown by pink dot.

CURRICULUM

Aim

To add a high quality medical program to the range of health and behavioural sciences taught at CSU incorporating into the medical program an interprofessional medical, health and human services stream to build student competencies and practical skills for integrated primary health care in rural areas in a e-health environment.

Strategy

- integrate interprofessional problem based learning across health, medical and behavioural science disciplines;
- design and deliver six year undergraduate medical program integrated with health and behavioural science programs; and
- stream medical students based on commitment to rural practice, with a focus on preparation for General Practice and the early development of appropriate procedural skills of particular importance to rural practice.

Performance Target

- The establishment of formal teaching in an IPE setting horizontally integrating elements of individual curricula for all the students from the different disciplines featured.

Alignment with National Priorities and Strategies

National Primary Health Care Strategy – develop professional skills for integrated primary health care.

Strategic Framework for Health Workforce – improve distribution of health practitioners in rural areas by improving preparation for rural practice.

E-Health Strategy – prepare graduates for professional practice using electronic health records and telemedicine.

Discussion

Studies have also shown that health practitioners that engage with IPE throughout their pre-qualifying education:

- were more confident at qualification about their relevant skills, their interprofessional relationships and other professionals' interactions;
- were more positive about their interprofessional relationships than those educated within uniprofessional curricula;
- showed positive correlations between their perceptions of their own communicative skills and interprofessional relationships" (Pollard & Miers, 2008, p. 414).

Integration of interprofessional problem based learning across health, medical and behavioural science disciplines

Without any dilution of the traditional learnings required for competency in a given discipline, the curriculum for each discipline offered within the Precinct will be developed to provide extensive opportunities for students to engage in interprofessional learning and clinical practice.

> "The curriculum will embed interprofessional and problem based learning, and integrated e-health competencies across the program, to prepare students for team based practice in an NBN enabled environment.
>
> Charles Sturt University

There will be a particular focus on regularly bringing students from across the health, medical and behavioural science disciplines together in Grand Rounds to apply discipline based knowledge to case studies and problem scenarios. This approach will build an awareness and respect among students for different approaches to problem solving, as well as broadening their understanding of the discipline expertise of each profession. It will reinforce for students the appropriate boundaries of professional practice within particular disciplines.

Virtual Grand Rounds will enable students studying at other CSU campuses (e.g. speech pathology, audiology, radiography, podiatry, Indigenous mental health) to participate in problem based learning workshops delivered from Orange using the University's IVT links, as well as students in Orange attending discipline organised workshops conducted at other campuses in Albury-Wodonga, Bathurst, Dubbo and Wagga Wagga.

The roll out of the National Broadband Network to rural and regional areas will enable distance health and behavioural science students to participate in Grand Rounds from their home or work using high definition (HD) webcams. Health, medical and human service practitioners working in rural and regional areas, as well as specialist contributors from metropolitan locations, will also be able to participate, provide expert input and build professional networks with students. CSU's approach can be summarised as 'team learning for team health'.

In later years, opportunities will be available for doctors and other health professionals to submit 'problem scenarios' to Grand Rounds. Specialist Grand Rounds linking University clinicians, medical and health specialists and rural clinicians will be developed to allow doctors and other health professionals to discuss particular problems presented by patients in practice. Where appropriate, Virtual Grand Rounds will be recorded and stored in asynchronous format by the University by subject matter as a resource for students, and rural practitioners, to access during their studies or work and will be the backbone of CSU's Professional Development programs designed to support experienced health professionals and new graduates across Australia, irrespective of geographic isolation or accessibility.

With the roll out of the National Broadband program new and important opportunities will open up for "remote" consultations. Neither the public nor the health professions are experienced in the techniques needed to extract the potential health benefits from this technology. High definition video in real time will be available and essential for a remote professional to "examine" a patient and look at test results, particularly moving images. The CSU initiative will undertake the training of future health professionals to use these opportunities and will engage the public through its health services research unit in studies of the cultural/procedural changes needed for the public to be comfortable with this form of consultation. CSU will share these learnings with the clinical community and health consumers. CSU will integrate these interactions into the patient's unique electronic medical

record. Many rural patients will not or cannot leave their towns/properties to travel to the city for consultation with specialists. This is a factor in the poorer health outcomes they experience with diseases such as cancer. The use of modern IT capabilities will form an important part of the package of initiatives contained herein to improve the health of rural Australians and diminish the inequity they experience in accessing health services.

Six year undergraduate medical program integrated with health and behavioural science programs

CSU proposes to develop a six year undergraduate medical training program aligned with our existing undergraduate nursing, allied health and human services programs. While there has been a shift in some of the traditional medical schools to a graduate entry model, the choice of an undergraduate program is based on the following factors:

1. CSU has extensive experience in the development of health and related programs at an undergraduate and postgraduate level in rural Australia. The University's experience suggests that undergraduate entry is best suited to the needs of rural students as it provides a more definitive career pathway and clear exit point, and is therefore viewed as more attractive. Undergraduate entry is therefore viewed as more suitable to attracting high numbers of rural and regional students.
2. Alignment of undergraduate medical, health and behavioural science programs is essential to realise the benefits of IPE. The majority of CSU's health science programs are undergraduate, allowing health, medical and allied students to commence and progress through their programs contemporaneously. At a functional level, this will facilitate the development of common subjects and learning opportunities. A graduate medical model, in particular, was viewed as inconsistent with this approach as this would inhibit the formation of necessary interpersonal and interprofessional relationships to support effective IPE and may contribute to perceived hierarchies between disciplines.
3. Research suggests that younger undergraduate students, and older graduate students, perform equally well in medical education and internships (Rolfe, Pearson, Powis, & Smith, 1995 Vol. 346, Issue 8986). In light of the above factors, an undergraduate medical education was viewed as suitable for the development of high quality medical graduates, while also enabling effective IPE.
4. A six year program provides CSU with the time necessary for constructive rotations to rural and remote practices and exposure to procedural techniques.

Streaming of medical students based on commitment to rural practice, with a focus on GP and Procedural workforce

While it is commonplace in many other countries, streaming of the learning process in Australian medical schools does not occur. Like other health disciplines, medical graduates are expected to have the necessary foundations in their discipline to be competent to handle a range of common problems. Post-vocational training is structured to provide intensive practice based competencies supported by a commitment to ongoing self-directed learning and clinical development.

CSU will offer medical students in the last two years of the course a choice (streaming) between:

1. continuing with a standard medical curriculum which will feature opportunities for a number of self-selected sub-speciality rotations; or
2. enrolment in a more proscribed rural pathway that would allow students more time to gain advanced practical skills in obstetrics, anaesthetics, minor surgery and endoscopic techniques, with intensive exposure to Indigenous health and mental health issues.

CSU aims to partner with postgraduate medical councils responsible for the Internship year to tailor that experience to the overall emphasis of the streaming program. It is anticipated that streamed rural pathway students would carry out their Internship requirements in a rural setting. Rural patients need doctors with these capabilities, and experience shows that these particularly skilled doctors enjoy their procedural work which adds to their professional satisfaction. Speciality colleges now agree with plans for returning to the era of the rural GP proceduralist.

STAFFING

Aim

Deploy existing staffing into new programs and attract high calibre health and medical staff to the new Precinct.

Strategy

- leverage existing substantial academic staffing resources to support health and medical curriculum development and teaching;
- attract highly qualified medical academic staff to the new Precinct;
- facilitate staff exchanges;
- engage rural medical profession in the clinical experience program.

Performance Target

- continue to meet accreditation requirements for courses consistent with existing practice.

Alignment with National Priorities and Strategies

National Primary Health Care Strategy – developing a genuinely interprofessional approach to health and medical education that develops and grows the next generation of rural doctors, nurses, allied health and human service professionals to work collaboratively as a team focussed on patient care

Discussion

Leverage existing substantial staffing resources to support medical curriculum development and teaching

CSU has expert staff delivering a wide range of medical science, health science and behavioural science subjects within its current degree profile (see Appendix B for detailed listing). In addition to this the University has a suite of research topics of relevance to medicine.

These programs are supported by a critical mass of academic staff with existing expertise to support the development and delivery of health, medical and behavioural science subjects, or to adapt existing curriculum to the planned medical program.

Attract and retain highly qualified medical academic staff to the new Precinct

The medicine staffing model is provided at Appendix C. Staffing costs for planned nursing, allied health and human services staffing will be consistent with existing staffing arrangements for these programs.

CSU has developed a highly successful recruitment and development model that has been particularly successful in attracting qualified academics in areas of critical workforce shortage including veterinary science, dentistry and pharmacy. There are several aspects to this approach.

1. Marketing the opportunities presented by a greenfield program where academic staff have an opportunity to shape the next generation curriculum and teaching program. This has been

> "CSU has one of the most extensive ranges of health programs in the country and has existing capacity to deliver education across the basic sciences. It will use innovative methods to build its clinical staffing, based on its success staffing programs like veterinary science and pharmacy.
>
> Charles Sturt University

a significant attractor to new staff in the veterinary science and dentistry programs at CSU. The opportunities of working in a genuinely interprofessional health, medical and behavioural sciences precinct are viewed as highly attractive to both international and domestic academics, as well as early career academics.

2. Using international recruitment agencies to target Australian academics working overseas (for example, Professor Ward Massey was appointed Professor of Dentistry and Head of School from the University of Maryland; Professor Kym Abbott was appointed Professor of Veterinary Science from the University of London; Professor Peter Chenoweth was appointed Professor of Veterinary Reproduction from the University of Kansas) and to attract highly qualified international academics (for example, Professor Patrick Ball was appointed Professor of Rural and Remote Pharmacy from the University of Auckland);
3. Deploy existing CSU medical academics into new programs.

Facilitate staff exchanges

CSU will engage with its existing academic partners, and develop new academic partnerships, to facilitate staff exchanges that will increase the opportunities associated with working at CSU and provide opportunities for specialist staff to teach into the CSU programs.

For example, as part of this initiative, CSU and McMaster University in Canada will develop staff exchanges to support the development of CSU's medical program and to provide international experiences and opportunities for both staff and students across our health programs.

CSU has also signed a Memorandum of Understanding with Liaocheng People's Hospital in China, a leading teaching hospital in inland China, to establish the CSU Australian Centre for Medicine that will facilitate staff and student exchanges across our health sciences programs. Liaocheng People's Hospital has particular specialisation in cardiovascular medicine and surgery.

Engage rural medical profession in the clinical experience program

The capacity to attract highly qualified doctors and medical specialists to clinical programs has been demonstrated by CSU through its veterinary, dental and health programs, as well as other universities in their recruitment of rural clinicians to work in rural pathway programs. CSU has already received informal expressions of interest from medical specialists and general practitioners to support the University's medical program and has extensive existing clinical placement networks involving hospitals and allied health organisations across rural Australia. The University has received letters of endorsement from three of the largest health services in rural areas including the Greater Western Area Health Service, Greater Southern Area Health Service and Albury-Wodonga Health indicating support for the development of a new medical school in rural Australia.

CLINICAL TRAINING

Aim

Apply interprofessional skills in clinical practice environments.

Strategy

- Develop curricula in collaboration with other institutions such as McMaster University.
- Establish an integrated Community Primary Health Care Clinic in Bathurst linked to established clinic in Albury-Wodonga and GP practices in small rural and remote areas.
- Establish international agreements for the exchange of students and staff to obtain clinical and medical training experience.
- Establish agreements with public health services, training organisations and private providers to support clinical and medical training.
- Work with relevant authorities to broaden use of simulation in clinical training, and expand range of settings.

Performance Target

- Health, medical and human service students have access to required clinical training places to meet accreditation requirements.

Alignment with National Priorities and Strategies

National Primary Health Care Strategy – developing a genuinely interprofessional approach to health and medical education that develops and grows the next generation of rural doctors, nurses, allied health and human service professionals to work collaboratively as a team focussed on patient care.

e-Health Strategy - equipping the next generation of rural health professionals with the knowledge and skills to confidently use e-health systems to advance patient care and maintain professional skills over large distances.

Discussion

The growth in the number of health and medical student places over the last 5-7 years has increased pressure on available clinical and medical training places. The Federal Government is currently working with the States and professional bodies to expand places across Australia. A number of strategies are being developed to improve the capacity of the system to manage the increased demand including:

- funding increases in the number of training places in State public hospitals;
- expanding the range of settings in which students can satisfy training requirements, and better reflect the diverse career paths of graduates, including aged care facilities, GP clinics and other community settings;
- shifting from 'time based training', to 'competency' based training to free up existing places;

> "Innovation will be at the core of clinical and medical training solutions including clinical simulation, international collaborations in China and Canada and the continuing support of rural hospitals and practices."
>
> Charles Sturt University

- expanding the use of clinical simulation using high fidelity manikins and computer technologies to develop initial competencies and improve patient safety.

In addition to these measures, CSU is exploring opportunities for greater engagement with the private sector in the provision of places and the use of overseas exchanges into comparable jurisdictions.

It is expected that the introduction of a new medical school in rural Australia will increase competition for medical training places in particular at rural hospitals and health services. This increased competition will give rural health and hospital services greater flexibility to identify and actively select medical graduates based on their commitment to work and remain in rural practice long term. In CSU's view this will act as an incentive for all medical schools to focus on the development of medical graduates for rural practice through improved recruitment, curriculum and training options.

Establish an integrated Community Primary Health Care Clinic in Bathurst linked to established clinic in Albury-Wodonga and GP practices in small rural and remote areas

CSU is of the view that it is essential for Australia to move beyond the current "one stop shop" approach to health and human services based on the co-location of independent practitioners.

CSU proposes to establish a large scale Community Primary Health Care Clinic (CPHCC) in Bathurst that will operate as one integrated practice with the medical care provided by a consortium of local GPs and a range of nursing and allied health professionals. The CPHCC will focus on prevention, early diagnosis and management of issues that could, if not addressed, lead to chronic and complex disease. It will deliver "team management" of chronic conditions and care in the community rather than hospital settings, providing an enhanced experience for the many who are currently sent to hospital rather than being better cared for locally.

Planned Community Primary Health Clinic (left); existing Community Dental and Oral Health Clinic (right).

The CPHCC will be linked to the smaller CPHCC in Albury-Wodonga currently under construction (medicine, dentistry, nursing, oral health, pharmacy, speech pathology, audiology, podiatry and physiotherapy) and specific purpose CPHCCs in Orange (dentistry, oral health), Wagga Wagga (dentistry, oral health, nutrition and dietetics) and Dubbo (dentistry and oral health). Recognising the pressure on existing clinical training facilities to accommodate projected student loads, CSU is focussed on creating University operated clinical facilities supplying significant clinical outlets for its own students and expanding health care services across rural and regional areas.

In addition to providing medical and health students with a practice environment in which to apply interprofessional skills, the CPHCC will be built on a 'hub and spoke' model to support smaller medical practices across the western region. The CPHCC will partner with 40 practices in regional and remote Australia that will work with the University in its educational mission. Currently, most medical students rotate through teaching units and hospitals in relatively large metropolitan areas located in Inner Regional Australia. These cities often have modern hospitals and patient profiles similar to hospitals in major cities of Australia. While the recruitment of doctors to even these more sophisticated towns is difficult, more problematic is the supply of doctors to vital but smaller rural and remote communities where, all too often, doctors are exhausted and frustrated by the lack of support they receive. Consequently, it is often the case that students spending a week or so in such practices come away with a negative impression of the professional lifestyle they offer.

Using income generated through the leasing of space in the CPHCC, and other income, CSU will provide significant advantages to those rural practices that sign on as partners in CSU's educational mission. In this way we will improve the clinical care provided to practice patients, and improve the job satisfaction of the practice health team which in turn will help students have a more positive experience of small practice rural medicine.

With Government funding support, CSU will supply state of the art equipment for IVT systems to support clinical consultations (e.g. GPs could present their problem patients to expert panels based in our medical school/teaching hospitals) and educational opportunities for both students and practice personnel. Online help would be available to improve business practice and the participation in the soon to be mandatory reporting of health outcomes related to care.

CSU clinical placement officers will visit practices to help/assess the practice's teaching programs. In addition, CSU will facilitate practice application for the Federal Government's infrastructure grants available to practices providing quality clinical training.

Development of the Bathurst CPHCC will be subject to a

separate funding application to the Federal Government once this application is approved.

Establish international agreements for the exchange of students and staff to obtain clinical and medical training experience

The University will cooperate with McMaster University in Ontario Canada (where CSU operates a campus) in staff and student exchanges. McMaster University is recognised as a world leading medical education provider and has particular expertise in the use of high fidelity clinical simulation to support clinical training for its students. Linked with CSU's advanced specialisation in technology enabled learning, this collaboration aims to support the increased integration of technology into the CSU medical and health curriculum.

The University also has an agreement with Liaocheng People's Hospital, a large inland teaching hospital in China that treats 1.3 million patients annually, to support student exchanges and collaboration in medical education and research. Liaocheng Hospital has 20 professorial level clinicians engaged in cardiovascular surgery and CSU Professor Lexin Wang is Honorary Director of the Department of Cardiology.

The University is exploring further opportunities to expand the range of collaborations to support the medical preparation in this program.

CSU's approach reflects its commitment to innovation in expanding medical training opportunities for students and providing a world-class medical education.

Establish agreements with public health services, training organisations and private providers to support clinical and medical training

CSU has support for the establishment of a new medical school from all major public hospital providers in rural and regional NSW and northern Victoria, including Greater Western Area Health Service, Greater Southern Area Health Service and Albury-Wodonga Health. The University also has an endorsement from the principal GP Training Organisation, Beyond Medical Education Ltd, to provide graduates with access to GP training places.

The University is in advanced discussions with Day Procedures Australia Ltd to establish a Day Hospital on the CSU campus in Bathurst, with an agreement to provide medical training places for CSU students. This is particularly useful given the importance of developing procedural skills.

Work with relevant authorities to broaden use of simulation in clinical training, and expand range of settings.

CSU uses models and simulation to complement the clinical training of its students and for the maintenance of competencies of clinical staff. It also uses these resources and expertise to support the continuing professional development (CPD) of health professionals in hospitals, health authorities and private practice. Coupled with its extensive IVT facilities and expertise, CSU provides CPD

to rural and remote pharmacists in weekend workshops. By combining the IVT access with the use of simulation (such as a virtual dispensary) students and graduates can develop their knowledge and experience in specific scenarios that may be rarely experienced in a typical clinical placement. The Regional Interprofessional Clinical Simulation Laboratory, currently being built at CSU's Bathurst Campus, will provide expanded opportunities to teach using simulated hospital, community and emergency scenarios.

Through the continued development and broadcast use of simulation in clinical training and re-training, CSU is expecting the various health accreditation authorities to begin to allow some supplementation of clinical training with simulated clinical training. This is the subject of considerable debate currently, and will be the subject of further work by Health Workforce Australia. CSU believes that simulation is a valuable method of learning and teaching, providing safe, repeatable practice that will allow clinical skills to be honed in specific ways. Whilst simulation will not replace clinical training, it is reasonable to predict that high-end simulation will be used as part of the clinical training in the future. This will not only produce better graduates and confident health professionals, it will also partially reduce the pressure on training places in clinical settings.

RESEARCH

Aim

Conduct research of relevance to inland and rural communities, in particular issues associated with the establishment and operation of an integrated primary health care facility and interprofessional health education.

Strategy

Establish the Rural Healthcare Delivery Research Unit as part of the University's Centre for Inland Health.

Performance Target

- Conduct research into rural health care delivery.

Alignment with National Priorities and Strategies

National Research Priorities – Promoting good health and well-being for all Australians.

National Innovation Priorities – promote public and community sectors working with others in the innovation system to improve policy development and service delivery.

Discussion

CSU's Centre for Inland Health conducts high quality, collaborative research that guides and informs community development to build health and enhance the management of chronic conditions in inland communities of Australia and other nations. The Centre has four research groups: Cardiovascular and Respiratory Diseases; Cell Biology, Genetics and Immunology; Physical Activity and Fatigue; Community Well-being, Human Services and Clinical Care.

CSU plans to establish a special grouping within the Centre for Inland Health that will, among other tasks, study the issues associated with establishing and operating a University owned CPHCC so that the lessons learnt particularly in regard to the effectiveness of IPE and subsequent Interprofessional Practice can be made widely available.

> "CSU will establish a new grouping to study the issues associated with operating an integrated primary health care facility and to share this new knowledge.
>
> Charles Sturt University

GRADUATE RETENTION

Aim

Increase the number of health, medical and behavioural science graduates commencing rural employment.

Strategy

Increase the intake of rural students (see above) and educate students within a curriculum that supports retention in rural practice (see above).

Performance Target

- At least 70% of health, medical and human service respondents to the Graduate Destination Survey commence employment in a rural or regional area.

Alignment with National Priorities and Strategies

Strategic Framework for the Health Workforce - targeting programs to contribute to health workforce self-sufficiency and the equitable distribution of the health workforce in rural areas.

Framework for Regional Development – developing rural regions by maximising current Government investments to achieve better outcomes in rural health workforce development.

Discussion

All the currently available evidence demonstrates that the most successful method for substantially increasing the supply of medical and health professionals in rural areas is to increase the availability of health and medical education for rural students in rural areas.

For example, a medical graduate is 2.5 times more likely to be in rural practice if they were originally from a rural area; 3.5 times more likely if they have a rural spouse; 3 times more likely if they undertake a rural internship; and, 4 times more likely if they undertake the majority of the training in a rural area. (Laven, 2003, pp. 227-284).

CSU's mission is to provide high quality educational programs that meet the needs of the rural communities we serve. Research demonstrates the University's track record of success in recruiting rural students to complex health and science disciplines (veterinary science, pharmacy, dentistry, physiotherapy, nursing etc) and the retention of highly skilled health and human service professionals in rural practice.

No other program to train and develop the rural health workforce has a comparable track record of success as the provision of educating *for rural Australians, in rural Australia.*

> CSU will significantly increase the number of doctors and health professionals retained in rural practice.
>
> Charles Sturt University

REGIONAL DEVELOPMENT

Aim
Deliver employment growth and economic activity.
Strategy
Maximise construction and operational expenditures in rural and regional areas to increase employment and economic activity in rural communities.
Performance Target

- Sustained increase in gross regional product, household income and jobs.

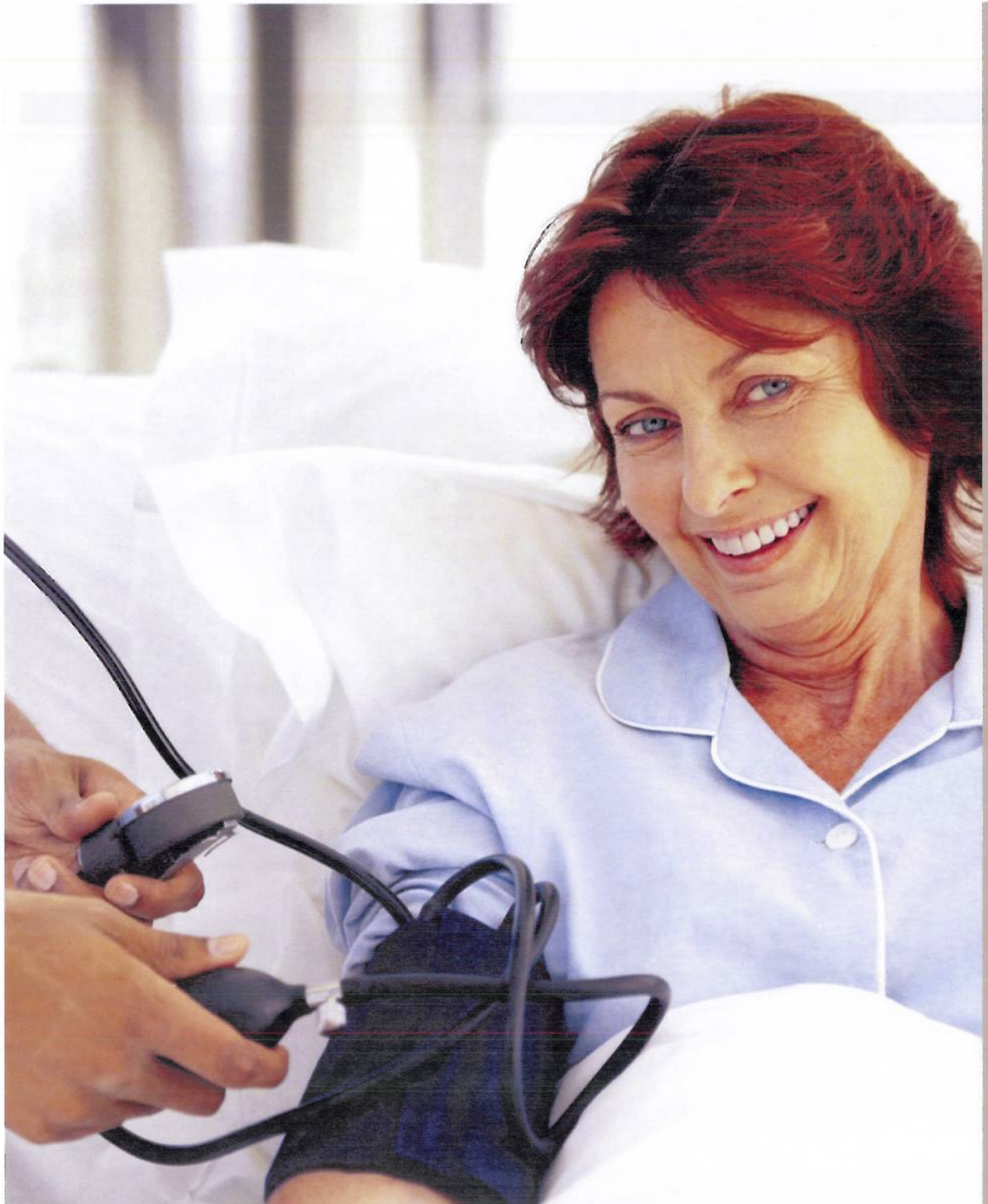
Alignment with National Priorities and Strategies
Framework for Regional Development – developing rural regions by maximising current Government investments to achieve better outcomes in regional development.

Discussion
CSU commissioned the Western Research Institute Ltd to undertake an economic impact analysis on the construction and operational phases of the planned Precinct (Western Research Institute, 2010). The modelling was undertaken using the latest available input-output tables developed in 2005. The tables are currently being updated for release in early 2011. As a result, the projections may be treated as conservative.

The construction phase of the project is estimated to generate $29 million in gross regional product, $15 million in household income and 240 full-time equivalent jobs in rural and regional Australia when flow-on effects are taken into account in 2012, the year of greatest expenditure on construction.

The full operations phase (2018), including student expenditure, is estimated to generate annually $26 million in gross regional product, $16 million in household income and 233 full-time equivalent jobs when flow-on effects are taken into account.

> CSU will contribute to the expansion of rural health services, as well employment and economic activity in rural and regional Australia.
>
> Charles Sturt University



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Appendix A - Space Definitions and Costings (Health Education Precinct including Medicine)

Functional Areas	No. required	Capacity	Sqm/person	Total sqm	$/sqm	Total $
Lecture theatre	1	250	1.4	350	$ 4,500.00	$ 1,575,000.00
Lecture theatre	2	100	1.5	300	$ 4,500.00	$ 1,350,000.00
Lecture theatre	1	150	1.4	210	$ 4,500.00	$ 945,000.00
PBL rooms	8	10	2.0	160	$ 4,500.00	$ 720,000.00
PC2 wet lab	2	80	6.0	960	$ 5,500.00	$ 5,280,000.00
Dry lab	1	80	4.0	320	$ 5,000.00	$ 1,600,000.00
Anatomy/pathology lab	2	40	8.0	640	$ 6,000.00	$ 3,840,000.00
Research lab	2	10	11.5	230	$ 8,000.00	$ 1,840,000.00
Research write up space	1	20	7.0	140	$ 3,750.00	$ 525,000.00
Clinical skills lab	1	40	4.0	160	$ 5,000.00	$ 800,000.00
Flat floor teaching space (seminar rooms)	6	50	2.0	600	$ 4,500.00	$ 2,700,000.00
E Health Learning and Research Laboratory	1	Up to 80	N/A	640	$ 5,000.00	$ 3,200,000.00
Clinical evaluation	4	2	6.0	48	$ 5,000.00	$ 240,000.00
Simulated environment	4	10	2.5	100	$ 5,000.00	$ 500,000.00
Group role play room	2	20	2.5	100	$ 5,000.00	$ 500,000.00
Case study room	2	50	2.0	200	$ 4,500.00	$ 900,000.00
Offices	110	1	11.0	1210	$ 4,000.00	$ 4,840,000.00
Café/common room	1	75	2.5	188	$ 5,000.00	$ 937,500.00
Teaching & Recreation Facilities	1	200	5.0	1000	$ 4,000.00	$ 4,000,000.00
Meeting rooms/staff space	3	20	2.5	150	$ 4,000.00	$ 600,000.00
Animal house	1	10	15.0	150	$ 5,000.00	$ 750,000.00
New Student Residences	60	1	20.0	1200	$ 2,500.00	$ 3,000,000.00

Cafeteria expansion	1	200	2.0	400	$	2,750.00	$	1,100,000.00
Library expansion	1	50	3.0	150	$	2,750.00	$	412,500.00
Total sqm				9606				42,155,000.00
Circulation & Plant @ 30%				2882		2750		7,924,537.50
Storage, toilets and ancillary space @ 10%				961		2750		2,641,512.50
Approx. Building Total sqm				**12487**				

Demolition of existing infrastructure	52,721,050.00
Site preparation, carparking, landscaping, etc	1,000,000.00
Site infrastructure	1,000,000.00
Off-site clinical support	2,000,000.00
	5,000,000.00
Construction cost	**61,721,050.00**
Design development contingency @ 10%	6,172,105.00
Construction contingency @ 10%	6,172,105.00
e-Health Learning Technology	1,500,000.00
FFE (including specialist equipment)	10,000,000.00
Consultant fees @ 12%	7,406,526.00
	92,971,786.00
Escalation @5%	4,648,589.30
Total for facilities	**97,620,375.30**
Total Rounded	**98,000,000**

- shared space
- dedicated space - medicine
- dedicated space - other
- campus expansion to support new course profiles

APPENDIX B - Existing Charles Sturt University Medicine Related Subjects

Anatomy & Physiology
BMS127 Human Anatomy and Physiology 1
BMS128 Human Anatomy and Physiology 2
BMS129 Physiological Sciences 1
BMS130 Physiological Sciences 2
BMS150 Functional Anatomy (16)
BMS151 Health and the Human Body - Cells, Skin and Microbiology
BMS191 Human Bioscience 1
BMS192 Human Bioscience 2
BMS253 Health and the Human Body – Cardiovascular, Respiratory and Renal
BMS255 Neuroscience for Health Practice
BMS256 Exercise Science for Health Practice
BMS257 Movement Science
Embryology
BMS406 Human Reproductive Biology
Histology
BMS229 Histotechniques
BMS337 Histopathology
Genetics
BMS240 Human Molecular Genetics
BMS241 Molecular Cell Biology
BMS242 Human Cytogenetics
BMS405 Human Genetic Diseases
Biochemistry
BCM210 Foundations and Techniques in Biochemistry
BMS211 Foundations of Biochemistry
Clinical Biochemistry
BMS207 Clinical Biochemistry 1
BMS302 Clinical Biochemistry 2
Immunology
BMS308 Immunology
Microbiology
MCR101 Introduction to Microbiology
Pharmacology
BMS340 Pharmacology
PHM430 Therapeutics
Cell biology
BMS241 Molecular Cell Biology
Infectious Diseases
MCR101 Introduction to Microbiology
BMS350 Health and Chronic Disease
BMS338 Clinical Bacteriology
BMS339 Virology, Mycology & Parasitology
Clinical Immunology
BMS350 Health and Chronic Disease
BMS308 Immunology
Geriatrics
BMS257 Movement Science
PHS200 Development of Physiotherapy Clinical Practice
PHS300 Integrated Physiotherapy Clinical Practice
PHS400 Transition to Physiotherapy Clinical Practice
HIP301 Complex Cases in Rehabilitation
NRS 375: Health Optimisation 1: Gerontic Nursing Care
NRS 381: Clinical Nursing Practice 3 (Aged care, mental health)
Rheumatology
PHS201 Musculoskeletal Physiotherapy Practice
BMS350 Health and Chronic Disease
BMS291 Pathophysiology and Pharmacology 1
BMS292 Pathophysiology and Pharmacology 2
BMS310 Disease Processes
BMS511 Processes of Pathology
NRS235 Pain Management
Renal Medicine
BMS350 Health and Chronic Disease
BMS291 Pathophysiology and Pharmacology 1
BMS292 Pathophysiology and Pharmacology 2
BMS310 Disease Processes
BMS511 Processes of Pathology
Hepatology
Anatomy & Physiology subjects as above plus:
BMS291 Pathophysiology and Pharmacology 1
BMS292 Pathophysiology and Pharmacology 2
BMS310 Disease Processes
BMS511 Processes of Pathology
Gastrointestinal diseases
BMS338 Clinical Bacteriology
BMS339 Virology, Mycology & Parasitology

BMS292 Pathophysiology & Pharmacology 2
BMS310 Disease Processes
PHM430 Therapeutics

Endocrinology

BMS291 Pathophysiology & Pharmacology 1
BMS292 Pathophysiology & Pharmacology 2
BMS310 Disease Processes
PHM430 Therapeutics

General Medicine

NRS235 Pain Management

Neurology

PHS301 Acute Care Physiotherapy Practice
PHS302 Neurology and paediatric physiotherapy practice
BMS292 Pathophysiology & Pharmacology 2
BMS310 Disease Processes
BMS319 Behavioural Neuroscience
BMS239 Clinical Measurement
BMS329 Clinical Neurophysiology

Spinal Medicine

PHS300 Integrated Physiotherapy Clinical Practice
PHS400 Transition to Physiotherapy Clinical Practice

Rehabilitation Medicine

BMS257 Movement Science
BMS350 Health and Chronic Disease
PHS200 Development of Physiotherapy Clinical Practice
PHS300 Integrated Physiotherapy Clinical Practice
PHS400 Transition to Physiotherapy Clinical Practice
NRS 291 Health challenges 1: Nursing Interventions and Rehabilitation
NRS292 Health challenges 1: Nursing Interventions and Rehabilitation
NRS 377 Health Optimisation 3: Chronic & Complex Nursing Care
NRS420 Perspectives of Managing Chronic and Complex Conditions
NRS421 Chronic Care Nursing Practice 1
NRS422 Chronic Care Nursing Practice 2
NRS423 Advanced Chronic Care Nursing
NRS235 Pain Management
PHS302 Neurology and paediatric physiotherapy practice

Oncology

PHS400 Transition to Physiotherapy Clinical Practice
BMS310 Disease Processes
BMS240 Human Molecular Genetics
BMS241 Molecular Cell Biology
BMS337 Histopathology
NRS379 Discipline of Nursing 4: Transition to Professional Nursing Practice
NRS235 Pain Management

Haematology

BMS341 Advanced Haematology and Blood Transfusion

Palliative Care

PHS400 Transition to Physiotherapy Clinical Practice
Discipline of Nursing 4: Transition to Professional Nursing Practice
NRS235 Pain Management
NRS337 Life Threatening Illness

Respiratory Medicine

BMS350 Health and Chronic Disease
PHS300 Integrated Physiotherapy Clinical Practice
PHS400 Transition to Physiotherapy Clinical Practice
RSC201 Cardiorespiratory Anatomy and Physiology
RSC301 Asthma Management
RSC460 Chronic Obstructive Pulmonary Disease
BMS239 Clinical Measurement
BMS310 Disease Processes

Clinical Pharmacology/Therapeutics

PHM430 Therapeutics
APS301 Advanced Paramedical Science 1
APS401 Advanced Paramedical Science (new subject to be offered in 2011)

Cardiology

BMS335 Clinical Cardiovascular Physiology

Neurosurgery

PHS301 Acute Care Physiotherapy Practice
PHS302 Neurology and paediatric physiotherapy practice

Orthopaedics

BMS350 Health and Chronic Disease
PHS301 Acute Care Physiotherapy Practice
PHS201 Musculoskeletal Physiotherapy Practice
HIP301 Complex Cases in Rehabilitation (16 points)
NRS235 Pain Management
NRS 293: Clinical Nursing Practice 1 (Medical, surgical, rehab)

NRS 294: Clinical Nursing Practice 2 (Medical, surgical, rehab)
NRS 381: Clinical Nursing Practice 3 (Aged care, mental health)
NRS 382: Clinical Nursing Practice 4 (Family, community, rural, chronic)

General Surgery

BMS350 Health and Chronic Disease
PHS301 Acute Care Physiotherapy Practice
NRS235 Pain Management
NRS 293: Clinical Nursing Practice 1 (Medical, surgical, rehab)
NRS 294: Clinical Nursing Practice 2 (Medical, surgical, rehab)
NRS 381: Clinical Nursing Practice 3 (Aged care, mental health)
NRS 382: Clinical Nursing Practice 4 (Family, community, rural, chronic & specialised area of choice)

Vascular surgery

BMS350 Health and Chronic Disease

Cardio-thoracic

PHS301 Acute Care Physiotherapy Practice
NRS235 Pain Management

Plastic/reconstructive surgery (related to physiotherapy: i.e., tendons etc)

PHS201 Musculoskeletal Physiotherapy Practice
PHS400 Transition to Physiotherapy Clinical Practice

Anaesthetics/Pain Management

PHM430 Therapeutics

Mental Health

NRS 195: Psychosocial Nursing
NRS 376: Health Optimisation 2: Mental Health Nursing
HLT512 Perspectives and Policies in Mental Health
NRS408 Psychosocial Interventions in Mental Health Nursing 1
NRS409 Psychosocial Interventions in Mental Health Nursing 2
NRS516 The therapeutic relationship
NRS517 Group process and therapy

Psycho geriatrics

PHS300 Integrated Physiotherapy Clinical Practice
PHS400 Transition to Physiotherapy Clinical Practice
HIP301 Complex Cases in Rehabilitation
NRS 376: Health Optimisation 2: Mental Health Nursing
HLT512 Perspectives and Policies in Mental Health
NRS408 Psychosocial Interventions in Mental Health Nursing 1
NRS409 Psychosocial Interventions in Mental Health Nursing 2

Psychology

PSY101 Foundations of Psychology 1
PSY102 Foundations of Psychology 2
PSY201 Research Methods and Statistics in Psychology
PSY202 Developmental Psychology
PSY304 Psychopathology
PSY111 Foundations of Psychology for Health and Human Services
PSY114 Indigenous Australians and Psychology: An Introduction
PSY214 Health Psychology
PSY216 Psychology of Ageing
PSY218 Psychology of Substance Abuse
PSY316 Psychology of Stress and Trauma

Obstetrics & Gynaecology

PHS301 Acute Care Physiotherapy Practice
MID441 Midwifery Studies 1
MID452 Issues in Midwifery
MID440 Midwifery Practice
MID442 Midwifery Studies 2
MID524 Contemporary Midwifery Practice
PHS301 Acute Care Physiotherapy Practice

Paediatric Medicine and Surgery

PHS301 Acute Care Physiotherapy Practice
PHC401 Paediatrics for Pre-Hospital Care
NRS115 Care of Infants
NRS325 Child Health Care and Promotion
NRS401 The Ecology of Child Health Care
PHS302 Neurology and paediatric physiotherapy practice

Emergency Medicine/Resuscitation

PHC402 Pre-Hospital Advanced trauma and Cardiac Care

CLS310 Major Incident Management
CLS 410 Major Incident Management

Intensive Care

PHS301 Acute Care Physiotherapy Practice
NRS235 Pain Management
NRS337 Life Threatening Illness

Professional and personal development

HIP100 Introduction to Health and Rehabilitation
PHS200 Development of Physiotherapy Clinical Practice
PHS300 Integrated Physiotherapy Clinical Practice
PHS400 Transition to Physiotherapy Clinical Practice
PHC303 Evidence Based Practice
PHC403 Evidence Based Practice
PHM101 Introduction to Pharmacy
PHM215 Pharmacy Practice 1
NUT301 Community and Public Health
NRS 193 Discipline of Nursing 1: Contexts of Nursing
NRS 379 Discipline of Nursing 4: Transition to Professional Nursing Practice
NRS 191 Primary Health Care Nursing 1: Health Promotion and Education

Community/Public Health/Population health

HIP302 Understanding Healthy Communities
HIP303 Promoting Healthy Communities
HSM403 Profiling Aged Care Services
NRS132 Nursing and Communities
NRS 191: Primary Health Care Nursing 1: Health Promotion and Education
NRS 378 Health Optimisation 4: Family, Community & Rural Nursing
HLT401 Contexts of Health Promotion
NRS520 Transcultural Nursing

Epidemiology/Medical statistics

HIP202 Research for Health Practice
HSM409 Epidemiology and Public Health
NUT301 Community and Public Health
NRS 296: Discipline of Nursing 3: Inquiry & Research
HLT505 Research Methods in Health Science A
HLT506 Research Methods in Health Science B
NRS239 Issues in International Nursing

Primary Health Care

HIP302 Understanding Healthy Communities
HIP303 Promoting Healthy Communities
NRS 191: Primary Health Care Nursing 1: Health Promotion and Education
NRS132 Nursing and Communities
NRS520 Transcultural Nursing
NRS 378 Health Optimisation 4: Family, Community & Rural Nursing

Clinical skills

HIP100 Introduction to Health and Rehabilitation
HIP112 Communication for Health Practice
PHS200 Development of Physiotherapy Clinical Practice
PHS300 Integrated Physiotherapy Clinical Practice
PHS400 Transition to Physiotherapy Clinical Practice
CLS300 Clinical Studies 4
CLS400 Clinical Studies for Paramedicine
HLT310 Reflective Clinical Practice (obsolete subject)
NRS 191: Primary Health Care Nursing 1: Health Promotion and Education
NRS 192 Primary Health Care Nursing 2: Fundamentals of Nursing Practice.
NRS 194: Indigenous Cultures, Health & Nursing
NRS 293: Clinical Nursing Practice 1 (Medical, surgical, rehab)
NRS 294: Clinical Nursing Practice 2 (Medical, surgical, rehab)
NRS 381: Clinical Nursing Practice 3 (Aged care, mental health)
NRS 382: Clinical Nursing Practice 4 (Family, community, rural, chronic)
NRS237 Management and the Nurse

Rural Health

HIP100 Introduction to Health and Rehabilitation
HIP302 Understanding Healthy Communities
HIP303 Promoting Healthy Communities
PHM490 Rural Pharmacy Practice
NRS 194: Indigenous Cultures, Health & Nursing
NRS 378 Health Optimisation 4: Family, Community & Rural Nursing
RAD120 Radiological Imaging 2
RAD210 Radiological Imaging 3
MRS 203: Medical Imaging (subject to be offered in 2012)
MRS 334: New subject for 4 yr course - still to be written

Diagnostic Imaging

PHS301 Acute Care Physiotherapy Practice
PHS201 Musculoskeletal Physiotherapy Practice

PHS301 Acute Care Physiotherapy Practice
PHS302 Neurology and paediatric physiotherapy practice
MRS100 Professional Fundamentals (16 points)
MRS110 Introductory Medical Radiation Science
MRS203 Imaging Anatomy
MRS211 Imaging Pathology (16 points)
MRS290 Medical Radiation Science Practicum 1
MRS303 Digital Imaging Processing and Informatics
MRS390 Medical Radiation Science Practicum 2
MRS434 Magnetic Resonance Imaging
MRS490 Medical Radiation Science Residency
PHY100 Medical Radiation Physics
PHY200 Radiation Detection and Devices
RAD332 Computed Tomography
MRS341 Image Interpretation and Correlative Imaging
RAD270 Radiological Imaging 1
RAD370 Radiological Imaging 2
RAD426 Diagnostic Ultrasound

Nuclear Medicine

MRS222 Nuclear Medicine Science 1
MRS321 Nuclear Medicine Science 2
MRS322 Nuclear Medicine Science 3

Medical Ethics

HIP202 Research for Health Practice
HIP100 Introduction to Health and Rehabilitation
HIP112 Communication for Health Practice
PHS200 Development of Physiotherapy Clinical Practice
PHS300 Integrated Physiotherapy Clinical Practice
PHS400 Transition to Physiotherapy Clinical Practice
PHM101 Introduction to Pharmacy
PHM215 Pharmacy Practice 1
PHM490 Rural Pharmacy Practice
PHM315 Pharmacy Practice 2
NRS 295: Discipline of Nursing 2: Health Law and Ethics

The Health system

HIP100 Introduction to Health and Rehabilitation
PHS200 Development of Physiotherapy Clinical Practice
PHS300 Integrated Physiotherapy Clinical Practice
PHS400 Transition to Physiotherapy Clinical Practice
HSM401 Perspectives on Health Care Systems
PHC404 EMS Systems
HSM202 Managing Health Services
HSM408 Current Issues in Health Services Management
HSM512 Evaluating Health Services
HSM510 Health Planning
HSM410 Aged Care Services Policies
HSM406 Resourcing Health and Aged Care Services
HSM402 Human Resources Management (Health Services)
NRS 193: Discipline of Nursing 1: Contexts of Nursing

Appendix C – Staffing Model (Medicine)

		Position	Level
Academic		Head of School	HOS
Medical Specialists			
	3	Medicine	LevelE
		Medicine	LevelD
		Medicine	LevelC
	3	Community Health	LevelD
		Community Health	LevelC
		Community Health	LevelC
	3	Integrated Primary Care	LevelE
		Integrated Primary Care	LevelC
		Integrated Primary Care	LevelC
	3	Clinical Specialists	LevelE
		Clinical Specialists	LevelE
		Clinical Specialists	LevelD
	2	Medical Informatics	LevelD
		Medical Informatics	LevelC
	4	Mental Health	LevelE
		Mental Health	LevelE
		Mental Health	LevelC
		Mental Health	LevelC
	3	Paediatrics	LevelE
		Paediatrics	LevelD
		Paediatrics	LevelC
	3	Obstetrics/Gynaecology	LevelE
		Obstetrics/Gynaecology	LevelD
		Obstetrics/Gynaecology	LevelC
	3	Surgery	LevelE
		Surgery	LevelE
		Surgery	LevelD
	3	Geriatrics	LevelE

		Geriatrics	LevelC
		Geriatrics	LevelC
Health Sciences			
	2	Anatomy	LevelC
		Anatomy	LevelB
	2	Biochemistry	LevelC
		Biochemistry	LevelB
	2	Genetics	LevelC
		Genetics	LevelB
	2	Physiology	LevelC
		Physiology	LevelB
	2	Immunology	LevelC
		Immunology	LevelB
	2	Microbiology	LevelC
		Microbiology	LevelB
	2	Pharmacology	LevelC
		Pharmacology	LevelB
	2	Cell Biology	LevelC
		Cell Biology	LevelB
Technical/Clinic			
		Anatomy Laboratory Manager	HEW7
		Anatomy Laboratory Assistant	HEW5
		Pathology Laboratory Manager	HEW7
		Pathology Laboratory Assistant	HEW5
		Clinical Skills Laboratory Manager	HEW7
		Clinical Skills Laboratory Assistant	HEW5
		Health Science Laboratory Assistant	HEW5
		Health Science Laboratory Assistant	HEW5
Administrators			
		School Manager	HEW6
		Course Accreditation Officer	HEW6

	Admin Assistant to HOS	HEW5
	Clinical Placement Coordinator	HEW5
	Clinical Placement Assistant	HEW4
	Volunteer & Donation Coordinator	HEW4
	Administration Officer	HEW4
STAFF PROFILE		
	HOS	1
	Academic Staff	
	Academic Level E	11
	Academic Level D	7
	Academic Level C	20
	Academic Level B	8
	Technical staff	
	HEW 7	3
	HEW 5	5
	Admin Staff	
	HEW 6	2
	HEW 5	2
	HEW 4	3
		7
	Total Staff	**62**