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ECU HEALTH MAKING A DIFFERENCE

VOLUME ONE: FEBRUARY 2010





World-class universities typically rest on three pillars: teaching excellence, high quality research, and engagement with society. When both the teaching and the research are directed towards positive social, economic, environmental and cultural impacts through interactive partnerships, a university approaches the ultimate model in delivery of service to society. This is our overarching objective at Edith Cowan University.

Beyond the words lie the actions. This first publication of ECU's Faculty of Computing, Health and Science in its series *Making a Difference*, sets down some of the positive impacts ECU staff and students are achieving in health.

The broad compass of *Making a Difference* reflects the scope of research and teaching across health disciplines. The achievements illuminate the expertise and intellectual rigour of the University. Our responsiveness to social need is evidenced in our engagement with local, national and international institutions, industry, and the communities we serve, as well as all levels of government.

The privilege of educating tomorrow's leaders in professional services carries with it the obligation to understand and anticipate the demands our graduates will face. With some 16,000 undergraduate and 5,000 postgraduate students undertaking more than 400 courses, our effectiveness is measured by the continuing success of our alumni. In some cases, they find positions back at ECU and so further contribute to our objectives.

We are excited by our mission. We believe our stakeholders, knowing more about the work we do as described in this publication, will recognise the strengths of our differentiated stance, our collaborative partnerships, our tight focus on worthwhile objectives, and the achievements made possible by quality people doing quality work.

Professor Kerry O. Cox
Vice-Chancellor

Australia's healthcare industry interacts with the lives – and deaths – of every Australian. Its clients expect world-class delivery of health services for their annual expenditure of about \$94 billion. The input demands include healthcare graduates of the highest caliber, plus independent research and innovative cost effective solutions.

The Faculty of Computing, Health & Science at ECU aims to deliver those solutions and stand by the position that "we can make a difference in health". Moreover, we strive to anticipate future demands through leading-edge research, analysis of emergent trends, and participation in health policy development.

This is a journey that never ends. Nonetheless, our broad range of stakeholders deserve ongoing evidence of our progress, and this first publication in our series, *Making a Difference*, describes some of the advances we have achieved. Critically, there is clear congruence with the recommendations of the National Hospitals and Health Reform Commission in its June 2009 Final Report, *A Healthier Future for All Australians*.

One of the Commission's reforms encapsulates what we argue is already in place at ECU, a "... framework for the education and training of our health professionals which moves towards a flexible, multi-disciplinary approach, and incorporates an agreed competency-based framework as part of a broad teaching and learning curriculum for all health professionals."

In these publications we will describe how teaching and research are tackling equity within, and access to, the health system and how we are helping to develop Australia's healthcare workforce with highly trained professionals across multiple fields. Our research contributions to the health system, our involvement in community wellbeing, and the facilities we provide and use to help promote and restore health.

At the beginning of life, we are researching the effects of environmental pollutants on the health of newborn babies. At the end of life, we are helping to implement a pathway for palliative care patients. At the peak of life, we are investigating ways to improve performance by international-class athletes.

ECU's health sciences, education and research are highly integrated with our local communities, with national and international institutions and with local, state and federal governments. Our objective is to make a difference, our achievements are set down for all to see, and our satisfaction is to serve the Australian community's needs.

Professor Tony Watson
Deputy Vice-Chancellor (International) and
Executive Dean, Faculty of Computing, Health and Science

Edith Cowan University (ECU) considers the subject of 'health' a significant one, impacting upon our learning and teaching directions and research into a variety of illnesses and conditions that affect individuals and communities as a whole. ECU is advancing the understanding of health problems and emerging trends with a strong focus on building partnerships and alliances with community groups, research organisations and government agencies.

By progressing health education within the University and across professional settings, with our partners, ECU is ensuring graduates are equipped to offer high quality care, and contribute to the enhancement of overall industry standards.

Volume one of "Making A Difference" introduces articles relating to the aforementioned areas, which share common ground: they all impact upon the betterment of the communities we serve.

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LEARNING WITH WORLD-CLASS SIMULATION FACILITIES

A unique education centre at Edith Cowan University offers health students and the healthcare industry a fully operational simulation complex, in which world-class facilities provide an environment for scenario-based learning and professional development.

The ECU Health Simulation Centre supports a tight focus on two specific patient-oriented approaches – inter-professional learning and inter-professional practice to address the needs of health and related workforces.

“ECU is not taking chances with its health education,” says Professor Cobie Rudd, Associate Dean – Health. “We want our health students to practice here in a safe environment, not on real patients in real life.”

The safety and quality of people’s experiences in the health care system remain key issues in 2010. Adverse events and near misses are still a major problem and a substantial cost factor in health. It is well known that poor communication is responsible for many of these failings. The challenge is so pressing that many argue that quality in the Australian health system is the problem that overshadows all others,” Professor Rudd says.

“Some key questions have to be answered to fix this alarming trend, where in WA we have almost 40 percent of sentinel events being related to suboptimal communication.”

The ECU Health Simulation Centre, on its Joondalup Campus, is a cornerstone of the response to this challenge. It offers health students both immersion and observational learning, while staff in hospitals and other health settings – including those in rural and remote areas – can participate in interactive simulations through real-time broadcast video streams.

“We faced a number of challenges in developing scenarios,” Professor Rudd says. “For example, translating into reality our focus on the person; improving, monitoring and safeguarding the quality and safety of the patient’s experience; profiling patient’s expectations throughout a journey that will possibly involve multiple services and multiple providers.”

Professor Rudd sees the Health Simulation Centre playing a critical dual role in helping students and clinicians to recognise their obligations in patient safety. On a broader front, experience and outcomes will assist governments in policy development towards greater patient safety.

She points out that the Centre can help to ensure health service staff are equipped to recognise the need to encourage questions from consumers and carers, and it can assist clinicians to identify and support patients with lower health literacy.

On the ground, the Centre has three self-contained simulation suites, each with full video recording and interactive audio-visual facilities. One of the suites is specifically designed as an authentic replica of a GP practice consultation room, and the others can be configured to represent a variety of settings. Debriefing rooms and observation areas facilitate learning analysis. Next door is a further competency development and assessment area, comprising 56 beds that meet Australian healthcare standards.

“We have trained actors and volunteers who are able to play a range of roles,” Professor Rudd says, “and the facilities can offer all levels of fidelity in simulation, including a broad range of simulation mannequins and task trainers.”

Reaching out beyond the Joondalup Campus, the Centre can broadcast simulated scenarios anywhere capable of receiving a video stream.

The Centre delivers services that include:

- Competency development and assessment
- Concurrent simulations either through immersion or broadcasting
- Scenario-based learning and resource development, such as multimedia videos for orientation websites, and interactive DVDs for professional development.

ECU’s facilities also have the capacity to deliver large-scale ‘mock’ disasters, as well as longitudinal scenarios across the continuum of care. These might take a ‘patient’ and attendant service providers from the trauma site to an Emergency Department, on to Intensive Care and Coronary Care Units, and then to a hospital ward, to a ‘hospital in the home’ and finally to the general practitioner’s surgery.

The events are debriefed with the aid of the video footage, using a structured method of facilitated reflection, self-assessment and enquiry. Learning results from actual experience and rehearsal, and from reflection on experience.

“Our focus is on inter-professional learning, and the human factors that become evident through simulation, as well as technical skills,” Professor Rudd says.



“We’re acutely aware of the education and training required to meet the imperatives of the national and State safety and quality frameworks. Our aim is to support the desired attitude and competency development of all who work in the health system, to help them deliver safe care and to recognise and manage risks.

“We presented a re-enactment of a sentinel event for large numbers of senior rural clinicians,” Professor Rudd says. “In this case, group participants comprised more than 80 people from WA Country Health Services. As a result they were able to determine how the case could be better managed to deliver optimal outcomes for the patient and the health professionals.”

Scenarios can also be developed to provide learning experiences such as:

- Dealing with alcohol and other drug and mental health presentations in emergency departments
- Counselling sessions or interviews with people with mental health problems and aggressive behaviour
- Obstetric emergencies

- Forensic investigations in an emergency department
- Addressing the alarming trend in violent behavioural cases experienced in hospital emergency departments
- Trauma upskilling for clinicians
- Large scale disaster management by paramedics
- Offering open disclosure to patients who have experienced harm while receiving care.

ECU’s simulation approach allows participants the opportunity to experience situations first hand, to practice and evaluate their skills and to receive feedback that is supportive.

“In particular,” Professor Rudd says, “this simulation environment captures many of the skills that are related to safe and high quality patient care, but might be poorly addressed by traditional learning and teaching. Our students tell me that our world-class facilities and simulation make all the difference to their levels of competence and confidence. Our industry partners agree that the results speak for themselves.”

“Evaluations of this scenario-based learning approach are consistently showing that participants regard the method as a learning tool sufficiently effective to prevent recurrence of a negative event.”



YOUNG PEOPLE’S HEALTH USING AN ANTI-BULLY PERSPECTIVE

How did it come about that a worldwide facility for sharing research and information inadvertently provided teenagers with the technology for bullying one another? Cyber-bullying, too new to have yet revealed its long term consequences, daily makes the lives of a significant proportion of the world’s teenagers miserable and fearful.

“About 25 percent of Australian children report being bullied in one way or another every few weeks or more often,” says Professor Donna Cross, “while another 10 percent report that they have bullied others at the same level of intensity.”

Professor Cross, Professor of Child and Adolescent Health, is an internationally-recognised expert on childhood and adolescent bullying. Since bullying is a significant predictor of future physical, psychological and academic problems, the proportion of affected children alone is a considerable social problem. What has changed in recent years is the emergence of cyber-bullying, where the anonymity of the person bullying can lead to paranoia for the victim.

A further complication is the silence surrounding the event. “Most cyber-bullying happens at home, where parents aren’t aware of what is going on via texting or through places young people gather on the Internet such as forums,” Professor Cross says. “Approximately one half of adolescents who are bullied tell us through surveys that when they tell an adult, the bullying stays the same or gets worse.”

The humiliation of cyber-bullying is not only widespread, with potentially huge numbers of kids being invited to view a photo or video of the event – sometimes staged – but permanent nonetheless. Adolescents usually know better than most that nothing ever really disappears from the Internet, and that even as an adult compromising or humiliating photographs will still be floating around in cyberspace.



“We think that the cyber-environment creates a more toxic cocktail of harm from bullying than face-to-face bullying, which we already know causes many social, health and academic problems.”

Having developed an effective evidence-based response to the bullying peak in primary schools, with a program that has achieved commercial success and is marketed in Australia, Britain, Singapore, South Africa and New Zealand under the *Friendly Schools and Families* banner, Professor Cross is confident that an equivalent response can be found for the second behavioural peak early in secondary education – at least for the face-to-face bullying. A study addressing this age group has recently been completed, and the resulting *Responsive Schools* program is yielding early positive results.

The good news is that the students themselves are confident that they are in the best position to fix this problem, so long as they have some support, expert guidance and authority.

“We have set up a student reference group of over 200 young people with whom we meet face-to-face, correspond with electronically and share information through a (high security) website,” says Professor Cross. “They want material to use in discussion with teachers and parents, particularly to discourage the many parents who believe the solution to cyber-bullying is to remove their children’s access to the technology.”

Following two years of highly targeted formative research with students and their teachers and parents, Professor Cross was recently funded to conduct a three-year longitudinal study, starting next year, of cyber-bullying intervention in secondary schools, incorporating the students’ ideas.

COMMUNITY-BASED PSYCHOLOGY CLINIC

Like so many good ideas, it began as a problem and evolved into a solution.

In 1999 the School of Psychology and Social Science at ECU was trying to find some space on campus to set up a psychology clinic, where its postgraduate students could gain practical experience in counselling clients. But there wasn't any room.

An unusual solution was proposed – to establish the clinic off-campus in the centre of the City of Joondalup's business district, where it would operate alongside recognised commercial health services. Ten years later, the track record of ECU's Psychological Services Centre has made it an exemplar in adding value to a local community's facilities.

Professor Craig Speelman, as Head of the School, has far-sighted ambitions to maintain the clinic at the leading-edge of practical learning.

"We already offer counselling and psychotherapeutic services to members of the public," he says. "They come to us through referrals from their general practitioners, public health services and hospitals, but the majority are actually self-referrals. Occasionally, when the waiting list shortens, we might even publicise our services in the community newspaper."

Clients present with the full range of needs, such as anxiety, depression, stress and anger management, relationship difficulties, drug or alcohol abuse, accident or trauma counselling, student behaviour, and loss or grief. The clients, averaging 150 a year, are each counselled by a postgraduate student who is undertaking a masters or doctoral degree.

All counselling is video-recorded so that each student can review sessions with one of two professional psychologists, and the material can also be used for teaching. Client confidentiality is strictly maintained, and no material leaves the clinic premises.

"We charge reduced fees that are tailored to client resources," says Professor Speelman. "The maximum is usually \$30 a session, but can be as low as \$10 for an unemployed



person. We post feedback surveys to all clients, and the response shows a very high level of satisfaction."

In 2004 the Centre's director initiated a benchmarking study of university teaching clinics Australia-wide, which led to an annual conference of directors where best practice can be shared and developments reviewed.

Professor Speelman and his professional colleagues are already looking at the next generation of student learning facilities, which will take the Centre into cyberspace. Having already established a track record using video, the logical step is to work with clients who are unable to travel, or who are isolated by their remote locations.

"Psychological services are just as important to people in the country or remote regions," he says. "The Internet, and the prospect of a national high-speed network that will support quality video transmission, will make us accessible to almost any location."

For the 20 to 25 students training each year, the Joondalup Centre is a highly regarded learning centre. The feedback from professional mentors in later years has given clear evidence of the value of their first clinical experience.

"They love our students," Professor Speelman says, "so much so that many of them are offered jobs before they've finished their course."

"There has been a huge growth in demand for qualified clinical psychologists. Our graduates are finding it easy to get jobs throughout Australia."

"We charge reduced fees that are tailored to client resources"

HELPING PEOPLE RECOVER FROM INJURY QUICKLY USING ECU VARIO HEALTH AND WELLNESS CLINIC

With the economic cost of road crashes in Australia exceeding 3.5 percent of Gross Domestic Product, rehabilitation programs for injured motorists, cyclists and pedestrians is a major business. Research into the cost-effective return of rehabilitated individuals to the community calls for the particular properties of a facility like the Vario Health and Wellness Clinic at ECU.

"We offer a fully-integrated service for accident victims, including those with workplace injuries," says Professor Rob Newton, Foundation Professor of Exercise and Sports Science at ECU.

"After assessment a program designed specifically for the individual is presented to the insurer, and in most cases is approved without change."

"The first intervention is by physiotherapists who deal with the acute aspects of the injury, often using specialised electro-therapies, for 6 to 12 sessions. The client is then passed to exercise physiologists who develop a set of exercises that take account of the injury and the client's fitness level. In some cases we also have to allow for an

inability to come regularly to our Joondalup Campus, and so exercises are designed that can be done in the home, with equipment from our lending stock."

Professor Newton stresses the need for integrated psychological help as part of a client's program. While most are highly motivated in the early stages, since their treatment is generally fully funded, there can be a reduced incentive once regular visits to the Clinic cease.

"We need to know the reasons for this, and they can be quite complex," Professor Newton says. "For example, while a psychologist can usually determine if a reported problem such as lower back pain is being exaggerated, we have to find out what the underlying cause is. It's not unusual to find external factors, such as workplace bullying, are causing over-reporting of pain or a reluctance to complete the rehabilitation and return to work."

What many traumatic injury clients don't realise, until they've worked with the Vario team, is that a significant and lasting change has been imposed onto their musculoskeletal system. A long term professionally designed exercise regime is vital to continuing wellness. "If you've had an accident, and you stop your exercises, a lot of your injury problems will quickly return," Professor Newton says.



A motorised wheelchair is not much use to a person who is severely disabled and who has a vision impairment that makes it hard to see obstacles, whose cognitive abilities impair problem solving, or perhaps is physically unable to manage the fine motor controls needed to follow a course. But leading-edge assistive technology has now delivered the Smart Wheelchair, and ECU is the only teaching institution in WA that has one.

Manufactured in the UK, this chair is essentially a motorised platform onto which the user's wheelchair is fixed. It can perform a variety of functions, such as sensing an obstacle, backing off and turning to avoid an obstacle, or using an infra-red track sensor to follow a reflective tape laid through tight spaces such as doorways. It can be driven in a variety of ways, from toggle switches to a laptop computer.

Occupational therapy professionals work hard to keep up with technology, particularly mobility aids that use computer chips, since Moore's famous law promises a doubling in processing power every 18 months. Researchers claim that in consequence, every two years a new wheelchair is developed that is twice as smart as the previous generation, and that the trend is towards lightweight, wearable, intelligent "exoskeletons" or computers operated by thought. Occupational therapy at ECU is committed to keeping up with these developments in technology and how they can enable greater independence for people with disabilities.

PUBLIC MOBILITY THROUGH OCCUPATIONAL THERAPY

Much is made of the problems and opportunities inherent in the Baby Boomer generation's transition to retirement, but almost inevitably the discussion centres on people who have had decades of employment, opportunity and good health. Who ever thinks that people with disabilities also must deal with retirement?

But with one person in five in Western Australia having some degree of disability, it's an important question.

A small research project at ECU has studied the aspirations of people who have worked in supported employment, and who are planning their retirement. Much to the dismay of Associate Professor Jeannine Millsteed, the dominant expectation is the health-threatening trio of more time to sleep, more time to eat and more time to watch television.

"As a result, we're now looking at how we can work with supporting agencies to develop some lifestyle programs," she says.

The response is typical of the Occupational Therapy program that Associate Professor Millsteed heads in the School of Exercise, Biomedical and Health Sciences. Occupational therapy's vision is to contribute to healthier and more sustainable communities, particularly through a teaching focus on assistive technology. In adopting this emphasis the new course – its first students will graduate this year – has stepped ahead of the more traditional occupational therapy teaching regimes.

"Many people don't know what resources are available in the community. We're not just talking about people with long term disabilities, but equally people who might have lost mobility with age, or perhaps suffer declining peripheral vision, and who are facing their annual driving test past the age of 75," Associate Professor Millsteed says.

"It's extremely important for people to be able to keep doing the things they enjoy doing, because it helps maintain their health and their place in the community."

Even for those who have resisted the easy path of becoming increasingly isolated, advances in technology are opening up opportunities for physical and mental engagement that would not have been possible before. An occupational therapy graduate with a strong background in assistive technology will expect to approach each case by finding out what the client wants to do, and then exploring ways to help make that happen.

"We've had children come into our centre and use the Smart Wheelchair (See Smart Wheelchair Article for more information), and subsequently heard from their parents that for at least a week afterwards they've been much more alert and interested. This is simply a result of them finding out something about what they could do that they never knew before," Associate Professor Millsteed says.

"We should never ever under-estimate what people can do. In the past there has been a tendency to pigeon-hole people with disabilities, and a view that they can't look after themselves. But most people, with some teaching and some technology, can do a lot more for themselves."

"In terms of health promotion and injury prevention, Australia is at the forefront of occupational therapy."



INTER-PROFESSIONAL LEARNING

Acute and chronic health problems that require multiple health professionals to achieve a solution, rather than an isolated treatment regime, inevitably complicate assessment, diagnosis, treatment and monitoring.

This cascade effect draws in a wider range of professional health services and leads, in turn, to a growing demand for inter-professional learning (IPL) and inter-professional practice (IPP).

"The current drive towards implementing IPL within higher education and healthcare facilities is supported by the Australian Government, and is consistent with international trends in health workforce development and education," says Professor Cobie Rudd, Associate Dean – Health at Edith Cowan University.

"Canada, New Zealand, the United Kingdom and the United States all have a high level of commitment from government to IPL, and they promote and encourage IPP.

"The National Health and Hospitals Reform Commission has expressed concern that the education of our health workforce still tends to reinforce professional boundaries, and it notes growing support to strengthen and redesign how we train our health professionals.

"At ECU we have the resources, and we are developing a University-based IPL and IPP Clinic to better manage chronic diseases," Professor Rudd says.

The scale of the challenge is staggering. Studies in Australia have reported up to 77 percent of the population suffers at least one long term condition, while the treatment of chronic illnesses consumes some 70 percent of the health budget.

Professor Rudd says that early discussion with key stakeholders revealed that services for clients with complex chronic diseases were not always well managed in hospital environments due to the acute care demand on hospital resources. ECU's model proposes that the University Clinic will focus on the provision of care for clients with

chronic and complex diseases, resulting in IPP that is centred on the patients and their carers.

Other benefits arising from the ECU Disease Management Clinic include an ability to use the facility for inter-professional clinical placements across all health disciplines at the University, and recruitment of clients to help with the clinical training of health students.

"For instance, ECU is doing innovative work in the area of Standardised Patient Equivalent Programs for health simulation," Professor Rudd says. "Through these programs, trained community members play the roles of patients, carers, health setting visitors and in turn, can engage in student education. For the community members this often means 'meaningful work' through their role in training the future health workforce. This can result in a sense of belonging and identity, for instance, for an older person with impaired mobility or someone who has recently been bereaved."

The Inter-Professional Learning and University Clinic (Disease Management Unit) will complement the current onsite services of ECU's Vario Health and Wellness Clinic as a holistic, multidisciplinary, preventative care centre, serving the wider community from the Joondalup Campus.

It will encourage better continuity and coordinated care for people with more complex health problems – including people with chronic diseases and disabilities.

Additionally, it will aim to promote better use of specialists in the community, recognising the central role of specialists in the shared management of patients with complex and chronic health needs.

"This initiative will advance ECU's objectives to engage and serve our communities, provide a supportive and stimulating learning community, and develop the focus, depth and impact of our research," Professor Rudd says.



Inter-professional learning has gradually evolved as a concept since the late 1960s, and is today identified as a key area for future educational reform by the Commonwealth Government and the State Government.

The introduction of IPL across health disciplines fosters the necessary knowledge, skills and attitudes required for 'work ready' ECU graduates. IPL is recognised by our industry partners as adding value to the learning experience for our students because it can result in:

- Common recognition and understanding of patient-focused goals
- Awareness of inter-professional boundaries and role responsibility
- Effective communication reducing error potential
- Early identification and resolution of 'team tension'
- Coordinated assessment, diagnosis, treatment and evaluation of quality healthcare
- Modelling of effective leadership skills
- More efficient use of time at team meetings/case reviews
- Improved patient outcomes.

A positive outcome of IPL and simulated learning is that the professional relationship between disciplines is established early, and counteracts the traditional trend of discipline-specific, stereotypical attitudes and professional silo-behaviours being developed.

IPL is a fast emerging initiative, being embraced at an international level in higher education. ECU is keeping pace with this trend and offers health discipline students responsive curricula.

ALZHEIMER'S AND AGEING RESEARCH

The early diagnosis of Alzheimer's disease is one of the holy grails of medical science. That it has been achieved at all is a huge step forward, but to develop a low-cost test – as simple as a blood test – would be a crowning achievement for one of Western Australia's most highly-regarded research teams.

Professor Ralph Martins, Foundation Chair of Ageing and Alzheimer's at Edith Cowan University, is confident that his team is close to this breakthrough. One of its key research thrusts is to find a panel of blood markers that can be linked, through the hard evidence of a positive PET brain scan, to early amyloidosis.

"Early detection is the most important way forward for Alzheimer's disease," he says. "We have measured two proteins in blood, beta-amyloid and apoE, both of which play a significant role in developing a diagnostic test for Alzheimer's. I anticipate that we need to add three more blood markers to make up a discrete diagnostic panel for early diagnosis of this devastating disease. Currently we are in the process of screening a panel of candidate blood biomarkers to identify those that will add value towards developing the blood test."

Professor Martins has built up a team of some 40 researchers, and finds his association with ECU provides a wide range of specialist skills through academic collaborators, as well as many through PhD students such as molecular biologists, psychologists and exercise physiologists. "The breadth of our multi-disciplinary team is very interesting, and demonstrates just how varied the knowledge base must be to tackle this complex disorder," he says. "As Director of the WA Centre of Excellence for Alzheimer's Disease Research and Care led from ECU I have been able to recruit a substantial number of postgraduate students, and outstanding postdoctoral scientists, who have a real passion for medical research."

Exercise is one of the most exciting candidates to help prevent Alzheimer's – both physical and mental exercise. "We are investigating three treatment study arms here at the Alzheimer's Centre," Professor Martins says. "We are looking at the extent to which physical exercise helps reduce risk; separately we are looking at mental exercises using very sophisticated mental stimulation programs; and our third study arm is to combine the two in various ways to determine whether even greater benefits are obtained than from either alone".

Lifestyle intervention also involves diet. Professor Martins and his team have demonstrated that there is strong evidence linking fat intake with increased risk of Alzheimer's disease, with the likely causative factor being an interaction between cholesterol metabolism and the build-up of beta amyloid in the brain.

"If you feed guinea pigs a diet high in fat, within three months you will observe a very high level of beta-amyloid in the brain," he said. "Beta-amyloids, in turn, produce hydrogen peroxide which is a powerful oxidant and thought to be responsible for the oxidative stress observed in the brains of Alzheimer's sufferers."

In 1985 Professor Martins was the first to demonstrate the role of oxidative stress in Alzheimer's disease, and once his research results had gained traction and been widely accepted Alzheimer's quickly became known as the "rusty brain" disease. Downstream of that breakthrough research, the quest for a cocktail of anti-oxidants is proceeding apace.

"In our next stage we are examining a combination of essential nutrients," Professor Martins says. "We know that there are some anti-oxidants that are protective, and we have been funded by the NHMRC to look at a combination of these anti-oxidants that could protect against a deterioration of the brain. The outcomes will be known some time next year, and we will then use that information to inform our human clinical trial.

"We are trying to harness all the knowledge that we've gained about the disease, and to apply that to the community sooner rather than later."

In the background, drug companies are working furiously to try to find a way to "immunise" against Alzheimer's. Preventing the build-up of beta-amyloid, or helping the body to efficiently excrete excess levels, or interrupting the inter-action with other metabolic processes are all lines of research that are being actively investigated.

"The epidemic of Alzheimer's disease that will accompany our ageing population is truly frightening."

Professor Ralph Martins has been named WA's 2010 Australian of the Year. His citation recognises him as a world leader in Alzheimer's disease. His team made the first significant discovery, showing that the beta amyloid protein that coats cells in the brain is the foundation of Alzheimer's disease.

"He has been instrumental in bringing to Perth new technology that makes it possible to determine if a patient has deposits of the toxic beta-amyloid," the citation says. "Professor Martins continues to work to develop an early diagnostic blood test."

SPORTS SCIENCE RESEARCH

At the 2004 Olympic Games Chris Hoy of Great Britain sliced 0.898 of a second off the sea level record for the 1km time trial in men's cycling, to win gold in 1.00.711.

"The kilo" has since been dropped from the Olympics, much to the chagrin of cycling purists. But the question remains: is there a limit to human physical achievement, beyond which there will be no more records other than through improvements in equipment?

Less clearly, a second question arises – could you cycle faster if you'd trained each leg separately?

While that might not seem an obvious question to most people, to Professor Ken Nosaka and his professional colleagues it's one of the possibilities well worth researching.

Professor Nosaka is director of ECU's Centre for Exercise and Sports Science Research (CESSR). Research by 14 academic staff and more than 40 research students covers fields such as biomechanics, exercise physiology, strength and conditioning, physical activity and health, and the psychology of sport and physical activity.

While human physiology and performance have been studied intensively for more than a century, it's still surprising to find that there are many simple questions that have never been answered, such as the reason for muscle soreness.

"Our objective is to improve our understanding of exercise and sport through research," Professor Nosaka says. "Our research extends from basic inquiry such as the mechanisms of muscle hypertrophy, through to the effects of exercise on diseases such as diabetes, Alzheimer's and Parkinson's."

In collaboration with the Australian Institute of Sport, Dr Chris Abbiss at the CESSR has been investigating performance improvement by top cyclists. One-leg training, which involves cyclists exercising each leg individually instead of together, has – for reasons that are not yet clear – resulted in endurance improvements. Likely reasons are changes in blood flow, in enzyme production or efficiency, and in hypertrophy of some muscles that would not improve to the same extent with normal training.

As well as endurance, long distance cyclists need a reserve of energy for the last dash to the finish line. Apart from diet, CESSR researchers have been paying particular attention to cold liquid intake. Body temperature is a key factor in any endurance sport, and a body temperature above 39.5°C results in a rapid fall in performance.

While an athlete's competitors would all experience similar rises in body temperature as an endurance race progressed, a competitor whose core temperature rises more slowly will retain a reserve of energy after others have lost it. Up to a point, drinking a slushie – a liquid suffused with ice crystals – before or during competition can slow the rate of body temperature increase. With winning margins of less than a second, and many variables in the content, volume and temperature of a slushie drink, the research for an optimum combination is lengthy and complex.

The field extends from cycling to other sports likely to be played in the heat, such as long distance running, soccer and football. Some athletes have submitted to a five-minute plunge, fully clothed, into a 14°C to 20°C bath in the mid-point break of their game to see what effect it has on their second-half performance. It comes as no surprise, then, that research aimed at preventing injury has also been investigating muscle tear and muscle cramp.

"The cause of muscle cramp is still a mystery," he says. "We know that it is not caused by temperature change, muscle tiredness, hydration, or various mineral intakes."

The intensity of research in CESSR indicates the rate at which this physiological territory is being explored. Last year it produced more than 80 peer-reviewed papers, the highest for any ECU school.

"Australia is among the world leaders in sports performance studies, especially applied science involving top athletes."



Anyone can investigate one of the enduring mysteries of sports medicine.

On day one, walk up the stairs of your office building to the top floor and then take the lift to the basement. Repeat, until you are weary. It's unlikely that your leg muscles will be sore that day, or the day after.

Next time, walk down the stairs to the basement and then take the lift to the top floor. Repeat until you are weary. It's very likely that your leg muscles will ache, with the soreness probably occurring the next day rather than the same day. Nobody knows why.

Delayed onset muscle soreness is associated with eccentric muscle exercise, which involves muscles lengthening under load, rather than concentric exercise where the muscles shorten under load. The working hypothesis is that micro-injuries to fast twitch muscle fibres and their surrounding tissue result in inflammation, whereas slow twitch fibres are not affected.

The investigation is not merely academic. Prevention of falls in older people, being able to sit down easily, or to come to a halt, all rely on efficient eccentric muscle action. Most of the muscle atrophy arising from ageing involves loss of fast twitch fibres.

It's a set of scales like none you've ever stepped on. It uses dual-energy X-ray absorptiometry (DXA), and if you want one to replace your bathroom scales, you'll need to find upwards of \$250,000.

For that, you will get a triple readout of your body: the amount of muscle mass to within a gram, the amount of fat mass to within a gram (giving you the all-important ratio between the two) and your bone density.

"Australia is suffering an epidemic of metabolic syndrome," says Professor Newton. "That means that an increasing number of people are exhibiting an increase in the ratio of fat to muscle.

The consequences, in terms of health and functionality, put the entire body under strain and can lead to a downwards spiral in physical, social and psychological parameters, particularly in older people."

DXA won't make you better, but it will probably make you want to be better. The state-of-the-art preciseness of its measures allows users to record the very first improvements as a result of exercise, no matter how small they are. A tailored program of fitness exercise will typically add a kilo of muscle mass within 12 weeks, with a commensurate reduction in fat mass and a reduced risk of osteoporosis.



STAYING YOUNG WHILE YOU GROW OLDER WITH ECU'S LIVING LONGER LIVING STRONGER PROGRAM

In every one of the 10 trillion living cells of every one of the 6.8 billion people on earth, the human genome is calling out for unending vigorous exercise to satisfy the body's 45,000 year-old blueprint. At ECU's Vario Health Institute, the call is heeded.

Professor Rob Newton is fond of quoting a famous biomedical scientist who concluded that "with the possible exception of diet modification, we know of no single intervention with greater promise than physical exercise to reduce the risk of all chronic diseases simultaneously." Unlike Booth *et al*, Vario's programs make no exceptions and dietetics is just as important as anabolic exercise.

As ECU's Foundation Professor of Exercise and Sports Science, Rob Newton and his team at Vario have built a wellness clinic that predicts the future of super clinics in Australia, with programs that include general fitness designed for seniors, cancer survivors, diabetes sufferers, Parkinson's disease patients and for overweight and obese children.

"Living Longer Living Stronger," the program designed for seniors, is typical of the multi-disciplinary format. "We have a team approach to health management," Professor Newton says. "The minimum three inputs are psychology, exercise physiology and dietetics. You can't produce major changes in a person's behaviour unless you apply all three sciences. People need first to understand why they are losing fitness or gaining weight, then what they can do about it through exercise, and finally how they can maintain and support that change through diet."

The Vario Health and Wellness Clinic works to maintain newly-regained health through diet. Dieticians take clients shopping to ensure they understand the food values of what they buy, and run courses in a fully-functioning kitchen to help overcome the tendency of older people to stop cooking, or to teach people such as widowers who have never cooked before how to ensure their nutritional needs are met.

On average some 1,800 clients use the on-campus Health and Wellness Clinic each month, with more recent figures past 2,000 a month. Clients typically come twice a week for exercise that largely involves resistance training – lifting weights in a "6RM" to "12RM" cycle. This means that the participant must be able to lift a weight at least six times, but cannot get past 10 or 12 repetitions. Achieve the limit, and the weight is increased. It sounds like a recipe for torture, but the program is so popular that the Clinic has had to cap numbers.

"That final, almost-impossible lift is what gives you a testosterone surge," Professor Newton says. "That endocrinological response has a significant effect on building muscle mass, reducing fat, increasing bone density and even improving brain function. Experimental studies have shown that this kind of exercise can delay the onset of Alzheimer's disease as well as improve psychological wellbeing."

The average age of clients is 67, though there are many in their eighties. This is a critical time – at 80 years of age about 60 percent of the Australian population has sarcopenia, or loss of muscle mass to a clinically significant extent. Loss of mobility and the risk of falls are two consequences. Walking the dog or playing golf are low-intensity exercises that will do little to remedy the problem.

"Because we have a well-controlled environment, with trained exercise physiologists and back-up medical facilities, we take them to fairly high intensities. During aerobic exercises we get them up into a decent training range, with a heart rate of 60 to 90 percent of their maximum," Professor Newton says.

"We've had some incredible increases in strength. We had one fellow in his seventies, unbelievably strong, lifting hundreds of kilos in leg presses. He was as strong as any 20-year old student running around this campus. It's a great way to stave off chronic disease."

"Loss of muscle mass is one of the main reasons why people lose their independence."

BETTER YOUR HEALTH THROUGH BEHAVIOURAL CHANGE

Who hasn't wished, at least once, that they had a time machine? Something that would allow you to pop into the future and see what's ahead. Dr Paul Chang has a time machine, and he knows how to use it to fast-forward your face.

Dr Chang is a senior lecturer at ECU's School of Psychology and Social Science, with research interests in cognitive psychology, face recognition and cerebral asymmetry. His mission is to find effective ways to change the behaviour of people who increase their health risk through practices such as sun or noise exposure, eating disorders and smoking.

"Psychologists are very good at describing and explaining behaviour," he says. "We're not so good at finding ways to change behaviour."

A worrying feature of skin damage arising from exposure to the sun is that the damage often happens in childhood, but the results aren't seen until later in life. To change behaviours, Dr Chang has to work with parents and convince them that their children must be protected. To do this, he uses an ultra-violet camera.

This high-tech camera with a UV filter uses a flash that allows UV light to penetrate below the skin's surface, and capture irregularities in the distribution of melanin. These irregularities have already resulted from UV damage, and will come to the surface of the skin years later. Typically, over-exposure will result in prematurely aged skin that exhibits wrinkles, a leathery texture, folding, sagging, warty growths called keratoses, freckling and yellowing.

A software program captures the damage from below the skin, and evolves the image to show what a person's face will look like after years have passed.

"The main reason people tan is because they believe it makes them look better. These pictures disabuse them of that idea," Dr Chang says. "Our qualitative studies demonstrate that if you show them these photo-ageing pictures, they are much more inclined to take on board the message of sun protection."

In the most recent study, parents involved in the education phase were followed up four to five weeks later with a survey. Some parents had been given information on sun damage, and a second group had the same information plus the photo-ageing images. Those who were shocked by the images maintained stronger protection intentions, but in both groups the message had a much greater effect during summer months.

"Fear is the best driver for behavioural change," Dr Chang says. "When they see these photos they're shocked, they're horrified and they want to change."

"Parents need to understand that if a child has half a dozen severe sunburn episodes before the age of 18, it will increase the chance of melanoma by 40 to 50 percent."

"People are much more likely to take action if they're frightened for themselves."



Hearing loss is a looming epidemic. Over the next 40 years, projections indicate that hearing loss among Australian will jump 50 percent, from one in six to one in four.

The driving force is the amount of noise we experience in our environment, both self-inflicted and passively received. The onset of impaired hearing function can be both sudden and irreversible.

"You might walk out of a rock concert or a noisy industrial workplace with your ears ringing, and after a while they return to normal. But one day, the ringing might stay, and from then on you have tinnitus in addition to a hearing loss," Dr Chang says.

"Exposure to loud noise on a regular basis will almost inevitably lead to impaired hearing. Fortunately we can simulate hearing loss and tinnitus, and when people realise that this could be their 24/7 future, they start to understand the risk."

Dr Chang and his team are working on ways to encourage people to take hearing conservation measures. Pilot testing of a behavioural change tool is now being followed up by a larger-scale study, to determine efficient change agents.

ENVIRONMENTAL POLLUTANTS AND THE HEALTH OF UNBORN BABIES

In December 2006, when thousands of birds died in and around the picturesque coastal town of Denmark, a lead exporting enterprise was immediately suspected. Subsequent medical analysis confirmed widespread elevation of lead in the bloodstreams of the town's children, and reignited community concerns about the effects on child health of persistent toxic substances.

Children are uniquely vulnerable to toxic contaminants because of the way in which many compounds interfere with normal growth. The most vulnerable time is during those nine months when the foetal body is forming, but – surprisingly – much has yet to be learned about the subtle effects of high concentrations of toxic contaminants in maternal blood.

ECU is leading a collaborative study, the first of its kind in Australia, called the Maternal Persistent Toxic Substances Exposure Study. "The objectives of the study," says Dr Andrea Hinwood, "are to measure the levels of persistent toxic substances in pregnant women, to identify sources of any elevated concentrations, and to review the risk of adverse birth outcomes." Dr Hinwood, who is a senior lecturer in environmental management at ECU, heads up the collaborative team that includes The Arctic Assessment and Monitoring Program, The University of WA, the Institute of Child Health Research and the National Measurement Institute.

The study is in the process of recruiting 160 pregnant women who will be asked to provide blood, urine, drinking water, soil and dust samples, keep diaries covering two separate weeks and fill out a questionnaire. "This is the first time anything like this has been done in Australia, with testing on an

individual basis," Dr Hinwood says. "We also look for birth outcomes, such as birth weight, head circumference, male-female ratios and abnormalities."

Data analyses involves correlating these outcomes with the exposures that the women have recorded, such as the amount of fish they eat, or how many computers there are in the house, and with persistent toxic substance levels in their blood.

"The dust in your home, as well as your diet, can contribute to your exposure," says Dr Hinwood. "Part of the fascination with a study like this is that we don't know what we're going to get, but once we discover strong correlations in the results we can do something about it. In one recent study for a different project, we found high concentrations of arsenic in products used in natural therapies, because they were derived from seaweeds."

Improving the prospects of healthy birth characteristics in children, and their continuing healthy development in a world made precarious by a continuing influx of new compounds, is the end objective. As yet there is no funding for a follow-on survey as the children start to grow, but the results of the Maternal Persistent Toxic Substance Exposure Study may well make that an epidemiological imperative.

"The vast majority of persistent pollutants encountered by a pregnant mother pass through the placenta to the unborn baby."

The global economy has brought with it an ever-changing kaleidoscope of pollutants that, like viruses, can penetrate our defences before we know what they might do to us. Who among Australia's consumers has even heard of brominated flame retardants, let alone realised that they can be incorporated into the foam inside our pillows, or the plastic shells of our computers and DVD cases.

Australia doesn't produce any of these flame retardants. Some of them have been banned because of demonstrated persistent properties, yet the few studies done to date have registered rising levels in children's blood samples.

The Nordic countries have led the world in recognising the need to study the health effects of such compounds, particularly because of their diet being high in ocean produce. The Arctic Assessment and Monitoring Program started in 1991 and has become a highly successful regional blood monitoring initiative. Its participation in the WA project provides a reference point and methodology that assures robust design and implementation.

"The beauty of our study is that it fits into this international program," says Dr Hinwood. "Our work will set an Australian benchmark, and researchers will be able to revisit our results in coming decades to measure and evaluate any changes."





While Australia's health system is the envy of many other countries, policy development is a continuing need. In particular it should not fall behind research outcomes simply through an acceptance of standard practice.

One distortion, relevant to palliative care, lies in hospital funding. Patients classified as requiring active treatment trigger higher funding than those moved across the boundary into palliative care.

In consequence, there is a financial incentive to continue active treatment beyond the point where it will affect the outcome, and delay a transfer to a palliative environment.

Besides policy evolution, research can influence the incentive. Health professionals, once they are able to recognise the quality assurance underlying a palliative regime, will more efficiently determine the point of transference from treatment to care.

QUALITY OF LIFE AT THE END OF LIFE

Without teeth, without eyes, without taste, without everything. Shakespeare's seventh age of man is a concerning prospect for all mortals. Professor Anne Wilkinson and her palliative care research team are determined to banish "mere oblivion" and build an end-of-life prescription that ensures dignity within a social structure.

Professor Wilkinson holds the Cancer Council of Western Australia Chair in Palliative and Support Care at Edith Cowan University. The current focus of her research is to validate, in the Australian environment, the issues that are relevant to the quality of life at the end of life – healthcare, economic needs and family considerations.

"The key question is this: what is important to patients, and their families, when a person is facing the last phase of life?" Professor Wilkinson says.

While there are many differences between people around the world – language, religion, custom, ethnicity, experience and so on – within particular societies there are fewer differences, and it becomes possible to adopt and adapt a standard instrument that is evidence-based and can be codified for particular population groups.

"Work started 10 or 15 years ago, looking at and asking families and patients who were in this circumstance what the salient issues were that they would like to have addressed. There were 20 or 30 research groups throughout the world, but particularly in Western societies, looking at these issues," she says.

"Most patients, including those in the last weeks of their lives, are willing to be a research subject if they feel that what they are contributing will make a difference to people like them."

The research found a significant number of common responses to questions about the needs of patients, of their medical and palliative care providers, and of their families.

Being treated with dignity, being seen as a whole person, being provided with relevant and understandable information about their prognosis, and having informed choices of treatments, are among the core requirements of people at the end of life.

Hoping to die at home, with their family accessible, is not only near the top of the list of needs – it has considerable implications for the provision of medical care. Clinicians must understand and accommodate what their patients want.

That understanding is derived from the application of an instrument comprising some 30 items. The American version of this instrument is being used with an Australian cohort, to test for universality of palliative needs.

Technical questions that arise demand rigorous research. Earlier instruments were based largely on cancer patients, primarily because the inevitability of a final outcome was often preceded by a long period of treatment, including extensive hospitalisation and, finally, a phase after which treatment had been withdrawn.

Methodological issues assume importance when the instrument is migrated to other illnesses, such as Alzheimer's disease with its longer medical trajectory, or cardio-vascular and other organ failure diseases with typically shorter trajectories.

At this stage Professor Wilkinson's team is mid-way through data collection. A sample of 70 patients, split equally between Royal Perth Hospital and Sir Charles Gairdner Hospital, are all people who are aware that their illnesses are terminal. Results are due a year from now.

Professor Wilkinson is working with Associate Professor Anne Williams, Dr Douglas Bridge (palliative care physician, Royal Perth Hospital) and Dr Anil Tandon (palliative care physician, Sir Charles Gairdner Hospital) to complete the project.

"Our long term goal is to establish a baseline to show where we are in Australia in terms of dealing with the different dying trajectories for patient populations. It's not that everyone has to have an individual silver service delivery package, but there are ways you can address this in a population-based approach that makes sense to the needs of the disease, not the needs of the payment source or of the medical care system," Professor Wilkinson says.



EMPLOYABILITY OF ECU'S NURSING GRADUATES

Responding to the imperative of the link between nurses' education and improved patient outcomes, the School of Nursing, Midwifery and Postgraduate Medicine at Edith Cowan University is set apart by innovative facilities and curricula in nursing education.

"Better educated nurses lead to better patient safety and health outcomes," says Professor Di Twigg, Head of School. "They are more able to detect when problems start to arise, and to organise for those problems to be properly addressed. A landmark study found that a 10 percent increase in degree-educated nurses was associated with a 5 percent decrease in the chance of patients dying within 30 days of admission, and a 5 percent decrease in failure to rescue a patient with serious complications."

ECU is making a difference in nursing education through using the University's world-class facilities.

"When our students go into a clinical environment, we find they suffer lower levels of anxiety because they have already trained to handle the sorts of challenges they encounter," Professor Twigg says. "This confidence, in turn, allows them to focus on the learning opportunity and to get more out of the experience than they otherwise would."

Apart from a recent dip due to the economic downturn ECU nursing graduates typically achieve 100 percent employment, and Professor Twigg expects that demand will quickly recover as the WA economy powers ahead. The longer-term trend worldwide promises a lifetime career for students choosing nursing as their profession.

"World Health Organisation statistics show that 57 countries worldwide are short of 2.3 million nurses, midwives and doctors, with an increase of 70 percent required to fill the gap," she says. "The median age of the nursing workforce is increasing faster than that of the general population, with about a third of Australia's nurses already over 50 years of age."

As the population ages and as chronic disease rates increase the need for nurses rises. At the same time, the body of knowledge continues to grow. Taken together, these factors have triggered a rapid increase in the need for specialist nursing. In its response, ECU has led the way by introducing a masters degree in Clinical Nursing that offers graduate registered nurses some 17 different specialist clinical streams that, on completion, will qualify them with a Masters in Clinical Nursing. There is flexibility within the masters program to choose a nurse practitioner pathway and be eligible for registration as a Nurse practitioner.

"Our masters course is available online/off-campus, because the students who enrol already work in the specialist areas. It's more about the acquisition of specialist knowledge and the specific problem solving required for each specialty," Professor Twigg says. "Apart from the core subjects, we bring in specialist clinicians as part-time lecturers to ensure our teaching reflects the latest developments in practice."

She points out that in the western world, medicine and health services are becoming more and more specialised. Each specialty requires not only its own specialist medical body of knowledge, but also the specialist nursing body of knowledge and the ability to properly manage the nursing care requirements of patients.

Innovation continues in the undergraduate course. "We offer students in the second year of their Registered Nurse program two online/off-campus elective modules and face-to-face weekly tutorials that, on completion, qualify them as enrolled nurses. In addition we provide a two week clinical placement to consolidate the skills of the enrolled nurse, a unique initiative. This means that an undergraduate can be employed as an enrolled nurse while completing the remainder of the three-year degree course," Professor Twigg says.

The move is very popular with hospitals and health services, which see the chance to recruit a student as an enrolled nurse with the potential to retain that person as a registered nurse on graduation. Some hospitals specifically make positions available for ECU students taking this option.

"Our students are well-trained, confident and keenly sought," Professor Twigg says. "We ensure that upon graduation, they are industry-ready."

"The higher education of nurses is becoming increasingly important to the health outcomes of patients."

HEALTH PARTNERSHIPS THAT PROVIDE INSIGHT

Building partnerships between universities and their communities has become increasingly well defined, in the sense of shared destinies, over the past decade. Edith Cowan University is one of the catalysts of this process, involved internationally at the leading-edge of community engagement and service learning processes.

“Developing partnerships between ECU and stakeholders across health sectors and settings is a dynamic characteristic of our focus on meaningful and substantial engagement with the communities we serve,” says Professor Cobie Rudd, Associate Dean – Health.

“Whether this is about linking future employers with our students – often as early as Year 10 – or about linking external parties to our internal research capabilities, at ECU we set out to align with community trends and employer requirements for capabilities, knowledge and skills.”

ECU’s message has universal coverage. In August 2008, following a global ballot, Professor Rudd was elected to the International Board of Directors for the International Association for Research on Service-Learning and Community Engagement. She is the first Australian to have been elected to this Board and fills the role of an international representative.

“Inevitably, partnerships and collaborations evolve,” Professor Rudd says. “So participants must share a commitment to continually evaluate and improve the relationship, and to share knowledge, as well as participating in joint initiatives.

“Setting out to make a difference through health partnerships means focusing on how to better facilitate authentic student-community engagement. This goes beyond the development and delivery of community-responsive curricula, new competency measures and graduate attributes. It’s about building linkages between a diverse group of students with their surrounding communities, and ensuring there are events along the student journey that ‘touched their hearts and souls’.”

Close to home, the Joondalup Health Campus (JHC) is undergoing massive expansion. By 2013 it will have a combined total of 536 public and private beds, making it one of the biggest hospitals in the State. It has worked with ECU to trial a number of highly successful innovations.

These include a longitudinal clinical partnership program set up to offer undergraduate nursing students the opportunity to undertake all their practical placements in one setting.

Additionally, through a Faculty Practice Program (a joint initiative between ECU and JHC), ECU academic staff are supported to maintain clinical currency. JHC and ECU jointly published the findings of their Faculty Practice Program in a peer-reviewed journal in late 2008 – showing that the personal and professional gains were far-reaching. The independent evaluation demonstrated immediate dividends of enhanced self-esteem, classroom practices and credibility with students by Faculty participants.

“ECU and the JHC now see this partnership as indispensable,” Professor Rudd says. “Neither of us could fully achieve our objectives without mutual engagement, and to some extent each partner measures its

success in terms of its partner’s success. As the JHC grows we like to think that we will match their expansion, aligning our course profile and graduate numbers so that we produce the health workforce they need, when they need it.”

A mix of programs in health incorporate integrated work-based learning, early career development programs that use experiential learning, and partnership programs for clinical development.

“Effective engagement at a number of points in career development requires planning. When we work with secondary schools and students we have to assess a very different set of influences compared with working with adults,” Professor Rudd says.

“Universities undertaking genuine engagement in order to achieve true mutuality and regional solidarity will need to set high standards of excellence for engagement activities that are rigorously evaluated,” she says. “As well, they need to accept that through partnerships they are opening themselves up to the possibility of significant change.”

“It’s a true partnership if you can’t make it to where you want to go without them.”

Universities often struggle to attract, engage and retain Aboriginal students.

It is widely accepted by health service professionals that improvement in the health profile of Aboriginal and Torres Strait Islander communities in Australia depends on greater Indigenous involvement.

For several years, successful work experience programs in partnership with, and funded by, the Department of Health Western Australia have been run for Year 10 students. The Hands on Training (HoT) program provides five-day placements that promote the diversity of careers in nursing and midwifery.

A culturally secure program – the “HoT ‘n’ Deadly Nursing and Paramedics @ ECU!” – will be launched in 2010 with the aim of recruiting Indigenous students into paramedicine and nursing, and to facilitate staff and student engagement with the Indigenous community.

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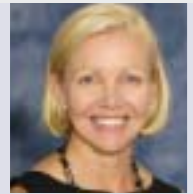
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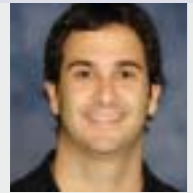
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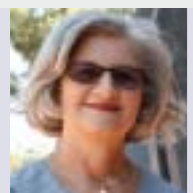
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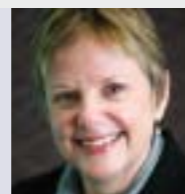
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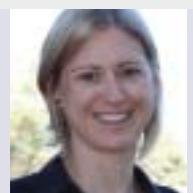
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Research interests: Prehospital education, simulation, prehospital clinical practice, prehospital emergency and disaster management



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Research interests: Melanoma detection and prognosis, melanoma stem cell detection, raising awareness of melanoma in the community