CONROD
Centre of National Research on Disability and Rehabilitation Medicine
Annual Report 1999

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Statement, Director of CONROD

The Centre of National Research on Disability and Rehabilitation Medicine (CONROD), has completed two full years of operation, since its inauguration in May 1997. Originating from a tripartite agreement between the Motor Accident Insurance Commission (MAIC), The University of Queensland (UQ), and the Queensland Institute of Medical Research (QIMR), CONROD was initially led by Associate Professor Rod McClure, who was Acting Director of the Centre, until my arrival from Canada in March 1999. Professor McClure is to be congratulated for his dedication, tenacity and service to CONROD in those early days, and it is a particular pleasure for the Centre that he has accepted the position of Deputy Director. We have also been fortunate in our appointment of Ms. Chesne McGrath who is the Centre's new secretary. Several new research staff have also been appointed to positions within CONROD and within the Queensland Trauma Registry. During the last year CONROD has been served internally by Adjunct Professor Graham Hughes. We have received encouragement and support from Professor Brooks, Executive Dean Health Sciences. As in past years the Centre has had close liaison with Ms Lesley Anderson, MAIC Insurance Commissioner, and Mr Mike Hancock, Principal Advisor Rehabilitation MAIC.

Two major organisational developments occurred within the CONROD organisation in 1999. Firstly, we developed a conceptual framework for the future development of the Centre. CONROD aspires to achieve national and international reputation as a Centre of Excellence in the area of rehabilitation science. Developed as a virtual centre, CONROD will be composed of five levels: Level 1 Motor vehicle accident (MVA) related trauma; Level 2 Workplace related trauma; Level 3 Non-MVA, Non-workplace related trauma; Level 4 Atraumatic musculoskeletal disability; Level 5 Atraumatic neurological disability; Level 6 Miscellaneous forms of disability. Within each of these levels, CONROD in collaboration with its strategic partners will identify the most important clinical problems which are considered technologically soluble, the so-called "Medawar Zone" of health care research. The development plan was discussed by the Strategic Development Committee of CONROD, prior to its submission to, and unanimous approval by the CONROD Board of Management. That plan has subsequently been discussed with MAIC, Queensland Health, and Queensland Treasury and a formal submission for funding Level 1 is currently pending. The plan calls for the appointment of additional staff in epidemiology, biostatistics, computer science, information technology, management, health economics and social science, to support five key initiatives. Those initiatives are the Queensland Trauma Registry, Health Outcomes Assessment, Informatics, Health Economics and Social Science.

The second major development was the formal re-alignment of the organisational structure of the "CONROD wheel", which places CONROD at the centre of the CONROD network, and redefines funding flow, reporting responsibilities and organisational relationships for the programmes, projects, fellowships and university chairs that MAIC currently supports. This realignment brings added responsibility to CONROD which is now juxtaposed between the MAIC and the recipients of the Commission's investment in health care related activities. However it also creates unparalleled opportunities for CONROD to further develop the network around the Centre's strategic goals, to maximise the synergies that exist within the exceptionally talented members of the network, and to leverage using its resource base.
In addition to these organisational achievements, Centre staff were successful in a number of endeavours. In particular, Professor McClure was instrumental in organising a major international injury conference, which was extremely well attended and received. The conference was opened by Ms Lesley Anderson, MAIC Insurance Commissioner, and closed by the Hon Anna Bligh, Minister for Families, Youth and Community Care and Minister for Disability Services, and also provided an opportunity for CONROD to bring its International Advisory Committee to Brisbane for consultation, and strategic planning purposes. Later in the year Professor McClure was successful in securing National Health and Medical Research Council funding for a project investigating injury in children, and acquiring further support for the Queensland Trauma Registry. Since leaving the University of Western Ontario in London, Canada, last February, I have found opportunity to meet with most members of the CONROD network. Their activities and many achievements are chronicled in this report. New funding has been secured, presentations made at prestigious conferences around the world, and papers published in peer review journals. Most importantly we are

learning more about those we seek to serve; people with disabilities and their families. In that regard I was particularly pleased to be appointed to the Disability Council of Queensland, which is a new and exciting initiative of Ms Anna Bligh, the Minister for Disability Services. The year has also provided the opportunity to develop close association with Queensland Treasury, Queensland Health and the Department of Employment, Training and Industrial Relations. I have been greatly impressed by the encouragement expressed and the level of interest shown by those Departments from a whole of government perspective for the mission, objectives and activities of CONROD. Through a combination of research and education, CONROD aspires to improve quality of care, quality of life and clinical, social and vocational outcomes. Many within the network provide direct patient services, a responsibility shared by various health agencies. CONROD aims to support health professionals in providing equitable, seamless, timely, evidence-based care.

The last twelve months at CONROD have been exciting, and the Centre has grown and progressed. Its network is stronger and more cohesive, and the funding base has expanded. We look forward to further growth during 2000, with additional staff, programme enhancements and even closer relationships with our strategic partners.

Professor Nicholas Bellamy

Director

Statement, Chair CONROD Board of Management

The second full year of the CONROD operation has seen significant advancement towards achieving the organisation's short, medium and long term objectives.

The issue of leadership in embryonic organisations is a crucial factor in achieving dynamic yet planned growth.

The Board of Management of CONROD believes that the appointment of Professor Nicholas Bellamy as Director of CONROD and Professor of Rehabilitation Medicine at The University of Queensland has placed the leadership of the organisation in the hands of an outstanding individual. The Board is confident Professor Bellamy has the necessary attributes to create and develop an energetic, quality focused team to take CONROD to the heights to which it aspires.

Professor Bellamy has had a distinguished career in North America as a clinician, medical research scientist, medical educator and administrator and has achieved international recognition for his contribution in the area of health status measurement. He is the originator of the WOMAC Osteoarthritis Index, a reference standard for outcome assessment in over 50 countries.

The appointment of Associate Professor Rod McClure, one of Queensland's leading epidemiologists, to the position of Deputy Director, CONROD, provides further strength to the organisation. Professor McClure was instrumental in the creation of the Queensland Trauma Registry, one of the key elements of the CONROD operation and is Director of the Registry.

Major activities during 1999 saw CONROD, in association with the Australian Injury Prevention Network and the Centre for Accident Research and Road Safety – Queensland (CARRS – Q), conjointly host the 3rd National Conference on Injury Prevention and Control. The conference was an outstanding success, measured by the quality of the speakers and the diversity of their respective papers, and the number and interest of attendees drawn from both hemispheres.

During the Conference, the opportunity was taken to conduct the second Convocation of CONROD researchers and to hold the biennial meeting of CONROD's International Advisory Committee. This committee, comprised of highly distinguished and influential individuals, provides CONROD with invaluable constructive advice coupled with an international perspective in relation to CONROD's activities, operation and opportunities. The committee also provides significant insight into the latest international initiatives encompassing CONROD's area of interest.

In August, the Board of Management was pleased to receive from the Director a detailed plan and budget for the development and progress of CONROD for the next five years. A submission seeking the required funding has been submitted to the Motor Accident Insurance Commission Queensland. The Board is confident that funds will be provided by the Commission in respect to CONROD's operation relevant to that organisation.

Additionally, CONROD will be actively seeking further relationships and funding sources to fully progress its development plans encompassing a range of issues and interests involving various stakeholders.

Further, I gratefully acknowledge the advice, support and contribution made to CONROD by the members of the Board of Management and also thank Ms Chesne McGrath for acting as Minutes Secretary to the Board.

During the year a review of the Queensland Compulsory Third Party Insurance Scheme was undertaken for the Queensland Government. In its report to the Treasurer of Queensland, the C.T.P. Review Committee considered that both CONROD and CARRS-Q should continue to develop through access to funding from both MAIC and other external funding sources. It

was most pleasing to receive this independent vote of confidence and support for CONROD's activities and operation.

With the progression of CONROD to achieve its potential, the opportunity will be taken to maximise its liaison, collaboration and association with its "sister" centre, situated within the Queensland University of Technology, the Centre for Accident Research and Road Safety – Queensland (CARRS – Q). These centres form a unique partnership with a common desire to enhance our environment in a complementary fashion.

An encouraging start has been made but there remains much to do to make inroads into the realm of rehabilitation and disability management in Australia. CONROD is determined to make a significant impact for the betterment of the seriously injured.

For the injured, their families and society generally, it will not be before time.

Dr Graham Hughes

Chair Board of Management

Mission

To achieve recognition at state, national and international levels as a leader in research and education on all aspects of the prevention, acute treatment, rehabilitation, social and vocational management of disabling conditions with special emphasis on those of traumatic origin.

Objectives

- To promote CONROD as a national Centre for basic and applied research into all aspects of the prevention, acute treatment, rehabilitation, social and vocational management of disabling conditions (with special emphasis on those of traumatic origin) and to act as the point of coordination and oversight of research supported through CONROD.

- To provide a source of education and information concerning prevention, acute treatment, rehabilitation, social and vocational management of disabling conditions for health care professionals (including those in training, and in rural and remote locations) and the community more generally.

- Through a combination of research and educational programs to facilitate the delivery of seamless evidence-based health care.

Background
Motor Accident Insurance Commission

The Motor Accident Insurance Commission administers the Compulsory Third Party (CTP) motor vehicle insurance scheme in Queensland. Established under the Motor Accident Insurance Act 1994, the Commission is a statutory body reporting to the State Treasurer and led by the Commission's chief executive, the Insurance Commissioner.

Since 1936, Queensland has operated a common law "fault" based CTP motor vehicle insurance scheme. The scheme provides motor vehicle owners with a policy of insurance that covers (subject to the provisions of the Act) their unlimited liability for personal injury caused by, through or in connection with the insured motor vehicle anywhere in Australia. For those injured in motor vehicle accidents, the scheme provides access to common law without constraint where the injured party can establish negligence against an owner or driver.

The primary activities of the Commission cover:

- Licensing and supervising CTP motor vehicle insurers.
- Recommending premium rates and levies to government.
- Promoting research, education and provision of rehabilitation services.
- Developing and maintaining a claims register and statistical database to provide management information.
- Administering the Nominal Defendant Fund.

Since the commencement of the Motor Accident Insurance Act on 1 September 1994, the Commission has emphasised research initiatives in accident prevention, treatment and rehabilitation.

Queensland Institute of Medical Research

The Queensland Institute of Medical Research (QIMR) commenced operation in 1945. Today it is the largest medical research facility in Australia and is internationally renowned with 440 scientists and staff working in 30 laboratories for the prevention, treatment and diagnosis of more than 20 life-threatening diseases.

Research at QIMR comprises:

- Cancer research - studying the influence of genes on cancer and how cancers grow and spread so that the process can be halted. Cancers studied include prostate, skin, liver, bladder, colon, breast, ovarian, lymphoma and leukaemia.
- Liver diseases - studying liver cancer, cirrhosis, iron deficiency and iron absorption and haemochromatosis (an inherited iron-overload disease which affects one in 300 Australians).
- Malaria and mosquito-borne diseases unit - researching better methods of control and vaccine development against diseases such as malaria, dengue fever and Ross River fever.
- Rheumatic Fever. Research leading to a vaccine to prevent rheumatic heart disease – a major cause of morbidity amongst indigenous Australians.
- Glandular fever and chronic fatigue syndrome - researching the virus which causes glandular fever and is linked with some cancers and chronic fatigue syndrome.

- Epidemiology and population health - examining how diseases occur in populations and how to control and prevent diseases including skin cancer, arthritis, asthma, mental disorders including schizophrenia and post-natal depression. This research includes genetic and twin studies.

- Human organ transplants - conducting studies to determine how to reduce rejection of organ transplants and improve survival rates.

- Tropical diseases - researching diseases such as giardia (the world's most common worm infestation) and other parasitic conditions which cause ill health and death in many countries.

The University of Queensland

One of Australia's leading universities, the University of Queensland (UQ) is a large, comprehensive, research-intensive institution of international standard.

The Good Universities Guide named UQ as Australia's 1998 University of the Year. The award recognised the high proportion of UQ graduates who obtain full-time employment (topping Australia for three of the past four years) and their success in progressing to further studies (around 36%, compared with 25% nationally).

Since its foundation in 1910, more than 100 000 students have graduated from UQ. Graduates' achievements include winning a Nobel Prize, Rhodes Scholarships and offices as Governor-General, Governor, Premier and Chief Justices of Queensland and Australia.

UQ offers Queensland's most comprehensive range of high quality courses. With nearly 400 courses and 5500 subjects, UQ's 29 717 students have great flexibility in choosing a course of study to suit their chosen career paths.

The majority of Queensland's top school leavers, plus highly qualified students from interstate and overseas, enroll at UQ. With one in 13 students from overseas, drawn from more than 80 countries, UQ enjoys rich cultural diversity and offers all students an international dimension to their studies.

UQ is one of one three Australian members of Universitas 21, a select global alliance limited to 20 universities using international benchmarking to monitor and enhance quality and performance.

World-class research is a defining characteristic of the University of Queensland, which, in 1998, attracted the highest level of industry support for research of any of Australia's universities and the Federal Government's second highest allocation of research funding.

Profile

The Centre of National Research on Disability and Rehabilitation Medicine (CONROD) was established in 1997 with annual funding of $588,000. CONROD was established through a partnership of the Motor Accident Insurance Commission (MAIC), the University of Queensland (UQ) and the Queensland Institute of Medical Research (QIMR) with the support of the Queensland Government.

CONROD was established for the primary purpose of advancing research into the acute treatment and rehabilitation of people injured in motor vehicle accidents or through other analogous events. This focus links with research initiatives in injury prevention and provides a more comprehensive research focus on the entire spectrum of injury control for the purpose of reducing the incidence and impact of injury.

In particular, the Centre was designed to assist the MAIC to achieve its responsibilities in relation to the provision of rehabilitation to people surviving trauma and the promotion of research.

The establishment of CONROD addressed the substantial need recognised by the key stakeholders for a national Centre of Excellence to advance research relating to acute treatment and rehabilitation following injury, and to link research across the spectrum of injury control at local, national and international levels in order to significantly improve the health, social, economic and vocational outcomes for Australians.

Infrastructure

The core intellectual and strategic component of the Centre is a Professorial Unit within the Graduate School of Medicine at UQ. The Professor of Rehabilitation Medicine, appointed in 1999, is the Director of the Centre, who is supported by a Deputy Director appointed at the level of Associate Professor, and a secretary.

CONROD is currently funded with $738,000 annually for three years from MAIC. UQ and QIMR provide in-kind infrastructure support.

CONROD has a 19 member Board of Management representing MAIC, UQ, QIMR and prominent members of the community relevant to the Centre's core business and goals with advice from an 11 member International Advisory Committee and a 26 member Research Advisory Committee. Additionally, there is a 9 member Research Evaluation Committee and a 6 member Strategic Development Committee.

Membership of the various committees includes local and world leaders in the fields of medicine, law, government and insurance and, as such, provides CONROD with strategic partnerships in all aspects of injury control that span national and global arenas.

Committee Membership

Board of Management

CONROD	*Adjunct Professor G Hughes* *Chair*
Australasian College of Paediatrics	*Dr K Shepherd* *Representative*
Australian Society of Rehabilitation Counsellors	*Mr M Hancock* *National President*
CONROD	*Professor N Bellamy* *Director*
CONROD	*Associate Professor R McClure* *Deputy Director*
Griffith University	*Professor G Kearney* *Deputy Vice Chancellor*
Motor Accident Insurance Commission	*Ms L Anderson* *Insurance Commissioner*
Princess Alexandra Hospital	*Dr P Hopkins* *Director of Rehabilitation*
Queensland Health	*Dr D Lange* *Chief Health Officer*
Queensland Institute of Medical Research	*Professor A Green* *Head,Epidemiology & Population Health Unit*
Queensland Institute of Medical Research	*Dr G Lawrence* *Representative*
Queensland University of Technology	*Dr C Hirst* *Chancellor*
Queensland University of Technology	*Professor M Sheehan* *Director, CARRS-Q*
The University of Queensland	*Professor T Grigg* *Pro-Vice Chancellor (Academic)*
The University of Queensland,	*Professor P Brooks* *Executive Dean, Faculty of Health Science*
The University of Queensland	*Professor M West* *Head, Department of Medicine*
The University of Queensland	*Professor W Marsden* *Head, Division of Orthopaedic Surgery*
The University of Queensland *University of Southern Queensland*	*Emeritus Professor M Eadie* *Professor J Grant-Thomson* *Head, Biomedical Engineering Unit*

International Advisory Committee

National Institute of Disability Management and Research, Port Alberni, ***CANADA***	*Mr W Zimmermann (Chair)* *Executive Director*
Baylor College of Medicine, Houston, ***USA***	*Associate Professor Q Smith* *Senior Research Associate, Independent Living Research Utilization Program*
Institute of Rehabilitation and Research, Texas Medical Centre, Houston, ***USA***	*Professor L Frieden* *Senior Vice President*
Insurance Corporation of British Columbia, Vancouver, ***CANADA***	*Mr N Weatherston* *Senior Vice President, Operations*
John Hopkins Medical School, Baltimore, ***USA***	*Professor E Mackenzie,* *Director, Centre for Injury Research & Policy*

Ludwig Boltzmann Institute of Restorative Neurology, Vienna, ***AUSTRIA***	*Professor M Dimitrijevic* *Consultant Neurologist*
Ministry of Labour and Social Affairs, Berlin, ***GERMANY***	*Dr H Haines* *Ministerial Director of Disability*
Ministry of Skills, Labour and Training, Vancouver, ***CANADA***	*Mr B Williams* *Director, Compensation Advisory Services*
The University of Queensland, Department of Medicine, Brisbane, ***AUSTRALIA***	*Emeritus Professor M Eadie*
Tiefbau-Berufsgenossenschaft, Munich, ***GERMANY***	*Professor M Bandmann* *Director-General*
UCLA, *Southern California Injury Prevention Research, Los Angeles,* ***USA***	*Professor J Kraus* *Director*

Research Advisory Committee

CONROD	*Professor N Bellamy (Chair)* *Director*
Australian Physiotherapy Association	*Mrs L Parker* *Executive Director*
Bar Association of Queensland	*Mr J Griffin* *Representative*
Central Queensland University	*Dr R Ho* *Department of Psychology*
FAI General Insurance Co Ltd.	*Ms K Birch* *Injury Management Manager CTP Claims*
Griffith University	*Dr N Buys* *Faculty of Health and Behavioural Sciences*
James Cook University	*Dr L Walker* *Rehabilitation Engineer*
Medico-Legal Society of Queensland	*Dr R Scott* *President*
Motor Accident Insurance Commission	*Ms L Anderson* *Insurance Commissioner*
Paraplegic & Quadriplegic Association of Qld	*Dr M Hauritz* *Chief Executive Officer*
Princess Alexandra Hospital	*Dr P Hopkins* *Director of Rehabilitation*
Princess Alexandra Hospital	*Ms P Dorsett* *Manager Transitional Rehabilitation Programme*
Princess Alexandra Hospital	*Dr V Hill* *Director, Spinal Injuries Unit*
Queensland Health	*Ms P Bowman* *Allied Health Advisor*
Queensland Law Society	*Mr P Carne* *President*
Queensland Transport (Road User Behaviour)	*Mr M King* *Manager*
Queensland University of Technology	*Professor T Parker* *Head, Human Movement Studies*
Royal Australasian College of Physicians	*Dr C Davis*
Royal Australasian College of Surgeons	*Professor G Merry*

	Chair, Trauma Committee
Royal Australian College of General Practitioners	*Dr B McGrath* *Director, Research & Health Promotion Unit*
Royal Children's Hospital	*Dr K Shepherd* *Director, Statewide Paediatric Rehabilitation Service*
The University of Queensland	*Professor J Strong,* *Head, Department of Occupational Therapy*
The University of Queensland	*Dr L Laakso* *Physiotherapy Department Representative*
The University of Queensland	*Professor M West,* *Head, Department of Medicine*
University of Southern Queensland	*Professor J Grant-Thomson* *Head, Biomedical Engineering Unit*
Work Directions Australia	*Ms K Murray* *National Manager, Injury Management Division*

Research Evaluation Committee

Griffith University	*Professor G Kearney* *Deputy Vice Chancellor (Chair)*
CONROD	*Professor N Bellamy* *Director*
Griffith University	*Professor G Gass* *Head, School of Exercise Science*
Queensland Institute of Medical Research	*Professor A Green* *Head, Epidemiology & Population Heath Unit*
The University of Queensland	*Professor P Brooks* *Executive Dean, Faculty of Health Science*
The University of Queensland	*Professor P Greenfield* *Deputy Vice Chancellor (Research)*
The University of Queensland	*Professor W Marsden* *Head, Division of Orthopaedic Surgery*
The University of Queensland	*Professor G Seymour* *Head, School of Dentistry*
The University of Queensland	*Professor M West* *Head, Department of Medicine*

Strategic Development Committee

CONROD	*Professor N Bellamy (Chair)* *Director*
CONROD	*Adjunct Professor G Hughes* *Chair, Board of Management*
CONROD	*Associate Professor R McClure* *Deputy Director*
Motor Accident Insurance Commission	*Ms L Anderson* *Insurance Commissioner*
Motor Accident Insurance Commission	*Mr M Hancock* *Principal Advisor Rehabilitation*
The University of Queensland	*Professor P Brooks* *Executive Dean, Faculty of Health Science*

In Australia, injury remains the principal cause of death in people under 45 years of age and a leading cause of morbidity and permanent disability.

Transport-related accidents represent a significant proportion of the direct cost of injury.

The lifetime cost of injury to Australia is estimated to be $13,305 million annually with road injury estimated to have a lifetime cost of $2,236 million per year.

Young males remain a high-risk injury population. In 1995, this group sustained 1,610 fatalities and 76,800 hospitalisations due to injury with motor vehicle accidents being a major cause. Lifetime costs associated with this group were estimated at $1,365 million.

Road fatalities in Queensland for 1998 were 8.1 per 100,000 while hospitalisations in Queensland during this period were 60 per 100,000.

Strategic Development

Injury remains a major public health problem, nationally and internationally.

While injury is one of five national health priority areas agreed on by Australian Health Ministers in 1996, injury research and strategies to address the issues remain poorly developed compared to other major epidemics. In Australia, contributing factors include the lack of a coordinated strategic plan and limited core competencies to progress strategies, the lack of a structure to link research, information, practice and policy development and the limited research focus on efficiency, effectiveness and relative cost-effectiveness of different interventions.

In Australia, much of the focus has been on the priority of injury treatment and rehabilitation, which are part of a continuum of research aimed at reducing the overall incidence and impact of injury.

CONROD is in a unique position to address this deficiency and facilitate research relationships across the continuum of injury control including prevention, acute treatment, rehabilitation and disability management aimed at reducing the social and economic costs associated with injury.

CONROD proposes using a model of injury control, which is a spectrum of interrelated research activity that includes prevention, acute treatment, rehabilitation and disability management aimed at reducing the overall incidence and burden of injury in society. By incorporating all aspects of injury control from prevention through treatment, rehabilitation and disability management, CONROD can make a more comprehensive contribution to service provision, public health, health economics and health policy in relation to injury and can facilitate research and data links across all aspects of injury control.

FIGURE 1 – Injury Control CONROD Research Continuum

The intention is to initially enhance the core capacity of the Centre by acquiring priority-driven research expertise in the areas of epidemiology, biostatistics, computer science, informatics, health economics and social science. It is this core of research expertise that will drive high impact research, key partnerships and the overall strategic development of the Centre.

FIGURE 2 – CONROD Research Expertise

Significant advancements in injury control are gained through epidemiological data. However, this needs to be combined with outcome research and research focused on the cost effectiveness and cost utility of therapeutic strategies and quantifying injury severity, health status and rehabilitation outcomes. To be the preferred research provider and a Centre of Excellence, CONROD must be able to respond to these current trends as they apply to key stakeholders.

A competitive research provider, however, must also contribute world class information in key research areas where acquisition of knowledge needs to be accelerated. In relation to injury control, this is required in the area of acute care and rehabilitation so that advancements and data linkages across all aspects of the injury continuum are strongly encouraged and well managed.

Enhancing the Centre's core capacity through this increased research expertise will encourage the development of strategic partnerships across public and private sectors and will enable the Centre to address critical issues for key stakeholders. Critical issues for stakeholders currently include the emphasis on priority-driven research, evidence-based practice and efficiency and effectiveness information in relation to interventions as well as intersectoral collaboration and industry partnerships.

Given its initial focus on achieving injury control relating to motor vehicle accidents, CONROD will apply the continuum of injury control, from primary prevention through acute care treatment to rehabilitation and disability management, across all social groups, from children to senior citizens, in all types of descriptive, predictive and evaluative research into motor vehicle-related injury.

FIGURE 3 – MVA Trauma

Ultimately, this will position the Centre to participate prominently in research, strategic planning and policy making aimed at reducing the overall incidence and burden of injury in society arising from motor vehicle accidents.

However, the injury control model supports CONROD in controlling injury arising from causes other than motor vehicle accidents. CONROD aims to evolve into a Centre of Excellence to reduce the incidence and burden of injury occurring in the workplace, trauma which arises from causes other than workplace or motor vehicles, musculoskeletal disease of atraumatic origin, atraumatic disease of neurological origin and the opportunity for ingress into other high priority areas.

FIGURE 4 – A vision for the future

CONROD has enormous potential to enhance the well being and health outcomes of Australians and the global population injured as a result of motor vehicle accidents and a range of other diverse aetiologies. By developing its core research expertise, CONROD can address critical issues for key stakeholders and attract strategic partnerships in controlling injury across the spectrum of its occurrence, treatment and recovery. This will reduce the social and economic cost of injury and reduce its burden on society.

CONROD – THE FUTURE PERSPECTIVE

Three distinct but interrelated strategies will be pursued to reflect short, medium and long term goals and build on existing infrastructure and achievements to position CONROD for its evolution into a Centre of Excellence. The three strategies are:

- Acquire core intellectual competencies and develop five key research areas.
- Establish partnerships with relevant key stakeholders across the public and private sectors.
- Advance intellectual and entrepreneurial activities to consolidate the Centre as an ongoing viable investment opportunity.

Strategy 1

The Centre's immediate goal is to extend its core business to respond to the need for:

- Priority driven research.
- Evidence based practice.
- Outcome measurement.
- Intervention effectiveness.
- Rehabilitation strategies that are cost effective and useful.
- Intersectoral research collaboration.
- Industry and research interaction.
- National and international partnerships in research and information exchange.

Expanded intellectual expertise will enable CONROD to target five key research programs:

- Queensland Trauma Registry (with links into other databases).
- Health Outcomes Assessment.
- Informatics (the Cochrane Collaborative Projects which are evidence based medicine; REHADAT Australia, an information highway for disabled individuals, families and health care professionals; development of undergraduate and postgraduate educational programs; teaching of critical appraisal skills to health professionals; and development of educational materials for the public domain).
- Health Economics.
- Social Science.

The expanded research capability will support the production of comprehensive information in effectiveness, cost management, best practice, benchmarking, national and international comparisons, policy development, social aspects of injury prevention, rehabilitation and long-term outcomes.

The development strengthens and widens the opportunities for cooperation between, and offers individual benefits to MAIC, QIMR and UQ as represented by CONROD. It also affords the opportunity to develop relationships outside the initial partnership.

Strategy 2

This medium term goal involves applying the outcomes of enhanced research expertise to cultivate key partnerships across private and public sectors. Potential partnerships provide the foundation for successful intersectoral links and collaboration at all levels of government, industry and relevant sectors of society around injury control.

CONROD is already working with State and Federal government departments, including the Departments of the Premier and Cabinet; Families, Youth and Community Care; Queensland Health; Employment, Training and Industrial Relations; Health and Aged Care and the Office of Disability.

CONROD is particularly seeking to further develop its relationship with a key public sector provider, Queensland Health. This is because Queensland Health is largely responsible for managing survivors of motor vehicle accidents; it confronts many of injury's direct and indirect costs; it is a key stakeholder in all aspects of injury control and it has a legitimate role in supporting research directed at improving health outcomes and reducing the burden of injury.

CONROD can partner with Queensland Health in providing

- A coordinated, comprehensive research, education and training, information collation and analysis activity to facilitate improved decision making.
- A strategic research link between the health outcomes injury prevention and control initiatives and the statewide plan for rehabilitation services.
- A better understanding of economic costs and knowledge of effective interventions across the spectrum of injury control.
- A mechanism to stimulate a whole of Government approach to the burden of injury.
- An improved knowledge and expertise of health care providers.
- Further expertise in evidence-based practice and strategies in injury control.

CONROD's interest in pursuing an expanded relationship with Queensland Health also offers flow-on benefits for injury control across all levels of government. CONROD can be a mechanism to

- Stimulate and manage fundamental, strategic and evaluative research and global collaboration in health research.
- Advance the intersectoral framework by assisting the health sector to facilitate the capacities and contributions of other related sectors.
- Link with national partnerships focused on injury control to strengthen the focus on treatment and rehabilitation in injury control.
- Raise the profile and influence of Australia in international forums on injury control.

CONROD also recognises that the full benefits of injury control to society are achieved through partnerships with the public and private sectors. By enhancing its research expertise, CONROD can provide high impact research on critical issues, and enhance workforce performance and infrastructure for public and private sector partners.

Strategy 3

This long-term strategy focuses on elevating the Centre's profile as a preferred research provider and as an ongoing viable investment opportunity across public and private sectors.

This strategy represents the most significant challenge for the Centre in the current competitive environment, but CONROD is committed to proving itself as a preferred research provider and ongoing viable investment opportunity, ultimately being positioned as Australia's premier Centre of Excellence for injury control.

This will depend on a commitment of core funding to maintain key intellectual capacities and attract increased research expertise, to build extensive partnerships across public and private sectors, to leverage diverse external funding sources. Diversity of funding sources will continually raise the profile of the Centre and reinforce its credibility as a viable investment, as well as optimising opportunities for major research innovations and the exchange of ideas, thus feeding investment in a stronger infrastructure to lever further funding across public and private sectors.

When fully evolved, CONROD will represent a national Centre of Excellence involved in priority driven research and strategic partnerships across private and public sectors aimed at reducing the social and economic costs associated with disability in Australia.

ACHIEVEMENTS AND HIGHLIGHTS OF 1999

Since its inception the Centre has made substantial progress towards a number of its objectives and identified key areas for further development in order to achieve its overall mission and aim of enhancing knowledge of all aspects of injury control. Progress towards objectives has occurred across six main areas; infrastructure, collaboration, research, research grant scheme, stimulus of research and information exchange and teaching.

Infrastructure

A major achievement has been the appointment of the Centre's various committees that have cultivated local, national and international research and advisory partnerships through appointment of the Board of Management, International Advisory, Research Advisory, Research Evaluation and Strategic Development Committees.

Collaboration

For the purpose of providing leadership in research and through association with the MAIC, CONROD has achieved formal relationships with

- A collaboration of researchers and service providers (the Statewide Paediatric Service, Spinal Outreach Team, the Transitional Rehabilitation Program and the Acquired Brain Injury Project and multiple research projects) engaged in relevant research activities and funded by the MAIC under the auspices of CONROD.

- Relationships with two University Chairs and three Royal College Fellowships.

- Strong collaboration with the Centre for Accident Research and Road Safety – Queensland (CARRS-Q) within the Queensland University of Technology.

Core Research

There have been extensive achievements in relation to the Centre's research objectives including:

- Queensland Trauma Registry - established through the support of the MAIC and Queensland Health, the Registry was initially operationalised with the assistance of Liverpool Hospital Trauma Department, NSW as a Brisbane-based information system and is now being further developed to meet the demands for a Statewide system.

- Outcomes research – outcomes of road traffic injuries and a Functional Capacity Index (FCI) validity study being conducted in conjunction with John Hopkins University, Maryland, USA.

- Causes of injury – determinants of road traffic injuries, a study of the epidemiology of motorcycle injury in Queensland, indigenous injury study and community-owned injury control strategies in Woorabinda, Queensland.

- Information research – REHADAT Australia feasibility study and strategic recommendations, International Labour Organisation (ILO)-GLADNET return to work project and information collation of injury control and prevention initiatives.

- Biomechanics – Inshore Rescue Boat (IRB) study injury prevention with Surf Life Saving Queensland.

Research Grant Scheme

The Centre has honoured its commitment to facilitating research by awarding $100,000 in research grants during 1999. This was allocated through the grant scheme to seven external researchers. Areas of research include:

- Investigating the role of Low Level Laser Therapy (LLLT) in an inflammatory model.
- Changes in joint sensation and muscle function following knee joint injury or disease: Implications for rehabilitation.
- Predictors of traumatic stress in children involved in motor vehicle accidents.
- Rehabilitation of prospective memory problems in individuals with traumatic brain injury.
- Repairing human spinal cord and peripheral nerve: towards autografts of olfactory ensheathing cells.
- Chronic pain, medical decision making and best practice: Development of a model.
- Physiological analysis of vocal tract dysfunction in children with traumatic brain injury subsequent to motor vehicle accidents.

Stimulus of Research and Information Exchange

CONROD has participated in the exchange of research and information through attending and presenting at a number of national and international events as well as staging its own Convocation 99.

CONROD presentations include:

- Risk-taking and hospitalised motor vehicle crashes at the 4th World Conference on Injury Prevention and Control in Amsterdam, Netherlands.
- Hospitalised motorcycle crashes and the use of protective clothing at the 4th World Conference on Injury Prevention and Control in Amsterdam, Netherlands.
- Injury prevention in an indigenous community at the 7th International Conference on Safe Communities in Amsterdam, Netherlands.
- Violence in indigenous communities at Partnerships in Crime Prevention in Hobart, Tasmania.
- A database of initiatives for injury prevention and control at the 2nd National Conference on Injury Control in Melbourne, Victoria.
- Injury prevention in an Aboriginal and Torres Strait Islander Community at the 2nd National Conference on Injury Control in Melbourne, Victoria.

Convocation 99 was held in conjunction with the 3rd National Conference on Injury Prevention and Control which CONROD and CARRS-Q hosted in Queensland in May 1999.

The aim of the 3rd National Conference on Injury Prevention and Control was to highlight the relationships that make injury control an effective activity. The conference program was of truly international quality and included presentations from six internationally acclaimed keynote speakers, 40 national and international invited guest speakers, 140 free papers and 35 poster presentations from around the globe.

The conference provided a forum for practitioners, researchers and consumers from the various disciplines that make up injury prevention, road safety, work safety, risk management,

acute care and rehabilitation. It provided CONROD with an unparalleled opportunity both to establish its presence on the national and international stage and to further the cause of injury control in Australia.

Plans are in progress for CONROD's involvement with Injury 2000, a combined set of conferences being held in Canberra in November 2000. The program will include:

- The 4th National Conference on Injury Prevention and Control, featuring safe communities; appropriate use of data; role of emergency services in injury prevention; safety promotion and public perceptions; high risk behaviour, self harm, violence; injury prevention in indigenous communities; road safety; rehabilitation and consumer safety.

- The 17th Annual Scientific Meeting of the Australasian College for Emergency Medicine, incorporating the 21st Annual Scientific Meeting of the Australasian Society for Emergency Medicine, featuring trauma care; injury prevention; paediatric trauma care; research; road trauma; teaching; trauma systems; publications in emergency medicine and trauma registries.

- The Australasian Trauma Society Clinical Trauma Meeting featuring pre-hospital trauma care, including aero-medical retrieval; rural trauma care; trauma resuscitation; trauma outcomes and challenging scenarios.

Teaching

The Centre has embarked upon the development of a suite of programs for graduates and undergraduates from the range of professions relating to the provision of services to injured and disabled people. Injury control has been introduced to students of the Graduate Medical Course from the first week of their training and is integrated with their learning at subsequent points in the curriculum where the opportunity arises. Two workshops have also been held in conjunction with the 3rd National Conference on Injury Prevention and Control, to make specific skills development available at a more general level to the injury control workforce. These included "Introduction to Epidemiology" and "Measuring the Burden of Injury". Discussions are underway with Princess Alexandra Hospital in Brisbane for CONROD to increase its links with hospital rehabilitation specialist trainees.

RESEARCH PROJECTS

International Studies

- Bellamy N and Martin N. An international (Canada, Australia) study of the genetic contribution to the aetiopathogenesis of OA in twins based on the Australian Twin Registry. $36,000

- Bellamy N. Development of an international (Canada, USA, France) standard of measurement of pain, stiffness, and physical disability in the osteoarthritic hand. $15,000

- Bellamy N. International (Canada, Australia) comparative study of generic (SF-36, HUI, NHP, EuroQol) and disease specific (WOMAC VA3.0) instruments in OA knee assessment. $120,000

- Bellamy N. Cochrane reviews of viscosupplementation and intra articular corticosteroid therapy in OA knee. $180,000

- McKendry R, Bellamy N with collaborators. Canadian double-blind, placebo controlled trial of gold discontinuation in RA patients. $5,000

- Pope J, Bellamy N with collaborators. An international (Canada, USA) double-blind placebo controlled trial of methotrexate in scleroderma. $80,000

CONROD RESEARCH GRANTS

- Valerie P, McClure R, Green A. Rural/Urban differences in exposure to Transport related Injury. $10,000

- McClure R, Purdie D, Najman J, Bain C. Socio-economic status (SES) and injury in children: a cohort study to identify and measure the effects of preventable mediating factors. NHMRC $360,000

- Buys N and Kendall E. Centre for Human Services, School of Human Services, Griffith University. Understanding Barriers to return to work for people injured in motor vehicle accidents. $17,000

- Laakso L and Cabot P. The University of Queensland. Investigating the role of Low Level Laser Therapy (LLLT) in an inflammatory model. $7,395

- Bullock-Saxton JE. The University of Queensland. Changes in Joint Sensation and Muscle Function Following Knee Joint Injury or Disease; Implications for Rehabilitation. $10,000

- Kenardy J and Spence S. The University of Queensland. Predictors of traumatic stress in children involved in motor vehicle accidents. $19,974

- Shum D, Fleming J, Strong J. The University of Queensland. Rehabilitation of Prospective Memory Problems in individuals with Traumatic Brain Injury. $19,707

- Mackay-Sim A. Centre for Molecular Neurobiology, Griffith University. Repairing spinal cord and peripheral nerve. Towards autografts of olfactory ensheathing cells. $14,714

- Kendall E, Neal R, Buys N. Centre for Human Services, School of Human Services, Griffith University. Chronic pain, medical decision making and best practice: Development of a model. $10,000

- Murdoch B and Theodoros D. Speech Pathology and Audiology, The University of Queensland. Physiological analysis of vocal tract dysfunction in children with traumatic brain injury subsequent to motor vehicle accidents. $18,198

- Kendall M and Kendall E. Centre for Human Services, School of Human Services, Griffith University. Social Support needs and the perceived controllability of stressful life events for people with Traumatic Brain Injury. $11,000

- Kuipers P, Kendall E, Hancock T. Centre for Human Services, School of Human Services, Griffith University. Developing community based rehabilitation (CBR) through participatory rural appraisal: A rural research pilot. $37,000

- Kuipers P, Foster M and Carlson G. University of Queensland. Client/patient goals as a qualitative data source for evidence based practice.

- Fleming J, Shum D, Strong J, Connell J. The University of Queensland. An investigation of prospective memory function in adults with traumatic brain injury. $10,000

- Murdoch B. School of Health and Rehabilitation Sciences, The University of Queensland. A biofeedback approach to the treatment of articulatory disorder in patients with traumatic brain injury subsequent to motor vehicle accidents. $19,000

- Murdoch B. School of Health and Rehabilitation Sciences, The University of Queensland. Physiological features of dysarthria in children with traumatic brain injury subsequent to motor vehicle accidents. $12,500

- Murdoch B. School of Health and Rehabilitation Sciences, The University of Queensland. Clinical and radiological investigation of acquired dysphagia in children following traumatic brain injury. $16,000
- Radcliffe D. The University of Queensland. Virtual Rehabilitation Teams project, undertaken at the Statewide Paediatric Rehabilitation Service (SPRS). $40,000
- Craig A. University of Technology, Sydney. Enhancing the Independence of the Severely Disabled. $10,000
- Murphy GC and Young A. La Trobe University. Disability following Traumatic Injury in Rural Australia: Are country residents achieving inferior rehabilitation outcomes? $41,000
- Rodger S, de Jonge D, Fitzgibbon H. The University of Queensland. Identifying factors for successful return to work through technology in the workplace. $17,000
- Saunders N and Fry E. University of Tasmania. Central nervous system regeneration: mission impossible? $87,994
- Saunders N and Dziegielewska. University of Tasmania. Repair of the injured spinal cord. $87,994
- Billingsley J, Aigner P, Durack M. University of Southern Queensland. Mechatronic aids for the disabled. $300,000
- Ho R, van Dyke M, Lawrence G, Wood G, Agar-Wilson. University of Central Queensland. Psychological well-being of at fault driver injured family members. $300,000
- Tweedy S. The University of Queensland. Queensland Teaching and Community Service Rehabilitation Centre. $250,000
- Freer T, Bartold PM, Walsh LJ, Stephens RR. The University of Queensland. Establishment of Orofacial Trauma Research Unit. $250,000
- Strong J. The University of Queensland. Driver Assessment Training & Rehabilitation Research Centre. $40,000
- Monsour F. Maxillofacial Surgery Unit, Royal Brisbane Hospital. Road trauma related “head and neck injuries and outcomes”. $60,418
- Walker L and Ramsden J. James Cook University. Using technology to remove barriers to tertiary education for people with disabilities. $300,000
- Jull G. The University of Queensland. Measurement of physical impairment in the cervical spine of chronic whiplash subjects. $48,875
- Strong J, Fleming J, Connell J. The University of Queensland. A comparison of adjustment and self-awareness in adults after traumatic brain injury and spinal cord injury: the transition from hospital to community. $8,000

CONROD Research Projects Completed

McClure, R. (Chief Investigator). The Epidemiology of motor cycle injuries in Queensland. University of Queensland. $15,453

McClure, R. (Chief Investigator with Green A, Evans J, Grote R). Inshore Rubber Boat-related injuries to Surf Life Saving Club personnel - Pilot Study. University of Los Angeles California. $15,000

McClure, R. (Chief Investigator) Queensland Trauma Registry. Queensland Health & Motor Accident Insurance Commission. $300,000

McClure, R. (Chief Investigator with Shannon C, Young L, Ober C, Haswell-Elkins M, Roche A). Community-owned injury control strategies in Woorabinda. Queensland Health. $200,000

McClure, R. (Chief Investigator with Miller B and Pollard C). Outcomes of road traffic injuries. Royal Australasian College of Surgeons. $75,000

McClure, R. (Chief Investigator with Hutchins C). Information collation on injury control and prevention initiatives. Queensland Health. $45,000

McClure, R. (Chief Investigator). Determinants of road traffic injuries. Royal Australasian College of Physicians. $50,000

CONROD Research Fellowships

Royal Australasian College of Physicians: Dr Allison Malcolm.

(Deferred until January 2000).

The pathophysiology and pharmacology of colorectal dysfunction in spinal cord injury.

Royal Australasian College of Surgeons: Dr Damian McMahon.

An investigation of satellite based technology in detecting severely injured rural motor vehicle accident patients.

Royal Australian College of General Practitioners:

(Not awarded for 1999).

Queensland University of Technology Research Fellow in Clinical Biomechanics: Dr Robyn Grote.

To provide a central biomechanics resource to share expertise and knowledge in amputee gait index, treatment regimes and prosthetic adjustments.

The University of Queensland Research Fellowship in Human Movements: Mr Sean Tweedy.

Establishment of a mobile physical testing and programming laboratory; and

research into physical activity and acquired brain injury.

University of Southern Queensland Fellowship in Mechatronics and Biomedical Engineering: Dr Peter Aigner.

Mechatronic aids for people with disabilities.

CONROD University Chairs

The University of Queensland

Chair Of Rehabilitation Medicine: Professor Nicholas Bellamy.

Chair Of Orthopaedic Surgery: Professor Bill Marsden (Retired December 1999). Part funded through CONROD.

NETWORK REPORTS

CONROD Director's Report

Director of CONROD, Nicholas Bellamy was involved in leading research initiatives in outcome measurement in musculoskeletal disease and three Cochrane Collaborative Projects. Additional linguistically valid alternate-language translations of the WOMAC 3.1 Index were created for several countries in S.E Asia and Eastern Europe. Progress was made on delineating a multicultural short form of the WOMAC 3.1 Index. Validation work on the AUSCAN 3.0 Index continued, and both the WOMAC 3.1 and AUSCAN 3.0 Indices provided to several international research groups. Studies on telephone administration of the WOMAC 3.0 Index and a touch screen version of the Index were completed. In addition research into the genetic determination of OA continued in collaboration with Prof Martin at QIMR. Finally a review of the burden of OA in Australia was undertaken, in preparation for the launch, by the World Health Organisation, of the Bone and Joint Decade, Cochrane Collaborative Projects on Viscosupplementation Therapy in Knee OA and Intra-articular Corticosteroid Therapy in Knee OA were progressed, and a new Cochrane Review on the Role of Excitatory Amino Acid Inhibitors in Traumatic Brain Injury initiated.

CONROD Deputy Director's Report

Acting Deputy Director of CONROD, Roderick McClure was involved in Teaching, Research and Service activities within the University of Queensland. Teaching activities included lecturing and course coordinating within the Masters of Public Health Program, the Corporate Public Health Program and the Graduate Medical Course where he taught Epidemiology, Clinical Epidemiology, Public Health and Research Methods. The extensive research work undertaken by Dr McClure during 1999 was largely related to establishing major new grant activities and in particular centred around the principal investigator responsibilities with the Queensland Trauma Registry and the various outcomes studies and risk factor identification studies associated with this Registry. Of particular note was the completion of twelve-month follow-up data on patients from this Registry which will enable the validation of existing functional capacity scores and facilitate the development of further measures for predicting the long-term outcome of injury. He was also involved in interdisciplinary work linking epidemiology and biomechanics investigations into the causes of particular sport injuries and was associated with two projects with international collaborators. 1999 saw the awarding of an NHMRC grant of $360,000 to identify causal pathways linking socio-economic disadvantage and injury. The service work carried out during 1999 included his many national responsibilities as President of the Australian Injury Prevention Network. In this role he convened the 3rd National Conference on Injury Prevention and Control (hosted by CONROD) which was an extremely successful exercise in enhancing partnerships between the various aspects of the injury control industry. With the NHMRC support obtained during 1999 for new project activity,1999 has been a most important foundation for a productive development of the CONROD research output in 2000.

Acquired Brain Injury Outreach Service

Research Team:

Mr Ray Quinn, Princess Alexandra Hospital, Brisbane.

Research details:

The Acquired Brain Injury Outreach Service (ABIOS), in the Princess Alexandra Hospital and District Health Service, was established in June 1997 to enhance the service system for people with Acquired Brain Injury (ABI) in Queensland.

Prior to the existence of ABIOS, the rehabilitation continuum for people with ABI was disjointed. At the community re-integration phase of rehabilitation it was common for clients to 'fall through the net' and for the full burden of care to rest with families. Furthermore, generic

community agencies often found it difficult to provide services to this client group due to lack of knowledge about ABI, the complexity of ABI issues, and strategies required to effectively manage these.

In some instances, this lack of dedicated non-vocational ABI services resulted in some people being offered services which were inappropriately targeted or which did not address their goals. For many others, it resulted in not being provided with any services at all. While the establishment of ABIOS (a limited service, based in one region) has not by any measure resolved the lack of services to people with ABI, it has lessened the impact for many people.

ABIOS is seeking to respond to the community integration needs of people with ABI by developing and enriching the service network.

ABIOS seeks to deliver optimal services through:

- direct delivery of professional rehabilitation services.
- training and consultancy services.
- research projects.

ABIOS is concentrating on building a co-ordinated service system that responds to the individual client within their social context. The priority focus for ABIOS is to assist individuals in transition from hospital to community living. During the period 1/1/99 and 31/12/99, two hundred and twenty-seven (227) new clients were referred to ABIOS. One hundred and sixty-eight (168) clients completed their community rehabilitation programs with ABIOS in this time period.

Many people with an ABI experience cognitive, behavioural and 'executive function' difficulties. For some people, the implications of these disabilities in the community are social and interpersonal difficulties, which leads to a lack of support. ABIOS has developed a contextually responsive model of assistance that aims to arrest the social isolation and disintegration of support networks that people commonly experience after head injury.

Major strategies to enhance community integration include:

- client directed goal development.
- co-ordination of multiple generic services.
- ABI education of carers and service providers.
- fostering natural support networks.
- advocacy for the development of new services

ABIOS provides training and consultancy to community members, families, carers and human service professionals. These services are offered at two levels:

- On an individual client basis to enhance the skills of people with ABI and their carers; and to build partnerships between service providers, carers and people with ABI.
- On a service basis to contribute towards the development of a strategically aligned and informed service sector.

To date, the predominant emphasis of training and consultancy initiatives, has been on an individual client or mutual client basis to organisations such as:

- lifestyle support agencies.

- professional service providers.
- volunteer support groups.
- residential care staff.
- carers/consumers.
- professional and academic bodies.
- hospital allied health and nursing staff.

Education services and training have been provided to community services to increase skill levels of staff dealing with ABI issues. Topics for training include:

- behaviour management.
- understanding and awareness of ABI.
- neuropsychological issues.
- community linking skills and “Networks of Support”.
- carer support.
- drug and alcohol issues and ABI.
- stroke rehabilitation.

ABIOS has developed a multi-dimensional research and development program, which seeks to respond to issues of relevance to people with ABI in the community context. The ABIOS research and development agenda seeks to build services, which will lead to sustainable outcomes for people with ABI in Queensland. Central to this is the exploration and investigation of aspects of community based models of service delivery.

During 1999, ABIOS research and development initiatives expanded considerably. A key emphasis during this period has been on fostering collaboration and increasing ABIOS’s involvement in larger scale service development projects.

Other ongoing research and development projects include:

- A rural research pilot in Taroom - Developing Community Based Rehabilitation (CBR) through Participatory Rural Appraisal (PRA).
- A development project tailoring existing drug and alcohol resources to assist people with ABI, their families and service providers.
- Building sustainable and practical informal support networks around people with ABI.

ABIOS’s evaluation framework integrates (a) the informational requirements of various ABIOS stakeholders; (b) measures of community based service outcome, (c) information to guide ABIOS services and (d) a number of research initiatives.

ABIOS is also participating in the development of a cross-program evaluation framework. Initiated by the MAIC this framework will enable four MAIC funded community rehabilitation programs to demonstrate the scope of their evaluations and reflect common and unique aspects of their evaluations.

Research Outcomes:

The ABIOS Website (www.health.qld.gov.au/abios) has been published on the Queensland Health Intranet and the Internet. It is envisaged that the Website will be an effective information tool and training medium with substantial benefits for rural service providers, carers and clients.

ABIOS research highlights for 1999 were:

- Successful ARC SPIRT grant to undertake an empirical evaluation of a theoretical approach to psychological and social rehabilitation for people who have suffered stroke. This is a 3-year collaborative project with the School of Human Services, Griffith University, the Department of Social and Preventive Medicine, University of Queensland and Southside Central Division of General Practice.

- A research grant through the Queensland Government Youth Suicide and Prevention Strategy to develop life affirming resources for young people with ABI and their carers.

- A grant from the Princess Alexandra Hospital Research and Development Foundation to analyse the content and themes of the rehabilitation goals of people with ABI in a community based service.

Statewide Paediatric Rehabilitation Service

Research Team:

Dr Karen Shepherd, Royal Children's Hospital.

The Statewide Paediatric Rehabilitation Service (SPRS) has continued to provide children with rehabilitation needs, a high standard of service to ensure that they reach their maximum potential. In the past 12 months commencing January 1999 until December 1999, children and adolescents were treated for a total of 11,301 occasions of service. Of the occasions of service 5,174 were for children involved in motor vehicle accidents.

An important focus of the Clinical service over the 1999 calendar year has been the ongoing development, in collaboration with Queensland Health, the Royal Children's Hospital and community organisations, of early discharge planning with home and community based care. These developing programs aim to facilitate the appropriate and timely discharge of patients with severe disability and impairment, to improve quality of life, and to help ensure the patients health and rehabilitation needs can be met within their home and community, reducing the likelihood of hospital readmissions.

Outreach services have enabled children throughout Queensland to benefit from the resources and expertise of the SPRS. The range of outreach activities undertaken within this 12 month period include :

- School visits
- Home visits
- Clinics
- Education programs
- Telemedicine
- Other clinical visits

Support of the child in the school environment continues to be an important component of their rehabilitation plan. The number of school visits undertaken in the six month period from July to December 1999 has increased 60% from the same period in 1998.

Outreach clinics, which have also involved school and home visits, have involved a larger regional area during 1999 including:

- St George (March)

- Bundaberg (April)
- Townsville (May)
- Hervey Bay (May)
- Middlemount/Rockhampton (July)
- Cairns (August)
- Kingaroy/Wondai/Gayndah (August)
- Hervey Bay (November)

SPRS staff participated in home visits with the aim of providing advice regarding home modifications, home based therapy sessions and equipment review.

Following the interest from Roundabout rehab magazine circulated in November 1998, 2 publications in July and November of 1999 have been distributed to currently 500 service providers and interested stakeholders statewide.

Group programs have been run in conjunction with Montrose and Mater Children's Hospital. A Family Fun Day was held at Montrose in October for families of children with Acquired Brain Injuries. The day involved entertainment for the children including the Clown Doctors and busker, a seminar for the parents on behaviour management. The wheelchair mobility program was run again in September school holidays aimed at children from 3 to 6 years of age with spina bifida and spinal cord injuries.

The Mobile Orthotics Van was delivered in late July and outfitted by December to commence use in early 2000. The van has been provided through an additional grant from Treasury /MAIC. The van will provide equipment services to clients of SPRS and will be used for transporting equipment for trial, and use on home and school visits.

The research program within SPRS includes ongoing research undertaken by SPRS staff individually and in conjunction with external tertiary institutions and other tertiary hospitals. Research projects are currently in progress with researchers from the University of Queensland in the school of Rehabilitation Sciences, Human Movement, Engineering, and Paediatrics and Child Health, from QUT in the School of Public Health and the Mater Children's Hospital. Reports of the progress and results of research were presented at conferences in Australia and overseas, and through the ongoing education program within the SPRS.

Education and Resource Development within SPRS has continued with enthusiasm. SPRS continues to offer undergraduate and postgraduate student training, an end of year review of feedback from these students indicates that the placements are seen in a very positive manner. A number of seminars, workshops and lectures have been organised by staff at the SPRS as part of the service's ongoing commitment to education. Much of the educational activity has been disseminated to professionals throughout the state during outreach clinics and visits, via teleconference link ups or at state conferences. Of interest, was the use of teleconferencing by SPRS speech pathologists to run one of the Advanced Clinical Skills Workshops for rural allied health staff at a conference in Longreach in November.

SPRS are committed to providing ongoing education, as a component of such a number of resource and training packages have been and are being developed in response to identified needs. Two completed packages include:

- Training package for carers of children who are ventilator dependent
- Prescription guidelines for paediatric ADL equipment

Other packages that are in the process of being actioned include:

- A skin care program for children with spinal disabilities, 'Think Skin and Grin'
- An information package for teachers of children who have acquired brain injury (this is being developed in consultation with Mater Children's Hospital and Montrose)
- Resource package for families and children with acquired brain injury
- An information package to assist with wheelchair prescription.

35 staff within SPRS provided these services in full/part time or casual/on call capacity with a total full time equivalence of 27.775.

Research, clinical activity, education and outreach are again the objectives SPRS aim to achieve and improve on each year, this calender year has seen an enthusiastic demonstration through activities undertaken to continue to strive to be a centre of excellence.

Spinal Outreach Team

Research Team

Ms Pat Dorsett, Princess Alexandra Hospital, Brisbane.
Ms Ruth Cox, Princess Alexandra Hospital, Brisbane.

Research details:

The Spinal Outreach Team (SPOT) supports people with spinal cord injury (SCI), their families and service providers through-out Queensland through a consultancy and early intervention service. The team consists of physiotherapists, occupational therapists, social workers and a clinical nurse. SPOT aims to provide a quality, timely and client focussed service which enhances access to specialist SCI services for people living outside Brisbane and which assists in preventing the human and financial costs of preventable complications after SCI. The team achieves these aims through direct service provision, education and training services, and research and evaluation.

Service Provision

The past year has been an exciting and productive period for SPOT with the service receiving 391 referrals.

- Referrals were made by people with SCI and their families, community agencies and hospitals. Road traffic accidents continued to be the most common cause of injury accounting for 32% of referrals. Interestingly, approximately 50% of referrals were for people injured 10 or more years ago, reflecting the complexity of ageing with a spinal cord injury.

- Home visiting and telephone consultancy continued to be the main modes of service delivery.

- SPOT continued its state-wide outreach, conducting 12 regional visits to areas such as Bundaberg, Cairns, Roma and Townsville.

Education and Training Services

The focus of SPOT's educational activities to service providers is on provision of individualised information either during joint client interventions, telephone consultations or inservices on topics nominated by organisations.

- A total of approximately **750 participants** attended **56 inservices and workshops** regarding a range of topics including the complications following SCI, equipment prescription and carer issues.

- The prescription of pressure relieving mattresses plus a product display was the topic of a **half day workshop**. It was a great success and a product video was made for distribution through-out the state.

- The introduction of **videoconferencing** has been another major achievement. Fourteen (14) videoconferences were presented to areas such as Thursday Island, Cloncurry, Mackay and the Gold Coast. Topics included posture and seating; bladder management; power-drive wheelchair prescription, pressure relieving mattress prescription; psychosocial adjustment; and client specific consultation. This has proved to be a popular and cost-effective medium for delivering training.

Service Evaluation and Research

Research and evaluation are also key components of SPOT's activities. SPOT is evaluating the efficiency and effectiveness of the service through measures such as client and service provider satisfaction; evaluation of education sessions; and performance against key indicators. The following is a list of the research activities currently being conducted by SPOT. A number of these project have a program evaluation aspect.

- **Goal Attainment Scaling (GAS) as a measure of client outcomes** – This individualised and client focused outcome measure has enabled intervention outcomes to be quantified. Results indicate that SPOT is successfully assisting clients to achieve their goals. GAS also facilitates realistic and collaborative goal setting between clients and clinicians.

- **Hospital re-admissions following implementation of the Transitional Rehabilitation Program and Spinal Outreach Team** (hospital readmission during the first two years after rehabilitation discharge) – The first stage (control group data) is completed. Readmission episodes, length of stay and diagnoses within the first 2 years of rehabilitation discharge will now be collected for clients who have participated in TRP and SPOT programs for comparison with the control group.

- **Physical and psychosocial changes in people with long term spinal cord injury** – Telephone interviews with people who have had their SCI for 20 years or more and who are currently 40 years of age or more have commenced. This project is exploring the changes which people experience as they age with SCI.

- **Impact of SPOT service on clients who are high cost users of inpatient care** – The methodology is currently being developed in conjunction with researchers from University of Queensland Department of Social and Preventive Medicine and Queensland University of Technology (QUT) School of Public Health. The study's aim is to examine the impact of SPOT on readmission to hospital for people who have been readmitted frequently and for long periods due to complications of SCI.

- **Aborigines and Torres Strait Islanders with spinal cord injury in Queensland: A review of demographics and mortality outcomes – 1972 to 1997** – The final report has been completed and disseminated. SPOT staff are collaborating with the QUT Centre for Indigenous Health and Research regarding the recommendations.

- **Validation of the SPOT Risk Screening Tool** – Data collection continues. This tool aims to identify those most in need of SPOT intervention within the first six months of hospital discharge.

- **Evidence based practice in reducing urinary tract infections related to intermittent clean self catheterisation (ICSC)** – This project is investigating the most effective catheter soaking technique for ICSC.

Client/patient goals as a qualitative data source for evidence based practice

Research Team:

Dr Pim Kuipers, Research Officer, Acquired Brain Injury Outreach Service.

Ms Michele Foster, PHD Student, Department of Social Work and Social Policy, University of Queensland.

Dr Glenys Carlson, Lecturer, Department of Occupational Therapy, University of Queensland.

Research Details:

Many health and rehabilitation services are seeking to develop evidence-based practice and also ensure a strong client/customer focus. This research project is exploring the use of rehabilitation goal statements to inform both of these emphases.

The primary purpose of the study is to explore client rehabilitation goal statements and develop methodologies to incorporate the analysis of these statements into a broader evidence base.

In tertiary (or community level) rehabilitation, the most influential determinants of the nature and course of interventions are **rehabilitation goals** formulated as part of an individual client's rehabilitation plan. These goals, which clients set together with their rehabilitation coordinator, become the primary guide and reference point for individual rehabilitation services. Within the current research project, these goal statements form a qualitative data source which is analysed (with the assistance of *NUD*IST Vivo* software) using a pragmatic "content" and "thematic" analysis, against a specially developed taxonomy. It is anticipated that the findings will be used to develop indicators of both quality and appropriateness of rehabilitation services at individual and organisational levels.

Research Outcomes:

It is anticipated that evaluation strategies using such content analysis of client goals will be more client-focused than many other approaches.

A biofeedback approach to the treatment of articulatory disorder in patients with traumatic brain injury subsequent to motor vehicle accidents.

Research Team:

Professor Bruce Murdoch, Department of Speech Pathology and Audiology, The University of Queensland.

Dr Deborah Theodoros, Department of Speech Pathology and Audiology, The University of Queensland.

Research Details:

Data collection for this project which aimed to develop new treatment approaches for the rehabilitation of articulatory deficits following traumatic brain injury (TBI) is now complete. A total of 27 subjects with TBI were tested on the protocols as outlined in the research proposal. Data analysis is currently being carried out but the evidence already to hand suggests that the two new biofeedback-based treatment programs developed during the course of the project have much better outcomes with regard to long-term improvement of articulatory function in these patients than traditional treatment approaches. In addition to the new software programs that have been written and implemented, the research team was also successful in further developing and applying a new instrumental technique for the dynamic assessment of tongue function in TBI cases. This new technique called electromagnetic articulography has

the potential to revolutionise the assessment of tongue function in neurologically disordered patients and will be the subject of further research projects in the future. Our research findings to date also indicate that this technique may have significant potential to form the basis of a physiologically-based rehabilitation program for TBI patients with moderate-severe motor speech disorders. The research team at the Motor Speech Research Unit is one of only two groups in the world to have developed and adapted this procedure for use with TBI individuals.

Physiological features of dysarthria in children with traumatic brain injury subsequent to motor vehicle accidents.

Research Team:

Professor Bruce Murdoch, Department of Speech Pathology and Audiology, The University of Queensland.

Dr Deborah Theodoros, Department of Speech Pathology and Audiology, The University of Queensland.

Research Details:

To date, 20 children with traumatic brain injury (TBI) and 20 matched controls have participated in this project which aims to develop a profile of the physiological impairment experienced in the major components of the speech production mechanism following TBI. As part of the work, several new transducer systems specifically designed to assess motor speech performance in children have been developed and applied. These include new instruments to assess tongue and lip function in child neurological cases. Data collection and analysis is continuing, but preliminary analysis of the data collected so far indicates that children who suffer TBI exhibit different profiles of physiological impairment in the different parts of the speech production system, thereby highlighting the need for a full physiological and perceptual assessment of their speech mechanism to determine treatment priorities. If confirmed, these findings will have important implications for the clinical management of motor speech disorders occurring as a result of TBI, highlighting the need for individual treatment programs based on sound physiological assessments to be devised for each case.

Clinical and radiological investigation of acquired dysphagia in children following traumatic brain injury.

Research Team:

Professor Bruce Murdoch, School of Health and Rehabilitation Sciences,The University of Queensland.

Research Details:

This project aims to investigate the relationship between severity of traumatic brain injury (TBI) and dysphagia experienced using procedures which provide qualitative and quantitative analysis of the child's oral-motor/swallowing systems. Assessment techniques have now been determined and to date 10 children with TBI have participated in the study. Data collection and analysis is too preliminary to allow any conclusions to be drawn at this time, however, further subjects have been identified and will be assessed over the next 12 months. Preliminary findings based on the data collected to date will be presented at the 2nd Asia Pacific Conference on Speech, Language and Hearing to be held on the Gold Coast in July 2000.

Enhancing the independence of the severely disabled

Research Team:

Professor Ashley Craig, University of Technology, Sydney.

Research Details:

This project investigates an innovative approach to developing an environmental control unit (ECU) in which the person manipulates their alpha signal (8-12 HZ) component of the electroencephalography (EEG) wave (here called the Mind Switch). Participants can achieve rapid and reliable remote control of electrical devices using amplitude increases in alpha wave activity associated with reduced visual input.

However, the project needs to know the variations in the alpha component in non-disabled and disabled populations. Therefore research will be assessing the neurophysiology (alpha wave signal strength at two bipolar posterior EEG sites contingent with eye closure and eye opening) of who have Spinal Cord Injury (SCI) and persons who have no known disability. Data presented showed that while SCI persons have similar neurophysiological increases over the cortex in amplitude contingent with eye closure, the magnitude of these increases was consistently smaller, resulting in implications for the Mind Switch ECU.

The objectives of this project are:

- To assess the EEG in the home of spinal cord injured persons (N=59) already participating in a controlled longitudinal study of the adjustment to SCI.
- To analyse EEG of the participants in order to determine their suitability to use a Mind Switch environmental control system (ECU) that enables the person to switch electrical devices with their brain signals.
- To make recommendations for SCI intervention and adjustment in the community based on the findings of this research.

Research Outcomes:

This project is assessing electroencephalography (EEG) in the spinal subjects participating in the long-term follow-up of the Sydney Spinal Cord Injury Controlled Trial. The project will continue to measure subjects throughout early 2000, and aims to complete the study by March 2000.

Preliminary results suggest the SCI persons have substantial increases in EEG amplitude occurred following eye closure (EC) to be able to use the Mind Switch. This EEG increase, necessary for the Mind Switch technology, appeared all over the cortex for the disabled persons. All cortical sites were responsive in both non-disabled and the SCI groups, though posterior, parietal, central and frontal (e.g. C_z, F_z, O_1, P_3, O_2, P_z, F_4) showed the highest response. There were no significant differences in EEG amplitude increases between males and females or as a result of age. Handedness was not significantly related to the EC increases

Social supports needs and the perceived controllability of stressful life events for people with traumatic brain injury (TBI)

Research Team:

Dr Elizabeth Kendall, Centre for Human Services, School of Human Services, Griffith University.

Ms Melissa Kendall, Centre for Human Services, School of Human Services, Griffith University.

Research Details:

The project aims to:

- Determine the stressful life events that people with Traumatic Brain Injury (TBI) face on a daily basis.
- Determine the social support needs of people with TBI.
- Determine whether the social support needs of people with TBI differ across different stressful life events faced.
- test the tenets of the Optimal Matching model which states that more emotional support would be required for life events perceived as uncontrollable and more practical support would be required for life events perceived as controllable.
- Determine the degree to which the social support needs of people with TBI are being met by their current support networks.
- Determine whether different types of support (emotional/practical) and different stressful life events require support to be provided by different people within an individual's social support network.
- Determine whether a match between ideal and actual levels of social support across different stressful life events facilitates emotional adjustment.

This project consisted of two components. The first component involved a focus group discussion to determine the types of stressful life events that people with TBI face on a daily basis. The focus group has been completed with five people with moderate to severe TBI participating.

Content analysis was used to analyse the results of the focus group discussion. Participants detailed numerous different stressful life events that they face on a daily basis including a loss of friendships, memory difficulties, discrimination from employers, discrimination from the general public, loss of mobility, legal issues, loss of family and social roles, loss of vocational roles, difficulties with concentration and organisation and a loss of independence in activities of daily living. These events were segregated into those that were rated as uncontrollable events and those that were rated as controllable events. These stressful life events were then used to develop 16 scenarios of typical stressful life events faced by people with TBI.

The second component of the study involved telephone and personal interviews with people with moderate to severe TBI. The scenarios developed from the first section of the study were used within the interview protocol. The interview presented participants with a range of different scenarios. For each scenario, participants were asked to identify the type and source of support they thought they would need to deal with that event and the type and source of support they actually received in relation to a similar stressful life event they experienced. To date, eleven participants have been interviewed.

Standardised measures of psychosocial adjustment have been included in the research and were mailed to participants after the completion of the interview.

Research Outcomes:

Preliminary analysis of findings indicated that people with TBI experience significant decreases in the social support available to them following their injury. Participants perceived a need for emotional, practical and informational support from a variety of sources including family, friends and professionals. Support from peers, particularly emotional support was the most frequently identified support need to date and yet appeared to be the most difficult type of support for people with TBI to obtain. Preliminary analysis showed no apparent difference

in the social support needs of people with TBI in uncontrollable as compared to controllable stressful events.

Developing a rural, community based, disability service: service framework and implementation strategy

Research Team:

Dr Pim Kuipers, Research Fellow, Centre For Human Services, Griffith University and Research Officer, Acquired Brain Injury Outreach Service, Queensland Health.

Dr Elizabeth Kendall, Research Fellow, Centre for Human Services, Griffith University.

Ms Therese Hancock, Taroom Project Community Coordinator, Centre for Human Services, Griffith University.

Research Details:

In response to widely recognised dilemmas associated with rehabilitation and disability service provision in remote and rural areas of Australia, a community based, participatory approach to service development was adapted for a disability service project in Central Queensland. The service framework, known as Community Based Rehabilitation (CBR), fosters the involvement of community members in disability service provision. An implementation strategy was adopted, known as Participatory Rural Appraisal (PRA), reported to foster the participation and decision making of community members in community projects.

Having identified a service framework (CBR) and an implementation strategy (PRA), the project identified a location – Taroom in central Queensland – where ongoing review of research and discussions with rural community members resulted in adapting and operating the PRA methodology to an eight-phase PRA framework. This framework is:

- Phase One - gaining entry to the local community.
- Phase Two - conducting interviews on local disability issues and concerns.
- Phase Three - collecting and analysing secondary information.
- Phase Four - devising a preliminary conceptual framework.
- Phase Five - gaining community approval and support for a meeting.
- Phase Six - conducting a community meeting.
- Phase Seven -providing feedback to community members and key stakeholders.
- Phase Eight - instigating processes for action and sustainability.

Research Outcomes:

The use of the PRA methodology has facilitated strong community ownership of disability issues, and is resulting in service responses that are appropriate to the local community. Anecdotally it appears that the combination of a CBR conceptual framework, and a PRA implementation strategy has already resulted in:

- A sustainable service model to respond the needs of people with disabilities.
- Greater community awareness of disability issues.

- More community support for people with disabilities and their carers.
- More effective networking and coordination between community members.
- Greater informal and community supports for people with disabilities.

Understanding barriers to return to work for people injured in motor vehicle accidents

Research Team:

Dr Nicholas Buys, Centre for Human Services, School of Human Services, Griffith University.

Dr Elizabeth Kendall, Centre for Human Services, School of Human Services, Griffith University.

Research Details:

The project aims to determine the barriers to successful vocational placement and job retention for people with disabilities sustained in motor vehicle accidents.

The project has been divided into two separate studies, a diary study and a retrospective study of key stakeholders.

The diary method has been seen as particularly suited to the examination of daily processes or small events as they occur rather than retrospective interview where clients are more likely to provide broad opinions or feelings without specific detail. It has been argued in the area of health care services that significant processes that impact on clients could be considered "trivial" and are easily forgotten, highlighting the importance of gathering data as close as possible to the occurrence of the event.

Participants in the diary study will be injured drivers with a Compulsory Third Party (CTP) claim who sustained a soft tissue (e.g. whiplash) or orthopaedic injury (e.g. severe fractures) and who have not returned to work or are currently involved in the return to work process. There will be 90 participants distributed among nine cohorts (i.e. 10% cohort). Within each cohort there will be five people with an orthopaedic injury and five people with a soft tissue injury. These injury types were chosen because they represent major disability types within the CTP scheme.

Cohorts will be matched as closely as possible on variables that include age, gender and type of employment. Each cohort will be selected to represent a four-monthly interval across timespan from onset of injury through to three years post-injury. Therefore cohort 1 will be four months post injury and cohort 9 will be three years post injury. Three years post injury was chosen for the final cohort as this time reflected the average time for a case to be settled under the motor accident system in Queensland. It is recognised that many injured drivers will have returned to work prior to this date.

Participants will keep a structured diary for a four month period, responding to open-ended questions to assess (a) return to work activities (b) thoughts and feelings about rehabilitation and return to work (c) sense of well being (d) progression towards vocational goals (e) perceived problems or barriers to achieving goals and (f) nature of interactions with other key parties in the return to work process.

After the conclusion of the recording period, an in-depth semi structured interview will be conducted with participants based on the responses in their diaries to enable researchers to clarify any information and inconsistencies in the diary entries and probe into particular content.

The purpose of the retrospective study is to explore barriers within the process of return to work from the perspective of key stakeholders involved in the CTP system. A random sample of participants will be drawn from insurance claims managers, rehabilitation providers, legal representatives, doctors, allied health practitioners and employers.

Participants will be selected through phone contact and by mail out (including an invitation to participate in the research and a consent form to return). In depth semi structured interviews will be conducted with each participant. New participants will be added to the group of participants until the information gained from the interviews reaches "saturation point"; i.e. no new information is forthcoming.

All participants will be asked to outline barriers they perceive are significant that impede the return to work process for clients. They will be asked to discuss these in terms of the timeframe from injury to return to work so a perspective can be gained as to whether barriers change over the period of time. Participants will also be asked to discuss these barriers in terms of the role of other key stakeholders in the return to work process and the impact on clients. This is intended to provide a "systems" view of barriers in terms of the role of other key stakeholders in facilitating or impeding the return to work process.

Research Outcomes:

This research has already been presented at the CONROD Conference and in two international workshops (Virginia, USA and Ontario, Canada). It is expected that the research will be submitted for publication in an international journal, as there is very little research in this area, particularly from the perspective of employers.

Virtual Rehabilitation Teams

Research Team:

Associate Professor David Radcliffe, Department of Mechanical Engineering, University of Queensland.

Statewide Paediatric Rehabilitation Service (SPRS), Royal Children's Hospital.

Research Details:

The Virtual Teams project was undertaken at the Statewide Paediatric Rehabilitation Service (SPRS), which is based at Brisbane's Royal Children's Hospital. The SPRS combines a wide variety of professional disciplines treating patients from remote areas. It is these two factors that make coordinating patient care a difficult task. This project was undertaken with the aim to improve the quality of patient care through improving patient management practice by implementing tools with a virtual teaming concept.

The first step in the process was to understand and evaluate the workflow and information management in the SPRS environment. This was achieved through numerous means including interviews with the staff at the SPRS, attending multi-disciplinary assessment planning (MAP) and rehabilitation planning meeting (RPM) sessions and patient therapy sessions. Through evaluation of work processes and consultation, a preliminary design of the SPRS Case Coordinator software was specifically based on the OTTR patient management system.

An innovative Web interface was devised to provide user-friendly access to the OTTR system and other SPRS databases. The interface comprised a number of pages that are accessed through a global menu. The global menu is visible at all times, providing instant access to page viewing and the ability to input data exclusive to the user's position on the system. There are a number of page interfaces that collate patient data for ease of viewing and manipulation. There is also a patient home page that will be the main point of focus for the coordinator, collating information about the patient's status.

A basic, proof of concept version of the software is being produced in association with the OTTR software agent in Australia. Once this is delivered, it will be implemented into the SPRS using five patients as a trial of the system.

Research Outcomes:

This product will be the first of its kind in rehabilitation medicine. It has the potential to improve patient care in a variety of areas, including:

- Patient-centric care versus profession-centric care
- Patient program refinement
- Remote access information sharing
- Ease of information access and sharing throughout multidisciplines
- Improved efficiency through set protocols
- At a glance patient status versus lengthy paper file interpretation
- Reduced information loss due to autonomous profession information collation and storage
- Improved care planning through measurable goal planning
- Ease of data manipulation for research
- Reduction in patient travel costs

Disability following traumatic injury in rural Australia: are country residents achieving inferior rehabilitation outcomes?

Research Team:

Dr Gregory C Murphy, School of Public Health, La Trobe University.

Dr Amanda E Young, Monash University Centre for Rural Health/School of Public Health, La Trobe University.

Research Details:

Severely injured people in rural and remote areas have the disadvantage of reduced access to specialist treatment and rehabilitation services. As a consequence, they might be expected to achieve inferior rehabilitation outcomes. Recent research focusing on rehabilitation of spinal cord injured farmers suggests that for those employed at the time of injury, there is little difference in the post injury labour force status between the people residing in metropolitan and non metropolitan areas. This project will report subsequent research focused on a larger group of rural and urban dwellers that suffered a traumatic spinal cord injury in southeastern Australia using a broader definition of rehabilitation outcomes. Semi-structured interviews covered a range of issues including barriers and facilitated to successful rehabilitation and community integration. Preliminary analysis indicates that there are a number of factors related to rural environments that facilitate positive rehabilitation experiences and assist individuals to make rehabilitation gains. These factors include family and social support, the attitudes of health service providers and the willingness of employers to make a place for those with physical impairments. Specific strategies for assisting country residents to achieve improved rehabilitation outcomes will be discussed, including the role of rural practitioners.

Research Outcomes:

Developments arising from the project have included:

- Two proposals involving extensions of the investigations to be submitted for industry partnership funding to the NHMRC and the ARC
- The development of new curricula for health professionals
- Advances in clinical services offered to those who suffer a spinal cord injury residing in rural areas.

The support through CONROD has not only resulted in answering the specific research question, it has already led to the development of a productive industry linkage, to being better able to prepare health professionals for work in a rural setting and to improved services for injured persons at the individual level.

An investigation of prospective memory function in adults with traumatic brain injury

Research Team:

Dr Jenny Fleming, Senior Clinical Lecturer, University of Queensland.

Dr David Shum, Senior Lecturer, Griffith University.

Professor Jenny Strong, University of Queensland.

Mrs Julie Connell, Princess Alexandra Hospital, Brisbane.

Research Details:

Memory problem is one of the most commonly reported difficulties reported by individuals with traumatic brain injury (TBI) and their significant others. The assessment and rehabilitation of this type of difficulty have focused on retrospective memory, or the ability to recall or recognise previously presented or learned information. Little research has been conducted on another type of memory termed “prospective memory” or the ability to remember to carry out intended actions in the future. While the retrospective recall of information is important to people with TBI, many daily activities require individuals to remember to perform an intended action in the future. Prospective memory, therefore, is considered to have implications for independent living and reintegration into the community and workplace in individuals with TBI. This project aims to develop a reliable and valid prospective memory questionnaire and investigate the nature and extent of prospective memory impairment in this group of individuals.

After reviewing the literature and evaluating existing memory questionnaires, a three-part questionnaire was developed. The first part consisted of 39 questions and measured the frequency of prospective memory problems. The second part consisted of the same 39 questions but measured how severe the respondent regarded each of the problems. The third part consisted of 42 questions and assessed the nature of prospective forgetting. Results collected from a group of 72 undergraduate students indicated that the questionnaire had reasonable test-retest reliability and that stable components could be extracted from the three parts of the questionnaire.

Data were also collected for a group of ten individuals with TBI from the Princess Alexandra Hospital, Brisbane. To determine the level of self-awareness of prospective memory difficulty in these individuals, the significant others of these individuals were also asked to complete the same questionnaire.

Research Outcomes:

These results were presented at the 3rd National Conference on Injury Prevention and Control in May in Brisbane. Based on these results, the questionnaire was further refined and data for more clinical participants were collected to increase the reliability and generalised nature of the findings. At present these analyses and interpretation of this set of data are being finalised and a number of journal manuscripts are being prepared.

Identifying factors for successful return to work through technology in the workplace

Research Team:

Dr Sylvia Rodger, Department of Occupational Therapy, University of Queensland.

Mrs Desleigh de Jonge, Department of Occupational Therapy, University of Queensland.

Mrs Heidi Fitzgibbon, the Independent Living Centre of Queensland.

Research Details:

This project aimed to describe barriers and supports to successful integration of a person with a spinal cord injury (SCI) in the workplace and compare the perspectives of employers, coworkers and technology users regarding successful integration of technology at work.

A qualitative methodology was employed and 11 people with SCI who used assistive technology in the workplace were recruited. The participants were all male aged from 18 to 60 years. Three were self-employed, one was a contract worker, three were in small businesses, three worked for State and local governments and one worked for the Commonwealth. Eleven coworkers or employers were also recruited. All participants were interviewed using an interview guide developed for the study. Interviews lasted between one and two hours and were tape-recorded. The tapes were transcribed and coded according to emergent themes.

Five major themes emerged in relation to using assistive technology at work: identifying the right technology for their needs, acquiring the technology, customising and learning to use the technology, supporting the technology in the workplace and empowerment in the workplace. The supports and strategies that had enabled them to identify the right technology solution were: the importance of knowing what you need, receiving assistance from an occupational therapist; contact with other users; being well informed about the range of options; using specialist technology services; keeping up to date and arranging for short term trials of equipment.

With regard to best practice in technology acquisition, participants identified having control over decisions, access to response information technology support and funding as major contributors to successful integration at work. In terms of customisation, they proposed the following: being aware of what is possible, accessing the right people, using occupational therapists for specialist support, having the opportunity to explore and accessing support for learning and training.

Research Outcomes:

In terms of supporting the use of assistive technology in the workplace, they proposed: the use of low-tech adaptations, access to information technology support, the need for funds to upgrade technology, considering mainstream technology developments and the advantages and flexibility of laptop computers.

For most of the participants with SCI, their ability to advocate for themselves was critical to their successful integration. It is therefore important that service providers collaborate with

technology users to share information, knowledge and expertise to enable users to become their own experts on their needs in the workplace.

Central nervous system regeneration: mission impossible?

Research Team:

Norman Saunders, Head Department of Anatomy and Physiology, University of Tasmania.

Elizabeth Fry, Department of Anatomy and Physiology, University of Tasmania.

Research Details:

The inability of the central nervous system to regenerate following injury has been a long-standing medical mystery and the associated loss of function remains irreversible. There appears to be a multitude of factors, which contribute to the non-regenerative state of the post-injury central nervous system, and accordingly, eliciting a regenerative response from an injured central neuron is a complex task.

A damaged axon must be able to sprout and maintain its growth. The application of neurotrophic factors and the inhibition of molecules inhibitory to regeneration may assist this process. Regrowing axons must then enter and cross the injury site, which is thought to have properties that impede the passage of neurons. The grafting of growth-permissive tissue into the injury site may act as a bridge for regenerating axons. Axons must elongate in the appropriate direction such that specific target regions are recognised and re-entered. Guidance molecules have an important role in these processes. Appropriate synaptic connections are required for functional transmission of nerve signals and correct reinnervation of topographical maps in target regions.

The return of function following a central nervous system injury would complete the regenerative process and may be encouraged by physical neurorehabilitation. As yet, functional recovery that depends on regeneration from spinal or other central nervous system injuries has not been achieved in patients.

The requirements for CNS regeneration are complicated and difficult to achieve for injured central axons. However, now requirements are known and strategies to overcome them are partially determined, it has been possible to dramatically change the outlook for the spinal patient. Small numbers of regenerated axons would mean the world of difference to a quadriplegic.

It is now understood that attempts to produce clinical repair after central nervous system injury would involve several treatments where the windows of opportunity exist. So when a patient suffers a spinal injury, treatment may include:

- The application of trophic support into the lesion site for axotomised neurons to initiate and maintain a cell body response conducive to regrowth
- Surgical intervention to provide a bridge across the injury site containing either Schwann cells or olfactory bulb ensheathing cells derived from the patient's own tissue
- The application of antibodies blocking the inhibitory action of myelin associated molecules and other glial elements
- Gene therapy to induce the correct cascade of guidance molecules to be released at appropriate times
- Physical rehabilitation to ensure that the muscle wastage is reduced and encourage function reconnection

Research Outcomes:

These strategies are yet to be individually tested on spinal patients and there must be many assessments of the individual elements for safety and their degree of effectiveness. It will take time but by approaching the problem in small steps, regeneration of the central nervous system, once thought to be impossible, may indeed be a reality for those devastated by spinal injury.

Repair of the injured spinal cord

Research Team:

Professor Norman Saunders, University of Tasmania.

Associate Professor Kate Dziegielewska, University of Tasmania.

Research Details:

The project is part of a new approach to the study of spinal repair in mammals, with the eventual aim of developing treatment for patients with spinal injuries. This approach involves the use of a marsupial species, the South American short-tailed grey opossum (*Monohelphis domestics*). This project has the only colony of this species for experimental work in Australia. Like other marsupials, these animals are born at a very early stage of development. Studies showed that these animals recovered both anatomically and functionally from complete spinal transection if the injury was made in the first week of life. For comparison, experiments in newborn rats are not followed by such repair and recovery, although recovery would occur if the spinal cord of fetal rats was operated upon, but this is technically very difficult.

The overall aim of the studies with the opossum is to document the nature and extent of repair that is possible to achieve following a spinal cord injury and to understand the age related changes that occur preventing recovery after two to three weeks of age. Once these processes are understood, the aim is to try to reprogram the adult spinal cord to recover some of its immature attributes so as to improve its ability to repair following injury. There are only two other laboratories in the world using this approach.

A detailed study has been carried out of the amount of structural repair and level of behavioural recovery in newborn opossums with spinal cord injuries. This has shown for the first time that there is a direct correlation between the amount of tissue repair and functional recovery and also that a substantial degree of function occurs with significantly less than full tissue repair. These results are important because it has been widely believed that recovery might not require full anatomical repair, although there has been no experimental evidence to support this. This observation will be important in designing treatments for patients since it suggests that it will not be necessary to aim for complete anatomical repair. This work is being prepared for publication in the journal *Experimental Neurology*. Part of this work was presented at the Australian Neuroscience Society meeting in Melbourne in February 2000 and latest results will be presented at the 5th Paralympic Scientific Congress in Sydney in October 2000.

Experiments are being carried out to determine the source of fibres that bridge the site of injury and lead to repair. These axons could be from local circuits confined to the spinal cord, or they could be long tract axons that originate from nerve cells in the brain (motor nerves that control movement) or ascend from the sensory ganglia on either side of the spinal cord (the tracts which give rise to sensory experience). Project studies of the long tracts have found most of the nerve cells of origin in the brain are capable of sending axons across the site of injury. This is a new and important finding as other groups have claimed that many nerve cells in immature brains die when their axons are injured. This work was presented at the recent Australia Neuroscience Society annual meeting in Melbourne and is being written up for publication, probably in the *Journal of Comparative Neurology*. This work will also be presented at the 5th Paralympic Scientific Congress in Sydney in October 2000 and at the Society for Neuroscience meeting in New Orleans in November 2000.

The project has also developed a method for distinguishing between axons that are growing as an extension of injured axons from those that are growing as part of normal development and were not present at the time of injury.

Developmentally regulated changes in the immature spinal cord that may account for recovery from injury not shown by the adult.

Preliminary results in this approach indicate that between one week, when recovery occurs, and three weeks, when it does not, there are major changes in both growth factors that promote nerve fibre growth and inhibitory factors, which prevent growth.

Because the molecular studies represent a major piece of work and several different approaches are possible, the project is collaborating using different techniques with the Molecular Biology Institute, Austrian Academy of Sciences, Salzburg. The experimental material is prepared in Hobart and taken to Salzburg for analysis. The first material will go there in early April 2000.

The structure of drugs in relation to their ability to enter the brain and spinal cord is under study. These are normally "protected" by mechanisms referred to by the term "blood-brain barrier". A therapeutically detrimental consequence of these mechanisms is that many drugs, which are known to be effective in acting on the nervous system, are useless in clinical practice because they do not reach the central nervous system when taken by mouth or injected into the patient, unless injected directly into the brain or spinal cord which is usually impractical. The project has been collaborating with researchers in London and has been testing a series of metal chelating drugs for their ability to penetrate into the central nervous system.

The project is setting up experiments to examine the role of cytokines and the inflammatory response in the immature brain and spinal cord in the response to an insult. Controlling the inflammatory response following injury would lead to considerable improvement in the clinical outcome for spinal injury patients because of the ability to limit the secondary consequences that otherwise follow the primary injury.

Research Outcomes:

Experimental data are continuously evaluated by discussion in the laboratory. More formal evaluation is by presentation of results at national and international meetings and by publication of papers in peer reviewed journals or in response to invitations from journal editors and publishers.

In the last three months of the grant period, it is expected that progress will be made on preparing manuscripts for presentation; preliminary samples for molecular studies will have been prepared and delivered to Salzburg for analysis; analysis of the remaining behavioural data will be completed; the methods for in vitro spinal cord preparations will be set up to be used for evaluation of which growth factors and anti-inflammatory agents promote axon growth following injury; and blood-CNS permeability of a series of metal chelators will be measured and compared with theoretical predications of their permeability. The more penetrant ones will be tested in vitro for axon growth promoting properties.

Mechatronic aids for the disabled

Research Team

Professor J Billingsley, National Centre for Engineering in Agriculture, University of Southern Queensland.

Dr P Aigner, National Centre for Engineering in Agriculture, University of Southern Queensland.

Dr M Durack, National Centre for Engineering in Agriculture, University of Southern Queensland.

Research details:

Rapid progress is being made on the BrowsMouse, one of the ongoing components which forms part of this research project. The BrowsMouse is an interface designed to reduce the impairment a disabling accident can inflict on the victim's life. It enables people who have little or no use of their arms to operate a standard computer by using their eyebrows.

The BrowsMouse consists of a pair of spectacles, which serve as a mounting frame for sensors which detect movement of the users eyebrows. The up and down movements of both eyebrows are conveyed to a small box which generates 'mouse codes' which are sent to the computer system via infra-red light signals. The received signals are interpreted in exactly the same way as a conventional mouse. Thus, compatibility problems are avoided and the user can point and click using their eyebrows.

The BrowsMouse has been developed based on needs and design criteria determined in earlier stages of this research. It has been designed to minimise the cost to the user. It is robust, easy to use, light weight and unobtrusive.

After encouraging publicity and links forged with disability groups, the BrowsMouse is about to undergo extensive field trials with the aim of making it a commercial product. Thus far 18 BrowsMice have been built for evaluation purposes. These units will be distributed among disability groups, including the Toowoomba Library Disability Access Centre, and individual users around Australia and overseas.

Research Outcomes:

The future of the BrowsMouse is in providing computer access as well as in giving the users more independence in their living environment. To enhance independence, home automation is currently making inroads into the disability industry. The BrowsMouse, which communicates using infra-red light, will be adapted to link with home automation systems. This will make the BrowsMouse a very flexible aid for people with disabilities.

MIRF mobile intensive care rescue

Research Team:

Professor J Grant-Thomson, University of Southern Queensland

Research Details:

It is a well documented fact that early intervention of severe trauma cases improves recovery rates. Organic to this capability is the need to provide highly mobile medical facilities equipped with appropriate medical technologies. The exponentially increasing capital expenditure required to design and develop air and road platforms dedicated to provide critical care facilities during transportation is significant. A serious implication of customising road vehicles or aircraft for emergency transport is that inbuilt life support equipment tragically becomes unusable should the vehicle or aircraft become unserviceable. Further, during transfers from one vehicle to another or from a vehicle to a hospital, the patient has to be disconnected from these inbuilt life support systems to effect the transfer.

The Mobile Intensive-care Rescue Facility (MIRF) designed by Professor John Grant-Thomson in the Faculty of Engineering at the University of Southern Queensland for the Australian Defence Force has seen action in the Rwandan war and other international humanitarian aid missions. The MIRF integrates patient,stretcher, monitoring and resuscitation equipment into a biomedically engineered , highly mobile capsule capable of

being transported easily by road or air. The application of such a system in the public health sector is obvious.

Research Outcomes:

This project aims to evaluate the efficiency and effectiveness of the MIRF in the public health sector through the deployment of two MIRF's in public hospital and ambulance scenarios. Currently the MIRF's are on trial at Toowoomba General Hospital and with Careflight. Data are being collected on their use for inclusion in the final report. Major areas of interest include integration with existing systems, level of trauma, types of vehicles, equipment ensemble and training levels required for efficient MIRF use.

Psychological well-being of at fault driver injured family members

Research Team:

Dr R Ho, School of Psychology and Sociology, University of Central Queensland.

Dr M van Dyke, School of Psychology and Sociology, University of Central Queensland.

Dr G Lawrence, School of Psychology and Sociology, University of Central Queensland.

Dr G Wood, School of Psychology and Sociology, University of Central Queensland.

Dr M Agar-Wilson, School of Psychology and Sociology, University of Central Queensland.

Research Details:

According to anecdotal evidence available from the MAIC, injury to a passenger in a motor vehicle accident may be more profound if the at-fault driver and the injured passenger are from the same family. As part of the general rehabilitation process, our research was designed to answer the basic question: "*How can we improve the quality of life of passengers injured in the car of an at-fault driver, when the driver and passenger are from the same family*?". In order to answer this question, we have designed and carried out a three-stage project from identification of the problem to intervention.

Stages 1 and 2 were designed to test the assumption that the impact of a motor vehicle accident is more profound if the at-fault driver and the injured passenger are from the same family. These two stages were successfully carried out and the results have been reported at the *3rd National Conference on Injury Prevention and Control (Brisbane, Queensland, 9-12 May 1999*), and published in the *Journal of Health Psychology* *.

Research Outcomes:

Based on the findings from Stages 1 and 2 of the study, a therapeutic program has been developed. This therapeutic program aims to promote the rebuilding of shattered belief systems and improved psychological well-being for victims of motor vehicle accidents through cognitive restructuring. The program is presently being tested, and data collection is proceeding well. Once data collection is complete, the effectiveness of the program will be evaluated.

* Ho, R., Davidson, G., Van Dyke, M., & Agar-Wilson, M. (2000). The impact of motor vehicle accidents on the psychological well-being of at-fault drivers and related passengers. *Journal of Health Psychology*, 5(1), 33-51.

Queensland Teaching and Community Service Rehabilitation Research Centre

Research Team:

Mr S Tweedy, Research Fellow Physical Activity for People with Disabilities, The University of Queensland .

In February 1997 the inaugural Fellowship was established in the School of Human Movement Studies for an initial period of five years. 1999 was the third year of appointment for the inaugural Fellowship holder, Mr Sean Tweedy, and this report summarises his activity in the three primary areas of responsibility – research, teaching and community service.

Research Details:

Research
The most exciting development in 1999 was the procuring of funding to support the establishment a mobile exercise science laboratory. This facility will be a self contained laboratory (floor space approximately $10m^2$) mounted permanently on a cab chasse. It will be outfitted with state-of-the-art remote movement analysis equipment that will permit fundamental and applied research on physical activity and movement control in groups for whom normal laboratory access is either impossible or inappropriate. Chief among the populations of interest are people with more severe disabilities, particularly those in rural and remote areas.

Establishment of this facility has been one of the primary goals of the Fellowship since its inception, and was made possible through initial seeding monies provided by CONROD as well as the Australian Research Council, various sources within the University of Queensland and Southern Cross University.

Funding for a collaborative research project entitled "*The efficacy of a community based physical activity intervention in improving the health of people with acquired brain injury"* was applied for in 1999. Although the application was unsuccessful, strong links were forged with researchers from the Princess Alexandra Hospital and the Brain Injury Association of Queensland. It is expected that the proposal will be refined and resubmitted in 2000.

Teaching
Eight Students graduated from the Masters of Scientific Studies (MScSt) course and four of these chose to undertake specialist studies in exercise prescription for people with central nervous system impairment, the main focus of this Fellowship. Additionally, seventy-eight undergraduate students completed the course entitled Adapted Physical Activity for Special Populations. These figures reflect an increase in the number and quality of students completing studies in this area since the establishment of the Fellowship, an important medium term step towards improving the standard and number of practitioners able to provide services to people who have had motor vehicle accidents.

Community Service
The Adapted Physical Activity Programme (APAP) is the community service arm of the Fellowship, receiving referrals community based rehabilitation providers at Statewide Paediatric Rehabilitation Service, Geriatric Rehabilitation Unit (QEII) and ABIOS and SPOT (at Princess Alexandra Hospital). APAP provides community based physical activity programmes as an adjunct to the services provided by these agencies. In Sem I, 1999 thirteen students designed programmes for eight clients and in Sem II, ten students designed programmes for ten clients. The written feedback received from Rehab. Coordinators regarding the appropriateness and effectiveness of the services provided by APAP was very positive.

I also made an invited presentation entitled at the "Adapted Physical Education Needs of Students with Unique Needs" workshop held 25th to 29th January, 1999 in Taiwan. This was a joint programme of the National Taiwan Normal University and the Australia Sports Commission.

Establishment of Orofacial Trauma Research Unit

Research Team:

Epidemiological Surgery – Professor T Freer, The University of Queensland.

Biology of wound healing – Professor M Bartold, The University of Queensland.

Effect of trauma on dental pulp – A/Professor LJ Walsh, The University of Queensland.

Aids for Quadriplegics – Emeritus Professor RR Stephens, The University of Queensland

Research Details:

The Orofacial Trauma Research Unit (OFTRU) aims to provide a focus for basic scientific, clinical and epidemiological research and treatment in the field dental trauma arising from accidents. This unit is unique in Australia (and probably the world) in having a major focus on orofacial trauma with respect to its incidence, its effects and its management.

The key benefits of this Unit include the identification of the incidence of orofacial trauma in Queensland, the establishment of research and training posts, the development of new technologies as well as the development of new products designed to improve the quality of life for individuals affects by motor vehicle accidents.

The Unit has been established within the Department of Dentistry at the University of Queensland through the appointment of a director, a research advisory panel and 4 identifiable project areas.

The major research focus of the OFTRU has been divided into the following areas:

Dental Trauma survey.
Biology of wound healing.
Effect of trauma on dental pulps.
Development of aids for quadriplegics.

The activities of each of these groups are detailed below:

PROJECT 1.
DENTAL TRAUMA SURVEY

Aims:

- Identify types of orofacial trauma
- Study the causes of orofacial trauma
- Determine the relationships between etiological factors
- Collect and analyse data

General preventive and rehabilitative strategies

Personnel:

Project Leader: Professor TJ Freer
Research Officer (Ms Elisa Bastone) - part funded by MAIC & part funded by University of Queensland Research Funds
Graduate research assistant - funded by the University of Queensland Dental School

Progress Report

This progress report should be read in conjunction with previous reports submitted. The activities of the Dental Trauma Survey Group continue to build on previous activities which have included recruitment of patients to the large-scale trauma study is continuing. To date,

over 467 trauma patients have completed trauma questionnaires and consent forms and these data are being entered into a database and analysed. To date, the data indicate that the most common maxillofacial injury recorded in this study was injury to the teeth. This included dislocation or loosening, fractures and avulsions and injuries that were not further classified. The next most common injury was zygoma fracture and included all types of fractures. Males outnumbered females in all maxillofacial injuries except alveolar ridge fractures, and dental injuries, however these differences were not significantly different.

PROJECT 2.
BIOLOGY OF WOUND HEALING

Aims:
Investigate new means of stimulating bone repair.
Apply technology to repairing dental trauma defects.

Personnel:
Project Leader: Professor PM Bartold
Project Associate: Associate Professor LJ Walsh
Full time PhD scholar (Mr Y Xiao) – part funded by MAIC
Part Time PhD Scholar (Dr N Doan) – part funded by MAIC
Research Staff - funded by University of Queensland Dental School

Progress Report:
This progress report should be read in conjunction with previous reports submitted. Two projects are currently under way. In one study the role of the plasminogen system in wound repair is being investigated for its potential to be used in regenerative therapies following trauma to the periodontium. In another study, the effect of low level laser therapy on the healing of orofacial wounds is being investigated.

Both projects are proceeding very well. The plasminogen system project has generated three papers which have been submitted for publication and the low level laser project has resulted in the preparation of one manuscript to date.

PROJECT 3.
EFFECT OF TRAUMA ON DENTAL PULP

Aims:
To understand the physiological changes in pulp following trauma.
To understand neuro-immunological changes in pulp following trauma.
To develop suitable storage media for avulsed teeth.

Personnel:
Project Leader: Associate Professor LJ Walsh
Visiting scientist (D K Yamazaki - Japan) - funded by MAIC
Research Staff - funded by University of Queensland Dental School

Progress Report:
This project is now completed and a full report of the findings of this study was presented in our previous report dated December 1998.

PROJECT 4.
AIDS FOR QUADRIPLEGICS

Aims:
Improving the quality of life for quadriplegics.
Development of mouthsticks for use by quadriplegics.
Aid in self use of “push button” appliances.
Aid in self feeding

Personnel:
This project is run solely by Emeritus Professor RR Stephens

Progress Report
This progress report should be read in conjunction with previous reports submitted. This project continues to progress very well. Professor Stephens is continuing to refine several aspects of the engineering features of his "mouthsticks". Professor Stephens is currently drawing up detailed engineering plans and blueprints of his devices and it is intended that these will later be used for the next phase of his project which will be consideration of development of these aids within a more commercial framework.

Measurement of physical impairment in the cervical spine of chronic whiplash subjects.

Research Team:

Associate Professor Gwendolen Jull, Department of Physiotherapy, The University of Queensland.

Research Details:

Whiplash associated disorders continue to challenge those involved in rehabilitation. In Queensland, 52% of all compulsory third party insurance (CTP) claims involve whiplash, with whiplash being the major injury in 42% of all claims. Insurance pay-outs indicate that the cost of these injuries is between $70-$90million per annum in this State alone. Two key issues which must be addressed to progress rehabilitation in whiplash associated disorders (WAD) are the inability to quantify physical impairment in WAD, and the lack of integrated, evidence-based treatment approaches to the rehabilitation of WAD. The project *Measurement of physical impairment in the cervical spine in chronic whiplash subjects* aims to address these issues.

As a direct result of the CONROD Project Grant, the Whiplash Research Unit has been established within the Department of Physiotherapy at The University of Queensland. Processes within the unit were structured to meet the joint demands as a research unit and a self-funding clinical service. The project established a target to assess 110 individuals with persistent whiplash associated disorders during 1999 and achieved this target. Database development continues to progress, with a total of 200 individuals with whiplash associated disorders assessed by July 2000.

Comparison of results of physical measures with those obtained from the previous MAIC funded project *(Establishing a normative database for measures of physical impairment in the cervical spine)* has allowed assessment of the relevance and discriminatory capabilities of these measures to be commenced. Analysis of the data has revealed that statistically significant differences exist between asymptomatic and whiplash subjects on a range of the newly developed measures of physical impairment. These findings have so far resulted in the submission of five manuscripts for publication, with additional articles in preparation.

Research Outcomes:

Refinement of the tests of physical impairment and development of new tests has also been made possible by analysis of results and has been enhanced by completion in July 1999 of a collaborative project with an international researcher. Further development of the diagnostic potential of the measures of physical impairment will be assisted in the coming year by provision of research funds from the State's largest compulsory third party insurer.

Promotion of best practice management for individuals with whiplash associated disorders continues to be a priority for the research team. Practitioners referring clients to the Whiplash Physical Diagnostic Clinic receive detailed information about appropriate treatments for the individual as well as more general information, which is applicable to a variety of clients with whiplash associated disorders. Presentation of research findings and clinical information obtained during this project has also been undertaken through a range of activities at

international, national and local conferences and meetings. The chief investigator represented the MAIC on the Motor Accident Authority of NSW, Whiplash Clinical Practice Guidelines Working Party.

This project has therefore provided the platform for the successful development of a three-pronged approach to addressing WAD in Queensland:

1) A dedicated research unit
2) A self-funding clinical service
3) A self-funding education program for physiotherapists and other health care professionals.

The research unit, which forms the central core of the project, has already attracted two PhD candidates and a Masters student. The clinical service has provided a high quality consultation and rehabilitation plan for 200 persistent WAD clients from as far afield as Townsville. The education program developed by the research team has reached over 200 physiotherapists and medical practitioners.

Driver Assessment Training & Rehabilitation Research Centre

Research Team:

Professor J Strong, Department of Occupational Therapy, The University of Queensland.

Research Details:

The Driver Assessment Training, Rehabilitation and Research Centre was established within the Department of Occupational Therapy, The University of Queensland in October 1998. Funding for the establishment of the Centre was provided the Motor Accident Insurance Commission. Professor Jenny Strong is the Director of the Centre.. Val O'Meara was appointed as Research Assistant and her responsibilities include the development and the running of the driver assessment training course for Occupational Therapists.

One of the major purposes of the Centre is to train Occupational Therapists in the processes of Driver Assessment and Rehabilitation. The first training course was conducted in February 1999, with subsequent courses in September 1999 and February 2000. A total of 19 Queensland therapists have been trained to date. The Motor Accident Insurance Commission also provided funding for a bursary scheme to be established whereby therapists from rural and country areas have their course fees subsidised. Eleven therapists have been trained under this scheme and they have subsequently developed Driver Assessment programmes in Toowoomba, Townsville, Rockhampton, Gladstone, the North Coast and the Gold Coast. The next course will be conducted in August/September 2000.

Research Outcomes:

Promotional activities have been conducted throughout 1999 and have included public lectures as well as informing medical practitioners about the process of Occupational Therapy Driver Assessment. Regular discussions are conducted with Queensland Transport regarding the policies and procedures for the assessment of people with a disability and medical conditions. Research projects being conducted at the Centre include an investigation into the long term outcomes of people who participate in Occupational Therapy Driver assessment and rehabilitation. Further research relevant to the Occupational Therapy assessment process is being planned.

Road trauma related "head and neck injuries and outcomes"

Research Team:

Professor F Monsour, Maxillofacial Surgery Unit, Royal Brisbane Hospital

Dr Greg Peek, Maxillofacial Surgery Unit, Royal Brisbane Hospital

Dr Anthony Lynham, Maxillofacial Surgery Unit, Royal Brisbane Hospital

Miss Pamela Pattel (RN), Maxillofacial Surgery Unit, Royal Brisbane Hospital

Research Details:

This study is being co-ordinated through the "Maxillofacial Units" within the Brisbane Metropolitan Hospitals, and conducted as a collaborative study requiring multidisciplinary involvements and commitments to achieve its stated goals.

The project aims to accurately identify existing treatment patterns and protocols and outcomes of 'facially injured road trauma victims' and to utilise this information measured against best practice standards to develop optimal multidisciplinary based treatment protocols appropriate to Statewide
Health Services.

The Study has essentially two defined stages:

Stage 1: Retrospective Study (1999/2000)
Stage 2: Prospective Study (2000/2002)

A particular strength of this project is the achievement of appropriate levels of co-operation and commitment within multiple disciplines involved in 'Head and Neck' trauma, and this has demanded extensive detailing and specific undertakings to develop the platform for extension of the Study.

Although significant time has been consumed in accurately detailing and recording 'Unit Specific Indicators', this will provide a most comprehensive database quite unique in its development.

The span of information being identified in the retrospective analysis includes:

(a) The number of road trauma 'Head and Neck' injuries treated within each specialty for the past five (5) years;

(b) The type of management and treatment of each specific patient injury;

(c) Identification of difficulties experienced by each specialty during management of patient suffering from road trauma 'Head and Neck' injury;

(d) Identification of delays in management of a particular injury and, if evident, reasons why (for each specialty);

(e) Patient outcome in acute phase for each specialty (dependent on injuries patient received);

(f) Patient outcome following rehabilitation and/or follow-up management for each specialty;

(g) Identification of number of patients 'lost to follow-up';

(h) Identification of re-admission rates;

(i) Identification of patient length of stay.

To date the research of relevant hospital files, principally concentrated on some 400 Royal Brisbane Hospital road accident cases of multi-trauma involving maxillofacial injuries, while disclosing quite significant deficiencies in both consistency and quality of documentation, has been most instructional and highly productive of evidence-based case management.

The Retrospecive Study is destined to become a very significant component of the more definitive study, as it will represent an extremely valuable overview of current trends in trauma management which need to be closely audited. There are also disclosed serious deficiencies in rehabilitation and longer-term reviews due to a multitude of factors being analysed.

The extension of the 'Pilot Study stage' to more comprehensive analysis and interpretations, necessitated repeated returns to case notes in the first 12 months to determine additional information impacting on the overall case management. This extremely valuable additional exercise has embraced further clinical and non-clinical parameters crucial to the overall assessments, but highly demanding in additional time commitment from the study investigators.

It is now felt that the parameters and extended data requirements have been fully exposed and refined, which should accelerate passage through the remaining case files in other Metropolitan Hospitals.

Research Outcomes:

This Study will become extremely valuable as a scientific tool for trauma management, as well as being quite unique in its comprehensive and should be extended as identified with relatively modest overall commitment, but potentially considerable benefits in trauma patient care.

It is proposed, therefore, to continue the Stage One (1) aspects of the project for a further period of up to six (6) months. It is intended to parallel this extended staging with initiation of the collective basis for the second stage, with proposals being developed through multi-unit collaboration on the basis of findings to date.

It is proposed that the extension of numbers in this stage of the project is unlikely to significantly vary the findings, while developing a very large case basis leading into the definitive stage of the project.

Using technology to remove barriers to tertiary education for people with disabilities

Research Team:

Dr Lloyd Walker, James Cook University
Dr Jan Ramsden, James Cook University

Research Details:

This project commenced in 1997 to offer the pathway of tertiary education to those with a disability following traumatic injury. The initial year of the project focused closely on the needs of various target groups and identified those with head injuries and consequent or unrelated learning difficulties as a key, unaddressed target group. Current electronic systems of educational delivery are being adapted or simply standardised to address problems students were identifying in being able to study.

The research work of the project has highlighted a number of important factors that can create insurmountable barriers to students with some cognitive impairments. Particular care has been taken in the development work that the underlying academic material is not weakened, but any unnecessary hindrances to good learning are removed. In keeping with its aim of providing systems that address common shortfalls in standard subjects, the project team have been working with academic staff at James Cook University to prepare a number of mainstream undergraduate subjects using the new standards and techniques. The subjects will be made available to the broader University community and so maintain their level of academic standing.

Research Outcomes:

A new course, the Bachelor of Educational Services (Community Support) has been developed to permit a student in need of the extra learning supports to undertake a complete tertiary course. The course is focused on preparing people to meet the management needs of small community organisations, providing public liaison on behalf of government and NGO departments and a range of other employment opportunities. The subjects developed also permit students who regain key learning skills to transfer to other courses and gain credit for material they have studied. The BEdServices is thus a course that offers a range of pathways depending on the student's ability.

At the beginning of 2000 some 10 subjects have been developed for delivery with others at various stages of the development process. It is anticipated that up to 24 subjects in total will be developed for the course and other subjects developed by the University into electronic delivery mode will also include features established by the project team. Research and evaluation of the materials and the learning outcomes is expected to commence in 2000. Already lecturers are identifying benefits for their mainstream students who are using materials developed under the project. Unfortunately to date, a major difficulty has been in recruiting students - in part because of past disappointments in the educational setting. It is hoped that interest in the program will develop further as more materials become available.

A comparison of adjustment and self-awareness in adults after traumatic brain injury and spinal cord injury: the transition from hospital to community

Research Team:

J. Strong PhD, Professor and Head,
J. Fleming PhD, Lecturer, Department of Occupational Therapy, The University of Queensland
J. Connell, M. Whitehead, J. Kemp, R. Cox, Princess Alexandra Hospital

Research Details:

This prospective study investigated self-awareness and emotional adjustment in adults with traumatic brain injury (TBI) and spinal cord injury (SCI) over the period of transition from hospital to the community. The aims of the study were: 1) to investigate to what extent impaired self-awareness of deficits in adults with TBI is related to organic brain injury compared to psychological adjustment factors (by comparing the TBI group to the non-brain injured SCI group); 2) to investigate the effect of discharge from hospital to home on the development of self-awareness and emotional adjustment, and; 3) to determine and compare the level of emotional distress experienced by adults with SCI and TBI following discharge from rehabilitation.

Method

Participants

Patients consecutively discharged from the Brain Injury Rehabilitation Unit and Spinal Injury Unit of a major metropolitan public hospital were invited to participate in the study. Over a 4 month period, 23 participants with TBI and 13 participants with SCI were recruited to the study. The TBI group were predominantly males (92%) from a trades and labour background with a mean age of 28 years. Nineteen (79%) had sustained severe TBI (GCS 3-8), three (13%) had moderate TBI (GCS 9-12), and two had mild TBI (GCS 13-14). The SCI group were 62% male with a mean age of 30 years and mixed occupational backgrounds. Eight (62%) had quadriplegia and five (38%) had paraplegia. In both groups, the cause of injury was predominantly motor vehicle accidents including motor bike accidents and pedestrians struck by vehicles.

Procedure

The project was first given ethical clearance by the relevant hospital and University ethics committees. Demographic data and details of injury were retrieved from medical records for patients who gave informed consent. A repeated measures design was used with data collected

at two stages, prior to discharge and 2 months after discharge. Participants were interviewed by a research assistant in the week preceding discharge from inpatient rehabilitation. A relative or friend was nominated by each participant to complete significant other's questionnaires at the same time. At 2 months post-discharge, a second interview was conducted with participants. The following five questionnaires assessing self-awareness and emotional distress were administered at both interviews, with an additional measure of community integration used in the second interview:

1) Self-Awareness of Deficits Interview (SADI) - total scores range from 0 to 9 with higher scores indicating greater impairment of self-awareness

2) Patient Competency Rating Scale (PCRS) - self-awareness scores were obtained by comparing patient self-reports to significant others' reports giving a range of scores from 0 to 30 with higher scores indicating greater impairment of self-awareness.

3) The Head Injury Behaviour Scale (HIBS)- self-awareness scores were obtained by subtracting the number of items endorsed by patients from the number endorsed by significant others resulting in positive scores indicating greater impairment of self-awareness.

4) Hospital Anxiety and Depression Scale (HADS) - depression and anxiety subscales with a possible range of 0 to 21 with higher scores representing greater emotional distress.

5) Center for Epidemiologic Studies Depression Scale (CES-D) - possible range of total scores from 0 to 60 with higher scores representing greater emotional distress.

6) Community Integration Questionnaire (CIQ) - higher scores reflect better community integration

Preliminary results and discussion

Pre-discharge scores indicated that the TBI group had generally greater impairment of self-awareness and less emotional distress than the SCI group. Organic brain damage is hypothesised to be responsible for the comparative lack of self-awareness in the TBI group. These results are also consistent with previous research indicating that awareness of deficits is related to emotional distress.

Scores at two months after discharge show an improvement in level of self-awareness for both groups on the SADI and PCRS with the SCI group maintaining generally more accurate self-awareness than the TBI group. This suggests that exposure to "real life" experiences in the community may assist with more accurate self-appraisal. The TBI group showed slightly more emotional distress than before discharge, which is consistent with their enhanced self-awareness. Despite having a slightly higher level of community integration on the CIQ, the SCI group remained generally more distressed than the TBI group at follow-up.

Plan

An abstract has been submitted for the 21st National Occupational Therapy Conference in Brisbane, April 2001, and a theory paper title "Self-awareness and denial continuum or dichotomy: issues for occupational therapy" is being prepared for submission to the American Journal of Occupational Therapy.

PUBLICATIONS AND PRESENTATIONS

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