

Solutions for Health

10 Years of the Hunter Medical Research Institute



In partnership with our community



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

HUNTER NEW ENGLAND
NSW HEALTH

introduction

From just a concept, to one of the State's largest medical research institutes in just 10 years.

This is a significant achievement for the Hunter Medical Research Institute (HMRI). An achievement that would not have been possible without the vision of a few passionate researchers and a commitment to the partnership by Hunter New England Health, the University of Newcastle and our Hunter community.

Ten years ago, HMRI was a revolutionary new model for health and medical research for a new century. Today the NSW Government recognises HMRI as a successful model for health and medical research and has provided both capital and infrastructure grants to support HMRI affiliated researchers.

The Hunter community embraced the new visionary model and over the past 10 years through community and government funding HMRI has contributed over \$22 million to support local research.

The successful partnership of Hunter New England Health, the University of Newcastle and the community is

celebrated in this 10th Anniversary booklet, highlighting 10 years of research excellence.

The research undertaken by HMRI affiliated researchers spans the spectrum of life, from successful conception to healthy ageing. This booklet is an acknowledgement of the quality of the research that is providing solutions to major health problems that are relevant to our community and have impact nationally and internationally.

HMRI has enjoyed 10 years of sustained growth, and as we celebrate these research achievements, HMRI is ready for the next 10 years.

To support Hunter researchers into the future, our vision is one of "Building Research Distinction and Healthier Communities".

I hope you enjoy reading *Solutions for Health*.

Professor Maree Gleeson
Director, HMRI
March 2008



***"10 years of research
excellence"***

10 years of HMRI - 10 research solutions for health

HMRI affiliated researchers are providing solutions that impact on every stage of every life.

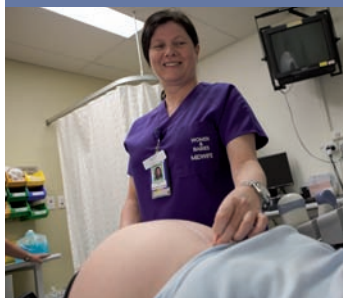
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infertility



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premature birth



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asthma



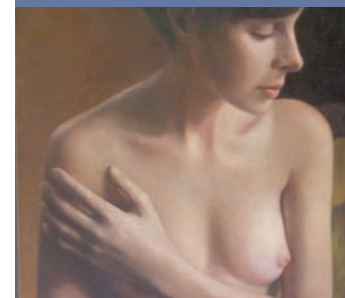
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schizophrenia



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breast cancer



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prostate cancer



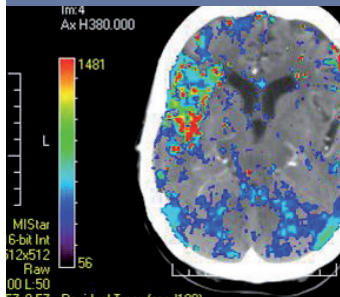
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melanoma



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stroke



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heart disease



10

ageing



infertility solutions

1 in 35 new-born Australians is now conceived through assisted conception. As fertility continues to decline in developed countries, the need to understand the causes of infertility will grow.

Defective sperm function is acknowledged as the most common cause of human infertility, affecting at least 1 in 20 Australian males.

Remarkable technical advances have enabled pregnancies to be achieved where sperm numbers are limited. This has enabled pregnancy to be achieved in those who would have been classified as untreatable a little over a decade ago. However, such progress might have been achieved at a cost to the offspring.

One of the distinguishing characteristics of human spermatozoa is the high incidence of damage to the genetic material, DNA, in these cells. DNA damage in the male germ line is associated with poor fertilisation rates, impaired preimplantation embryonic development, reduced fertility rates following *in vivo* and *in vitro* conception, increased pre-term pregnancy loss and abnormalities in the offspring including genetic diseases and cancer.

Given that the incidence of birth defects

is 25-30 per cent higher in IVF than the normal population, there is an urgent need to develop efficient, effective techniques for recovering human spermatozoa, free of DNA damage, for assisted conception therapy.

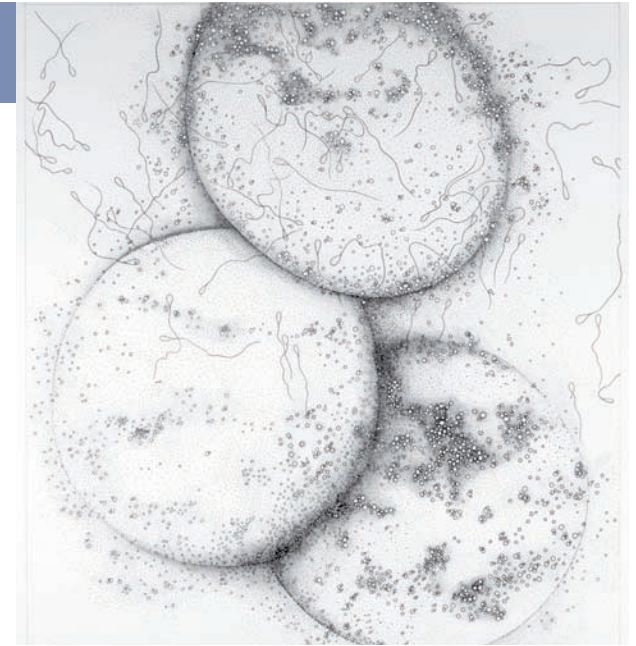
Creating a healthy baby is a focus of the HMRI Pregnancy and Reproduction Research Program.

Professor John Aitken and his team at the University of Newcastle and a Sydney-based biotechnology company have developed a sperm isolation device that successfully achieves rapid, efficient selection of viable functional human spermatozoa that are relatively free of DNA damage, for assisted conception purposes. The sperm isolation device has been successfully used to treat patients exhibiting prolonged infertility and is now undergoing large-scale clinical trials at Westmead Hospital, Sydney.

This research group also has international leadership in understanding the cell biology of male and female germ cells and the impact of environmental factors on the reproductive health of men and women.

Researchers are identifying environmental toxins and examining their impact on human fertility. In a preliminary

The Miracle of Conception by Rachel Burgess.
HMRI Art Series 2006.



study they have identified that radio waves of a similar frequency to those associated with mobile phones can damage sperm DNA in mice. They are also looking at the role that a group of oestrogen-related compounds may play in infertility. This research may lead to screening for these compounds in our water supplies.

Professor John Aitken and his team from the University of Newcastle's Priority Research Centre for Reproductive Science work in collaboration with HMRI's Pregnancy and Reproduction Research Program. The group's research into environmental impacts on female fertility has been supported by the Newcastle Permanent Building Society's Charitable Foundation.

“Creating a healthy baby”

premature birth solutions

Every year in Australia, premature birth occurs in over 17,000 pregnancies. The rates of preterm birth today are the same as 30 years ago.

Babies born prematurely (before 36 weeks of pregnancy) have an increased likelihood of developing conditions such as cerebral palsy, blindness and intellectual handicap which carry a life-long burden.

The HMRI Pregnancy and Reproduction Research Program is focussed on understanding the mechanisms and processes which control human birth, with the aim of preventing premature birth and ensuring the long term health of the individual. Hunter researchers have international leadership in their understanding of the mechanisms of human labour and the identification of the biological clock in the placenta that determines the length of human pregnancy.

In the early stages of pregnancy, it is difficult for doctors to predict whether symptoms such as contractions will lead to a premature delivery. Professor Roger Smith and his research team from the University of Newcastle and Hunter New England Health have developed a foetal test which can identify women who will not deliver. This test is particularly important in regional Australia, as it can rule out the need to transfer women over long distances to a

larger hospital, saving health care dollars and avoiding unnecessary disruption to the woman and her family.

This group's discovery of a new pathway that regulates contraction of the uterus at the time of labour has identified new targets for drugs to prevent premature labour. Current drugs are not very effective in preventing premature labour. Better drugs will reduce the number of babies who die because of premature birth, which is currently 1,300 babies in Australia each year.

Researchers investigating asthma in pregnancy, including HMRI Port Waratah Coal Services Research Fellow Dr Vanessa Murphy from the University of Newcastle, have applied their research to understanding the impact of asthma on the unborn child. They have demonstrated that a severe asthma attack in the mother impacts on the infant's health outcomes.

They have identified that it is beneficial to the health of both the mother and the unborn child for the mother to continue to take prescribed asthma medication during pregnancy. This research has informed health promotion materials of the Asthma Foundation of NSW on managing asthma in pregnancy.

The research has also identified that male babies are particularly vulnerable to an



asthma attack in the mother. The gender of a baby has impacts on other health outcomes. Research by Dr Ian Wright from Hunter New England Health has also shown that male babies born prematurely are more vulnerable to cardiovascular complications than females.

Professor Roger Smith and his team from the University of Newcastle's Priority Research Centre for Reproductive Science and Hunter New England Health work in collaboration with HMRI's Pregnancy and Reproduction Program. Professor Smith's premature birth research has received substantial support from the Thyne Reid Trust.

Dr Vanessa Murphy from the University's Priority Research Centre for Asthma and Respiratory Diseases works in collaboration with HMRI's VIVA Research Program.

“Maintaining a healthy pregnancy”

asthma solutions

Australia has one of the highest rates of asthma in the world, with 1 in 10 adults and 1 in 6 children affected. Australian health care costs for asthma totalled approximately \$693 million in 2000-01.

Hunter researchers are making an important contribution to worldwide asthma research. What makes HMRI's Viruses, Infections/Immunity, Vaccines and Asthma (VIVA) Research Program different is that it spans the spectrum of biomedical and clinical research, facilitating the translation of research into clinical practice.

A partnership of researchers from the University of Newcastle and Hunter New England Health, this group has generated research of national and international significance.

Their findings are improving the health of asthma patients in the Hunter and beyond by informing clinical guidelines and providing pointers for new therapies. In addition to enhancing patient care, this research has provided significant health savings for government.

Hunter asthma researchers have:

- Identified ways to differentiate the

different types of asthma which allows for better targeted therapies.

- Discovered the trigger for virus induced asthma and potential new treatment pathways.

- Identified that the optimal dose of corticosteroids for treating asthma was lower than current Australian guidelines. Adoption of recommendations for a lower prescribed dose will lead to savings for the Commonwealth Government of \$6 million per annum. This is also positive for the bone density of asthma patients as long-term high doses of steroid medication can reduce bone density, increasing the risk of bone fracture in old age.

- Discovered that a commonly available antibiotic can be used in conjunction with current medication to better treat a new type of asthma which responds poorly to standard treatment.

- Showed a link between poor diet and asthma control. Researchers found that reducing the dietary intake of antioxidants resulted in worsening lung function in people with asthma. This indicates that changes in dietary antioxidant intake may be relevant to the rising prevalence of



asthma on both a national and global level.

Through national and international collaborations with research colleagues and asthma societies, Hunter researchers are well positioned to help people breathe easier throughout the world.

The HMRI VIVA Research Program is led by Professor Paul Foster from the University of Newcastle's Priority Research Centre for Asthma and Respiratory Diseases and Professor Peter Gibson from Hunter New England Health.

"Breathe easier"

schizophrenia solutions

Schizophrenia affects 1 in 100 Australians and is the biggest cause of permanent disability in young Australians.

It is estimated that the socio-economic cost of schizophrenia to Australia is between \$1.5 billion and \$2.5 billion annually. The personal cost to patients and families in terms of suffering and reduced quality of life is immeasurable.

In collaboration with HMRI's Brain and Mental Health Research Program, researchers from the University of Newcastle, Hunter New England Health and Schizophrenia Research Institute are working with national and international colleagues to better understand the disease and the factors that lead to its onset. They aim to find better methods for early diagnosis, and to guide more effective treatments.

It is known that genes play a role in the development of schizophrenia. As technology progresses, so will researchers' ability to analyse large quantities of data and make sense of the genetic patterns. In 2003, Hunter researchers established the first Schizophrenia DNA Bank in Australia, a collaboration between the Schizophrenia Research Institute, HMRI, the University of Newcastle and the Hunter Area Pathology Service.

Hunter researchers are capturing clinical

data and blood samples donated by people with schizophrenia for future genetic studies. In conjunction with the Schizophrenia Research Register, established in 1998, these data banks have provided data to over 60 national schizophrenia studies. The Schizophrenia Register and Hunter DNA Bank recently attracted over \$3.5 million in funding to expand into a national resource - the Australian Schizophrenia Research Bank (ASRB). ASRB is an important national tool for researchers in their quest for a cure. It will house 4,000 samples from people with and without schizophrenia.

Early diagnosis of schizophrenia is important as it enables people to be referred to treatment quicker, improving their quality of life and reducing their level of disability. Hunter researchers have developed an important technique to map the brain, combining structural and functional brain imaging. They are investigating the effect of age, gender, illness and substance use on brain changes during the development of schizophrenia. This is aimed at opening up opportunities for earlier identification of schizophrenia and the possibility of prevention.

By examining a group of young people with a common genetic disorder who have an increased risk of developing schizophrenia, researchers hope to identify factors that lead to the onset of the condition. This research by HMRI Port



Waratah Coal Services Research Fellow Dr Linda Campbell from the University of Newcastle will provide information about how schizophrenia develops in the general population.

Schizophrenia can bring communication challenges for people with the condition, as it may lead to difficulty in interpreting other people's facial expressions. As a result, emotions such as anger and happiness can be confused. Hunter researchers are comparing how people with and without schizophrenia process facial expressions, with the aim of developing remediation strategies to help people with the condition to communicate more effectively and experience greater quality of life.

Researchers from the University of Newcastle's Priority Research Centre for Brain and Mental Health Research and Hunter New England Health work in collaboration with the HMRI Brain and Mental Health Research Program.

"A healthy mind in a healthy body"

breast cancer solutions

One in 8 women will be diagnosed with breast cancer by age 85. Breast cancer is the leading cause of cancer death in women in Australia.

The Hunter region is home to one of the premier breast cancer clinical research organisations in Australia and the world. The Australia New Zealand Breast Cancer Trials Group (ANZ BCTG) is led by Professor John Forbes from the University of Newcastle and Calvary Mater Newcastle.

The Group's research program includes more than 50 clinical trials assessing the effectiveness of new breast cancer treatments and prevention outcomes.

Many of the trials involve international research collaborations and have resulted in important changes in clinical practice, leading to better health outcomes for women with breast cancer. Significant research solutions have included:

- The optimal use of surgery in early breast cancer.
- The use of adjuvant therapy with tamoxifen and aromatase inhibitors to treat breast cancer.
- Defining the best drugs and sequence of chemotherapy treatments.
- Primary prevention of hormone sensitive breast cancer in women at risk.
- The introduction of quality of life assessments in breast cancer trials.

Hunter women were among the first to benefit from the results of a global study that confirms that the drug Tamoxifen, a well established treatment for breast cancer, can also reduce the risk of breast cancer in women at increased risk of the disease.

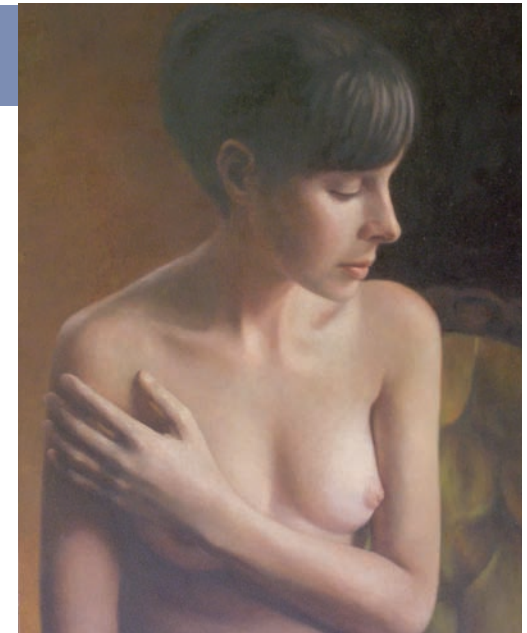
In women with early stage estrogen receptor-positive primary breast cancer who have completed adjuvant chemotherapy, researchers demonstrated that the addition of Trastuzumab to standard chemotherapy reduced the risk of disease recurrence by 46 per cent. This was a major advance in treatment for a group of women who previously had a poor prognosis.

The most recent results from an ANZ BCTG led trial show that there is a clear, long term benefit from starting treatment with Anastrozole in hormone sensitive early breast cancer in postmenopausal women. Results from the international study showed that 25 per cent of recurrences are prevented long term. This research has led to substantially improved treatment strategies in early breast cancer.

By participating in international clinical trials the ANZ BCTG ensures that Australian women have access to effective treatments early in their development.

Genetic research conducted by Professor Rodney Scott from the University of Newcastle and international colleagues,

A Woman's Destiny by Lee Zaunders.
HMRI Art Series 2008.



is increasing our understanding of the development of breast cancer. Four genes associated with a woman's likelihood and timeframe of developing breast cancer have been identified, which raises the possibility of individually tailored screening and treatment. If we can identify the most likely age at which an individual is liable to develop cancer, we can reduce the risk of a woman presenting with advanced disease.

Professor John Forbes and his research team are affiliated with the University of Newcastle, Calvary Mater Newcastle and work in collaboration with the HMRI Cancer Research Program. Professor Rodney Scott is a co-director of the University of Newcastle's Priority Research Centre for Bioinformatics, Biomarker Discovery and Information Based Medicine and works in collaboration with the HMRI Information Based Medicine Research Program.

“Early detection and improved treatments”

prostate cancer solutions

It is predicted that by age 75, 1 in 11 men in NSW will develop prostate cancer, the most common cancer in Australian men.

In the past, it was believed that prostate cancer largely occurred in older men, and rarely caused death. We now know that prostate cancers diagnosed in men aged 50-70 will often be directly responsible for the man's death, unless the disease can be successfully treated.

Research conducted by Professor Jim Denham and his team from Calvary Mater Newcastle and the University of Newcastle, has contributed to this knowledge.

Professor Denham has been the Chief Investigator of several innovative clinical trials undertaken by the Australia and New Zealand Trans-Tasman Radiation Oncology Group (TROG) which have demonstrated the benefits of hormone therapy in addition to radiation treatment for prostate cancer.

This research has significantly improved the survival outcomes for patients with locally advanced prostate cancer.

The 96.01 trial, involving 800 men with prostate cancer from Australia and New Zealand, found that three months of hormone therapy (maximal androgen deprivation therapy or MAD) treatment prior to radiotherapy reduced the chances of cancer returning in the prostate by

around 45 per cent.

Even more encouraging is the finding that six months of hormone therapy achieved even greater benefits, reducing the chances of cancer returning in the prostate by over one half. It also cut the chances of cancer returning in other parts of the body by one third.

This finding is important because if cancer develops in other parts of the body such as the bones, it usually proves to be fatal.

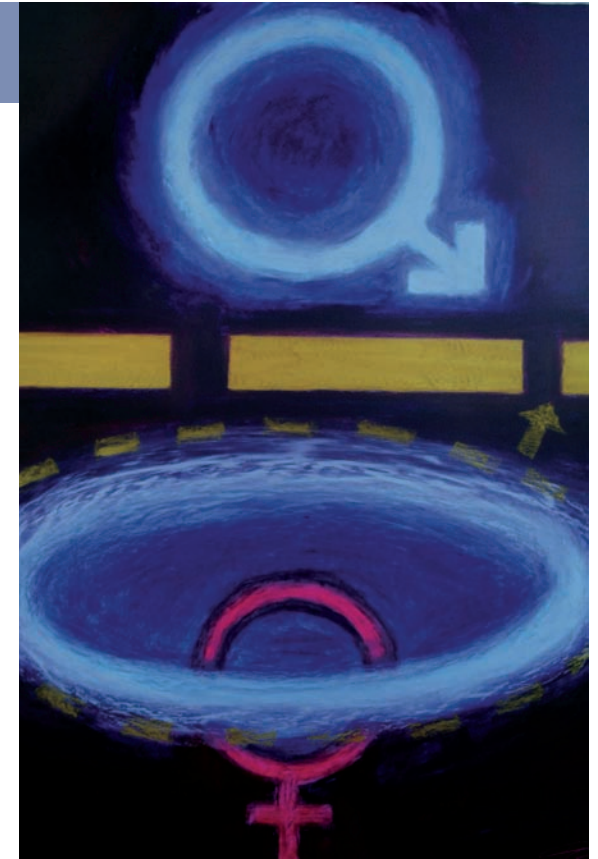
Also significant, is that improvements in treatment outcome have been achieved without reducing the men's overall health.

Findings from the 96.01 trial have resulted in a change in clinical practice in Australia and New Zealand, and have influenced guidelines in the United States and Europe. As a result, thousands of men will benefit from this targeted treatment approach.

TROG's second trial, RADAR, will investigate whether radiation treatment and 18 months of hormone therapy with or without the bone cancer drug Zoledronate will produce even better results. Enrolment of 1,071 men from both sides of the Tasman concluded in 2007, with major results expected to be reported in 2012.

Professor Denham has made a further contribution to men's health by using this

Pathways to Recovery by Susan Weaver. HMRI Art Series 2007.



research to promote the importance of men visiting their doctor regularly to allow early detection of prostate cancer.

Professor Denham and his team are affiliated with the University of Newcastle and Calvary Mater Newcastle and work in collaboration with the HMRI Cancer Research Program.

Professor Denham's early research into prostate cancer was supported by seed funding from Gallerie Fine Jewellery.

“Breaking down the barriers”

melanoma solutions

Anyone who has had unprotected sun exposure is at risk of developing melanoma, the most dangerous form of skin cancer. It is estimated that 1 in 35 Australians will develop melanoma by the age of 75.

Hunter researchers are working in collaboration with HMRI's Research Programs to tackle melanoma from a number of different angles.

Professor Peter Hersey and Dr Xu Zhang from Calvary Mater Newcastle and the University of Newcastle are carrying out research into melanoma on two levels: trying to understand the basis for resistance of melanoma to treatment; and conducting trials on melanoma as part of an international network. Their research is exploring the safety and feasibility of using new therapies, based on the person's own melanoma cells, to destroy the melanoma cells. It is hoped that the therapies will help stimulate the immune system in people with melanoma to fight the disease.

Another area of investigation by Hunter researchers is why some people with melanoma cells which have spread to other parts of the body (metastatic) are

resistant to chemotherapy. An HMRI Pilot Grant supported by Gallerie Fine Jewellery is helping Dr Zhang and his research team to develop new therapeutic agents to overcome the resistance of melanoma to chemotherapy.

Viruses such as the common cold may prove one of our best weapons against melanoma. Associate Professor Darren Shafren from the University of Newcastle and his research team have demonstrated the effectiveness of a common cold virus (Coxsackievirus A21) as a treatment to kill melanoma cells, both in laboratory tests and animal models. They began to investigate this exciting lead with the support of the Greater Building Society.

The results of this research led to the establishment of a biotechnology company to commercialise this anti-cancer technology. An early human clinical trial of the viral therapy is currently underway to assess the safety of using the virus in a small group of late stage melanoma patients who have not responded to traditional chemotherapy or radiation treatments.

Informing the community about the risks of tanning and investigating solarium



industry compliance is another approach that Hunter researchers are taking to prevent melanoma. Researchers from the Centre for Health Research and Psycho-oncology (CHeRP), a collaboration between the Cancer Council NSW and the University of Newcastle, found that only a few of the solariums involved in the study complied with most or all of the Australian or international recommendations, which include advising people with very fair skin (that does not tan) against using sun beds.

Melanoma researchers from the University of Newcastle, Calvary Mater Newcastle and Hunter New England Health work in collaboration with HMRI's Cancer, VIVA and Public Health Research Programs.

"Slip, slop, slap"

stroke solutions

Each year, 53,000 people in Australia will have a stroke - this figure equates to 1 stroke every 10 minutes.

Stroke is a leading cause of death and disability and a major economic burden to society.

HMRI's Stroke Research Group is regarded as the state leader in stroke research and one of the top three clinical and research stroke centres nationally. It combines the expertise of clinical researchers, stroke nurses, radiologists and radiographers from Hunter New England Health and medical researchers from the University of Newcastle.

Hunter researchers are involved in several national clinical trials evaluating clot busting (thrombolysis) stroke treatments, which can reduce a patient's level of disability when administered immediately after a stroke.

Thrombolysis has been shown to improve outcomes by dissolving blood clots in the brain, allowing blood flow to return to the brain, thereby preventing the stroke damage. Previously this treatment had not been proved effective beyond three hours.

With colleagues from the Royal Melbourne Hospital, they demonstrated that clot

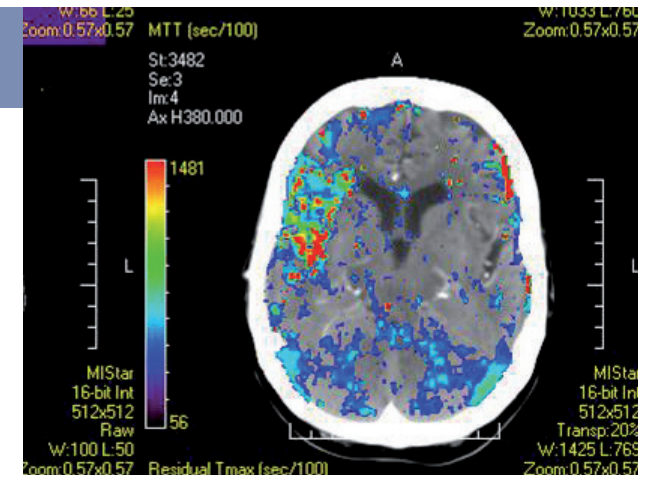
busting treatment can be effective when administered up to six hours after a stroke. This finding has extended the window of acute stroke treatment by three hours and may benefit an additional 5,000 Australian stroke patients each year.

They have also conducted pioneering work on the application of advanced CT brain imaging to identify potentially salvageable brain tissue after a stroke. They are using this technology to identify who would most likely benefit from the clot busting treatments.

The CT imaging advances are at the international cutting edge and will help guide the practical application of CT techniques across the world.

Health systems research conducted by Hunter researchers has been the recipient of local, state and national awards. The outcomes have enhanced stroke patients' access to clot busting (thrombolysis) stroke treatments through the implementation and evaluation of a pre-hospital acute stroke triage (PAST) protocol.

The thrombolysis access program in the Hunter region, based at John Hunter Hospital, has set the standard for acute stroke care nationally and internationally. It guides how other regions of NSW and



Australia can reorganise their pre-hospital stroke care to provide stroke patients with the best possible chance of a good outcome.

The 20 per cent rate of thrombolytic therapy achieved in the Hunter is better than international best practice benchmarks.

Stroke researchers from Hunter New England Health and the University of Newcastle work in collaboration with HMRI's Brain and Mental Health Research Program.

This research has been supported by the Greater Building Society, the Stroud Rodeo and Mrs Ferma McLean.

“Clot busters”

heart disease solutions

Cardiovascular disease kills more people in Australia than any other disease. In addition to contributing to illness, disability, poor quality of life and premature death, it is the most expensive disease group in Australia, generating the most health expenditure.

HMRI's Cardiovascular Research Program focuses on better understanding the workings of the heart, developing preventative strategies and investigating new therapies for cardiovascular disease.

Researchers from the University of Newcastle have demonstrated that the combined dietary therapy of a phytosterol-enriched margarine spread and omega-3 fatty acid supplementation is an effective treatment for the management of high blood cholesterol. This dietary strategy, applied worldwide, has the potential to reduce the dose of cholesterol-lowering drugs, and in mild cases of hyperlipidemia, may eliminate the need for medication. Researchers have demonstrated that this treatment can reduce an individual's 10 year risk of developing coronary artery disease. On a national level, it could lead to a reduction in the economic burden of hyperlipidemia and associated diseases.

A world first clinical trial conducted by Hunter researchers is contributing to the

global research effort to develop new therapies for cardiovascular disease. In 2007 researchers from Hunter New England Health concluded a trial to safely implant adult stem cells into the damaged hearts of six patients with severe coronary artery disease.

During the trial, stem cells were extracted from the patient's own bone marrow, isolated, and expanded in culture in a laboratory using the adult stem cell technology of Australian company Mesoblast Limited. Patients had shown significant improvements in either symptoms of heart failure or heart function and no cell-related adverse effects were seen in any of the patients followed for up to six months.

Investigations into calcium movements within cells by researchers from the University of Newcastle, have led to a new understanding of the mechanism of pacemaking in the heart muscle and in cell walls of the lymphatics system. This knowledge has led to the development of a drug that immobilises the lymph system when locally applied, which can retard the transport of venom following a snake bite. This is vital for the survival of people bitten where pressure bandages are ineffective and they are at distances from emergency care. A new product is being developed for



inclusion in snake bite kits.

Research investigating the vascular systems in the heart and lung have also contributed to the understanding of exercise-induced asthma symptoms. Researchers from the University of Newcastle have shown that during exercise the airways and their blood supply counter-intuitively constrict rather than dilate, explaining the prime reason for exercise-induced asthma syndromes.

Cardiovascular researchers from Hunter New England Health and the University of Newcastle work in collaboration with HMRI's Cardiovascular Research Program.

"A healthy heart"

ageing solutions

Ageing is a significant issue in Australia, with men and women aged 65 years and over comprising around 2.3 million of the population. It is projected that by June 2056, this age group will have grown from 13.3 per cent to 26.4 per cent of the population.

Maintaining the good health of Australians as they age is an important focus of HMRI's Public Health Research Program.

Researchers from the University of Newcastle, in partnership with the University of Queensland, have taken a leading role in establishing Australia's largest study into women's health.

Since the Australian Longitudinal Study on Women's Health (ALSWH) commenced in 1996, it has provided important data on health issues such as sleep, diabetes, heart disease and falls and has become a national resource for ageing research.

Researchers are using this information to generate health solutions and inform government policy and planning. As a result, Australia is better placed to respond to the ageing of an older population.

Researchers from the University of Newcastle and Hunter New England Health have found that:

- Being overweight or obese is an increasing risk factor for chronic health

problems including hypertension, heart disease, diabetes, asthma and arthritis and is increasing in prevalence and incidence.

- Women living in regional areas who do not have access to a female GP are less willing to seek help for some conditions which are treatable. This led to the Federal Government addressing the shortfall of rural GPs and female GPs through several initiatives, which have increased women's access to female GPs and bulk billing services.

- Moderate consumption of alcohol in older women, in line with Australian alcohol guidelines, is associated with better survival and quality of life.

- Health assessments for older people undertaken in the home are associated with higher quality of life and a reduction in the number of falls. Home health assessments are now a common part of primary care for older people.

- Malnutrition can lead to longer stays in hospital and nursing homes, delayed recovery, and increased health complications. Hunter researchers have increased awareness amongst health professionals and influenced nutrition screening practices around the world, improving the health of older people, and advising on methods to meet nutrition needs in acute and residential aged care.



This malnutrition research has been supported by the Rotary Club of Newcastle Enterprise.

- Incontinence affects nearly four million Australians, 70 per cent of whom are women. It costs around \$1.5 billion each year in Australia. Research into the prevalence and impact of incontinence has led to hospital intervention strategies for elderly patients and new mothers.

Professor Julie Byles and her team are members of the University of Newcastle's Priority Research Centre for Gender, Health and Ageing. They work in collaboration with HMRI's Public Health Research Program.

***“Ageing well,
ageing productively”***

significant solutions

Researchers from the University of Newcastle, Hunter New England Health and Calvary Mater Newcastle, working in collaboration with HMRI's Research Programs, have also made the following significant discoveries:

- HMRI established the first Research Register of healthy controls in Australia, with the support of PRIME Television. The HMRI Research Register enables the community to participate in studies, helping researchers gather important data and saving time and money which can be better spent on research.
- Completed a systematic review of the effectiveness of dietetic interventions in child obesity. This research was translated into a best practice information sheet for nurses and 15,000 copies have been distributed worldwide in collaboration with the Joanna Briggs Institute.
- The identification of a new bacterial species in ear infections among both Indigenous and non-Indigenous Australian children has led to improved treatment strategies for otitis media. This research has increased our understanding of the role that genes and environmental pollutants play in development of illnesses.
- The identification of the causes of respiratory infection in elite athletes has led to therapeutic interventions and training modifications that reduce the incidence and severity of symptoms and optimise their performance.
- Clinical assessment tools for patients' psychosocial health can improve the care of cancer patients in Australia and overseas. Oncology clinics are using this tool to identify psychological distress in cancer patients and to tailor clinical decisions and improve patient care.
- Identifying differences in a gene which appears to be associated with the age at which bowel cancer is likely to develop in people with a genetic predisposition to the disease may improve the screening efficiency for individuals at risk of bowel cancer.
- A randomised trial (Postcards from the EDge) showed that sustained postcard communication can reduce the likelihood of a repeat suicide attempt in patients who have been hospitalised for attempting to take their own life by overdose. The trial showed a significant reduction in the number of subsequent suicide attempts at 12 and 24 months after intervention. This approach has been replicated in New Zealand and the Middle East and drawn clinical and research interest from other international suicide prevention centres.
- Treating substance use problems and mental illness simultaneously can lead to significant improvements in the health of people with a mental illness.
- The development of the Alcohol Linking Project, an intelligence-led educational intervention, has reduced the incidence of alcohol-related crime in NSW through its delivery by police to licensees. This initiative has been implemented by police in South Australia and New Zealand.
- The development and evaluation of a computer-based intervention to help patients cease smoking before their operation has provided a model for other preoperative services to reduce patient operative risks, and reduce the risk of developing chronic illnesses such as cardiovascular disease.

In partnership with our community



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NSW HEALTH

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This publication was produced by HMRI's Communications Team, Lauren Eyles (HMRI Communications Manager) and Robbie Macaulay (HMRI Communications Officer).

Thank you to the researchers who contributed to this celebration of health and medical research in the Hunter.

The HMRI Art Series is supported by Chris and Shirley Piggott, Wide Horizons Framing and NCP Printing.

