



centre for health informatics

annual report 09/10



UNSW
THE UNIVERSITY OF NEW SOUTH WALES

science change analysis online **patient** tool study
informatics surveillance evidence focus aging technology mining safe
safety medical model system microbiology identity
pattern **care** hospital incident policy **chi** modelling explore social biosurveillance cognitive
clinical consumer management text translational simulation journal
bioinformatics research search infectious datum knowledge
complex control international trial gene method detection **disease**
institute discovery university **health** internet decision association quality improve
cancer **national image healthcare practice** retrieval human medicine
computer information lung

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What We Do

Building a sustainable health system for the 21st Century will require the reinvention of much of the present day system, and the intelligent use of information and communication technologies to deliver high quality, safe, efficient and affordable health care. The Centre for Health Informatics (CHI) is Australia's largest academic research group in this crucial emerging discipline. *CHI conducts fundamental and applied research in the design, evaluation and application of information and communication technologies for healthcare and the biosciences.*

The Centre's work is internationally recognised for its groundbreaking contributions in a number of areas including the impact of information technology (IT) on patient safety, on the use of decision support technologies to support consumers and clinicians and the use of IT to support diagnosis, management and surveillance of infectious diseases.

A research centre of the University of New South Wales, and a member of the Australian Institute of Health Innovation, CHI is supported by the Faculty of Medicine. We partner with major healthcare providers, research institutions and governments, including the New South Wales Department of Health and the Commonwealth Department of Health and Ageing.

CHI aims to drive change in healthcare and biomedicine by making contributions to:

SCIENCE

break-through discoveries in information, communication, cognitive and organisational science needed to support health service innovation at a system level

POLICY

providing expert input and leadership into government, shaping policy priorities and goals

INNOVATION

invention of novel technologies and methods that can transfer into industry and health services

EDUCATION

training future researchers through research degree programs to educate clinicians, technologists and policy makers in health informatics

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“Fast forward 50 years. Can you imagine our health system without instant access to our medical records? Where you carry your x-rays to each appointment, or have test results posted ... Where a simple click could deliver so much information but doesn't ... It's unthinkable ... We are building an e-health system now, because a future without it is unthinkable ... e-health really does have the potential to revolutionise how we deliver health care services.”

The Hon Nicola Roxon, MP, Minister for Health, 19 Aug 2009

Director's Report

This year marks the 10th Anniversary of the Centre for Health Informatics. All those clinicians, partners, researchers, staff and students who have worked or partnered with us over the last decade can rightly take pride in their contribution to the growth and maturation of the Centre into an internationally recognized centre of e-health research excellence. CHI now has a long and successful research grant track record with both the ARC and the NHMRC, and continues to carry out a broad multidisciplinary research program.

This year is also a national watershed for e-health. The National Health and Hospital Reform Commission report clearly identifies the core role e-health will play in delivering safe, effective and sustainable care in the decades to come. The Council of Australia Governments also endorsed the business case for large scale national investment in e-health, and the 2010 Federal budget has allocated a half billion dollars over 2 years to commence this program of health system modernisation. In parallel, the forthcoming National Broadband Network (NBN) will provide much of the underlying infrastructure needed to support our national e-health systems. Equally, e-health is also seen as a key driver for the NBN.

Our research program continues to develop in response to emerging technologies, and evolving health priorities. With significant funding support from the Hospitals Contribution Fund (HCF) Health and Medical Research Foundation, we have completed the first design and evaluation of our new 'Facebook for Health' system that will bring together many emerging elements from Web 2.0 like social computing, Wikis, blogs, and embedded and context sensitive information retrieval. Called Healthy.me, this system is helping us explore the way we can create new tools that support consumers in the decisions they face as they interact across the health system. Given the expectation that all Australians will have some access to a personally controlled electronic health record from 2012, our work seems particularly timely.

With so much new activity in e-health nationally, and the promise of significant funding for real systems to come at a State and Federal level, we can anticipate that the next 10 years will see e-health at last come to the front of the national agenda, and its contributions to health reform to grow. Exciting times indeed.

“Our third lever to support an agile, self improving system is the smart use of data, information and communication. We are recommending a transforming e-health agenda to drive improved quality, safety and efficiency of health care.”

National Health and Hospitals Reform Commission Final Report, 2009, p 8

2009 Key Performance Indicators

- > We were **awarded multiple new grants and contracts**, which included a NHMRC Project grant, \$289,750 over 2010-2012 (Magrabi, Kidd, Liaw); a Cancer Australia grant, \$89,250 for 2010-2011 (Tsafnat); Australian National Data Service (ANDS) \$60,000, 2010 (Tsafnat) and a Faculty of Medicine Goldstar award worth \$40,000.
- > In 2009, our research generated **48 publications**, with 28 international journal papers, 20 conference papers.
- > Our research staff gave **eight invited presentations** including Keynote or invited addresses to the International Society for Quality in Healthcare Conference, Dublin; the 7th Australasian Conference on Safety and Quality in Health Care, the HIMSS Healthcare IT Conference in Kuala Lumpur, the National E-Health Summit and the Royal Australasian College of Medical Administrators Annual Scientific Meeting.
- > In 2009 CHI **research** again **featured heavily in the press** and news wires with **radio interviews** by Richard Aedy on Life Matters, and Margaret Throsby on ABC Classic FM, and an opinion piece on ABC News online.

Partners and Major Funders

We are grateful to our partners and funders for their ongoing support of our research program. CHI's research is supported by the following organisations:

- > NSW Health
- > Australian Research Council (ARC)
- > National Health and Medical Research Council (NHMRC)
- > Federal Department of Health & Ageing
- > HCF Health and Medical Research Foundation
- > The Cerebral Palsy Institute
- > Cancer Australia
- > Australian National Data Service (ANDS)



Research Programs

CONSUMER INFORMATICS

The last five years have seen social computing sites like Facebook and MySpace gain unprecedented community acceptance, and many similar commercial health sites are now in operation. More recently, the convergence of information access via search tools, personal health records, online social networking, and information exchange between consumers and clinicians, is enabling a new class of e-health system, which puts the patient finally in the centre.

Today, **personally controlled electronic health records** (PCEHRs) are seen as a core technology that will underpin the national e-health strategy, a fact reinforced by the allocation of almost half a billion dollars to the national roll out of PCEHRs in the 2010 Federal budget.

PCEHR-based systems are likely to make significant and profound changes to consumer capability, engagement and behaviors. Better-informed consumers should result in more effective service utilization. Indeed, two thirds of healthcare cost growth comes from consumer demand for new technology and treatments. Prevention and health promotion are rightly identified as weak spots in our national health programs.

To better understand the impact that these changes might have on disease prevention and self-management in the chronically ill we have now developed a new consumer e-health platform to support personal and socially mediated decision-making. This 'Facebook' for Healthcare, or 'healthbook' idea was presented at the 2008 2020 Summit in Canberra, and 'Healthbook' became one of the final Top 5 health ideas. Our platform has since attracted significant interest and community support, including national radio coverage on ABC's PM (7/8/08) and Margaret Throsby (3/2/09) shows, and extensive print coverage. Now called *Healthy.me* this development was funded by an untied \$989k research grant from the HCF Health and Medical Research Foundation.

Healthy.me brings together:

- > A *personal health record (PHR)*, which captures medications, allergies, events, treatment choices, and personal data such as weight, blood pressures, and any available laboratory or imaging data;
- > *Self Management Tools* including a schedule, and to-do lists;
- > Access to *health information and decision aids*;
- > *Patient journeys*, which are condition specific consumer guides to management;
- > *Community spaces* including discussion forums and blogs, to discuss conditions and provide community ratings for services and treatments;
- > A trusted 'my team' with some access to the personal record (e.g. family, clinicians), and a looser network of 'friends';
- > Secure storage of personal data, *interaction logging mechanisms to track subject behaviors for research purposes*.

Working with clinical partners at IVF Australia, we recently completed a usability trial, supporting 14 women over the 8 weeks needed to complete one in-vitro fertilization (IVF) cycle, from Oct 2009 to Jan 2010. The average duration per session was 6 minutes. Participants were very positive about the system and accessed the site to update their personal health record or access information about the next steps of their treatment cycle. A larger randomized controlled trial is currently underway with close to 700 participants, and larger trials are planned in 2011.

PATIENT SAFETY INFORMATICS

Making sure that when we care for patients we do not harm them is one of the unsolved problems of health services research. Our Patient Safety Informatics program is examining how health service delivery can be made safer through the effective use of IT. We are also investigating the unintended 'side effects' of technology that itself may cause patient harm.

Highlights of our program for this year include:

Safe use of IT in clinical settings

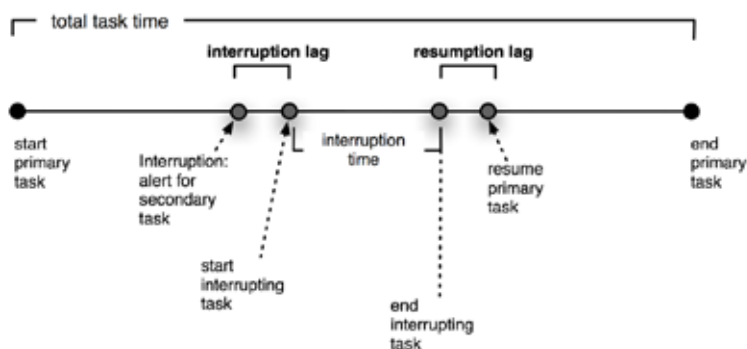
We are examining variables that influence the safe use of information technology in clinical environments, particularly the effects of interruptions in clinical work. Our research shows that understanding something as simple as an interruption is proving very difficult – not every interruption is bad, and the negative effects of interruptions have a lot to do with the environment in which they happen, and what else a clinician is doing at the time. A paper exploring this has been short-listed for the Best Paper Award at the 2010 World Congress on Medical Informatics. We are now working towards understanding the circumstances under which interruptions to clinical tasks are likely to be dangerous. Tanya Vavilova, who has an honours in Psychology from Sydney University, joined the team early this year to assist with our laboratory experiments.

Safety of clinical software

We have commenced a newly funded NHMRC project to examine the safety of clinical software in general practice, in collaboration with Flinders University and the UNSW/Sydney South West Area Health Service General Practice Unit. This work will develop evidence-based recommendations to guide national standards for software safety and user training requirements. Elin Lehnbohm, who has a Masters in Clinical Pharmacy from Uppsala University in Sweden, started working with us to develop a gold standard for testing prescribing decision support.

Improving patient safety by designing effective clinical decision support systems

As part of an NHMRC Program Grant we have built the PharmAlert system to provide a platform for the effective distribution of clinical guidelines, as well as potential for database integration for facilitating a wide range of decision support needs. Led by Dr. Frank Lin who recently completed his PhD with the Centre, we plan to test the effectiveness of this system using population pharmacokinetic models for improving the adoption of metformin in patients with moderately impaired renal function in 2011.





Mechanisms of communication failure in critical test result notification

Understanding the mechanisms behind these errors is important because the potential for patient harm is substantial. Evidence suggests that up to 5% of critical test results from diagnostic testing services such as radiology and pathology are lost to follow-up. Diane Rock has commenced a PhD looking into this topic and she aims to assess the extent of the problem within the Australian context and to design interventions to improve the communication of critical test results.

An engineering approach to improve compliance with infection control requirements

In collaboration with the Prince of Wales Hospital, we are investigating communication failures during in-patient transfers. Using observations of 80 patient transfers we have modelled the extent and execution of redundant processes and communication failure. On average 4 errors were observed per transfer. Inadequate handover was the most common error (46%), followed by failure to perform patient identification checks (43%). Meising Ong who is undertaking a PhD in this area is trialling several methods to improve communication.

Training healthcare professionals in patient safety processes

Using agent-based models we are analysing the risk of adverse events during inpatient transfers using data from observations. This allows us to test and evaluate potential interventions within the specific context of the observed organisational culture.

Virtual worlds such as Second Life may also offer a new environment to deliver simulation-based safety training to clinicians. We have demonstrated the feasibility of developing simulations in the virtual world of Second Life to train clinicians in safety procedures for inpatient transfer. Results from preliminary usability tests indicate acceptance of the simulation environment. Further investigation is required to evaluate usability with a representative and determine if training porters in a virtual world will reduce errors in the real-world. This project was part of the Masters research undertaken by three Aalborg University students that the Centre hosted in 2009 – Ann Merete Duedal Jensen, Merete Martlev Jensen and Anne Sofie Korsager.

TRANSLATIONAL BIOINFORMATICS

To help scientists studying human disease find the genes responsible for different illnesses, we are building new computer tools that sift through the vast stores of biological data to pinpoint new disease causing genes. The Translational Bioinformatics program is concentrating on infectious diseases and cancer, using machine learning and data mining techniques. Our work on infectious diseases is a partnership with researchers at the Centre for Infectious Diseases and Microbiology (CIDM) at Westmead hospital. Our work on cancer occurs in partnership with researchers at the Lowy Institute for Cancer Research at UNSW. We have a number of projects, which are revealing the power of computer methods to aid discovery:

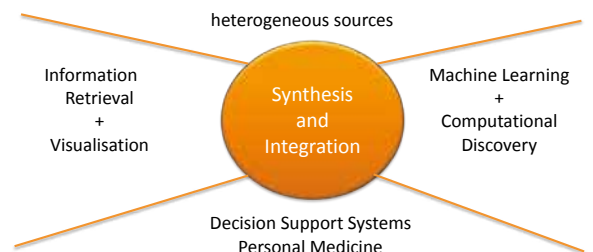
- > To help 'join the dots' between the research already published in the literature, we have been using computer linkage methods to create a dynamic 'textbook' linking all known infections with all known infectious organisms – a task never before possible, and which is shedding new insights into the way infection leads to disease. Drs. Vitali Sintchenko, Stephen Anthony, Hieu Phan, Frank Lin and Prof. Coiera published our first analysis of this infectious disease "knowledge space" in *PLoS One*. The dynamic network connects infectious disease syndromes, pathogens and their genomes.
- > Dr. Frank Lin's work using new computer techniques to discover the genes responsible for making bacteria virulent appeared in *BMC Bioinformatics* and was designated as a 'highly accessed paper' – a mark of the impact of his work in the research world. He has identified a number of genes, previously ignored in the research literature, which may be the culprits behind the aggressive behaviour of bacteria in neonates and pregnant women. Frank was awarded a PhD for his work at UNSW in 2009, supervised by Professors Enrico Coiera and Lyn Gilbert (CIDM).
- > Dr. Guy Tsafnat leads our work on gene 'cassettes' – small pieces of DNA that bacteria swap amongst themselves and spread resistance to antibiotics – a major problem in medicine as 'superbugs' emerge with resistance to most of the drugs we have. Using a novel approach which looks beyond the 'alphabet' of DNA, we can analyse DNA as a language with 'sentences' using computational grammar, based upon human spoken language. This highly novel method seems to explain gene cassette transmission patterns and has led to the discovery of new cassettes. Our work has led to the Australian National Data Service to commission a Repository of Antibiotic-resistance Cassettes (RAC), an international database that will assist medical scientists studying multiple antibiotic resistance.

Two visiting postgraduate students from Germany, Paul Setzermann and Dominik Grimm joined us over the year to work on the automatic detection of genetic elements that carry resistances to aminoglycoside and β -lactamase, two very important classes of antibiotics.

- > Dr. Guy Tsafnat's research on the discovery of changes to the coating of DNA that cause cancer has been recognized by the Cure Cancer Foundation which awarded him a grant to develop this work to help find the cause of some colorectal cancers. Colorectal cancer is a major form of cancer and up to 40% of all cases are caused by chemical changes that affect the folding of DNA (epimutations) rather than to the sequence of bases (mutations). In collaboration with the Epigenetics Lab of the newly formed Lowy Cancer Institute, Guy is investigating new algorithms to identify the important epimutations responsible for the cause and progression of colorectal cancer. He is developing new analysis methods for methylation chips – state of the art bioinformatics technologies that measure epimutations in the entire genome.

The biomedical research efforts of the group are complemented by research into decision support technologies. In collaboration with researchers from the University of Adelaide, Translational Bioinformatics researchers at CHI have developed BICEPP, a tool that searches through millions of scientific biomedical papers and automatically finds evidence to support pharmaceutical research. In a separate collaboration with Aalborg university and with Tel Aviv university in Israel, the Translational Bioinformatics group has presented methods for improving antibiotic prescription systems at the Scandinavian (SHI) and Australian (HIC) conferences in 2009.

We welcome post-doctoral fellow Dr. Miew Keen Choong and Research Assistant Vitalyi Kim. Dr. Choong brings to the team a range of skills in computer aided discovery, inference methods and numerical analysis. She will be working on cancer epigenetics. Mr. Kim brings a wealth of knowledge in data management and application development.



MODELLING AND SIMULATION IN HEALTH

One of the major challenges for healthcare is that the best attempts at system reform often fail to deliver what is expected, and usually have unpredicted and undesirable consequences. The complex and multi-scale nature of healthcare has led to a growing interest in using computer models to better understand the dynamics of healthcare delivery. Indeed, scientists and engineers in most other disciplines have used modelling and simulation to help with system analysis, training, surveillance and prediction. That it remains unexplored in healthcare is interesting in itself.

At CHI we are developing leading-edge applications for the purposes of improving patient safety and patient care. To achieve this we are bringing together researchers with expertise in healthcare, medicine, IT, mathematics and social science.

Our current health system is under stress from an ageing population, a greater prevalence of chronic conditions and the costs of advances in medical technology and drug therapies. It is also now accepted that there are significant problems with the safety and quality of healthcare delivery; for instance, internationally 10% of admissions to acute care hospitals are associated with an adverse event.

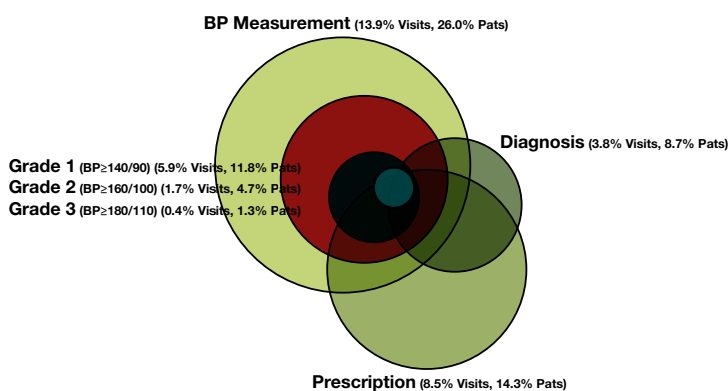
Current measures to address these major issues may fail because:

- a) they fail to understand the complex and dynamic behaviour that arises from the interaction of individual actions and/or health system components, and
- b) they lack good quality and comprehensive data of system performance.

We aim to address these shortcomings by using modelling and simulation driven by the best available empirical data. We intend to use these predictive models to guide research and policy. Some of our current research projects include:

> **An atlas of hospital safety**

There is a surprising lack of good comparative data about patient safety. This project aims to identify and collect lagging and leading indicators of patient safety and to then perform a comparative analysis at a hospital, regional and international level.



Basic hypertensive-related statistics from GPRN 2004-2006

> **Measuring the impact of clinical evidence on the adoption of drugs**

Little is known about the dynamic nature of the adoption of innovations in healthcare, although there have been many specific case analyses. We wish to address questions such as – How does research evidence actually influence the prescription of medications in general practice? How does failing to timely adopt evidence-based medicine impact on the levels of recommended care?

> **Management of hypertension in general practice**

Do Australian hypertensive patients receive recommended care? What characteristics of physicians, practices and patients are associated with unacceptable levels of care?

> **Interruptions and multitasking between doctors in a hospital unit**

This model looks at the effect of patient load, staffing levels, communication cultures and policies on efficiency and safety.

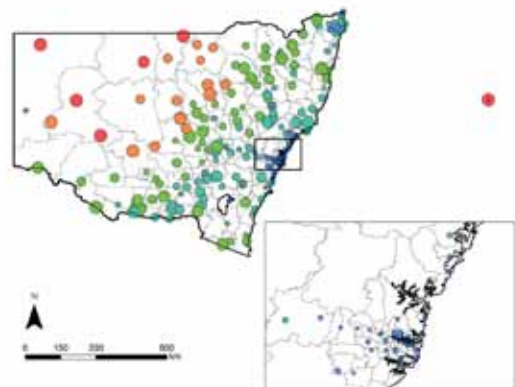
> **Management of the spread of Methicillin-resistant Staphylococcus aureus (MRSA) in hospitals**

This tool integrates the different spatial and time scales involved in hospital infection control and explores the impact of hospital settings and policies on the spread of MRSA.

> **Adverse event risks in inter-ward patient transfer**

Modelling the creation and detection of errors during patient transfer in a hospital in order to devise the best error-checking systems for the prevention of adverse events.

Our work takes place in collaboration with key players in the research of healthcare quality and safety including: our colleagues at the Centre for Clinical Governance & Research in Health, the Simpson Centre for Health Services Research and the Centre for Primary Healthcare and Equity at UNSW; the Health Informatics Research & Evaluation Unit at the University of Sydney, the Australian Patient Safety Foundation, St Vincent's Hospital and Westmead Hospital. HCN has kindly provided us with access to research data. Our research informs government health organisations such as the Australian Commission on Safety and Quality in Health Care and the Australian Institute of Health and Welfare.



Simulations of network-based adoption of new practices in acute care facilities in NSW



Guest speakers at the 10th Anniversary Symposium included Professor Michael Kidd (Flinders University), Professor Johanna Westbrook (Sydney University), Professor Penny Sanderson (National ICT Australia (NICTA)), Dr Shaun Larkin (HCF) and Ross Lazarus (Harvard University)

CHI 10TH ANNIVERSARY

In late 1999, UNSW agreed to found a new Centre for Health Informatics (CHI), as a joint venture between the Faculties of Medicine and Engineering. The Centre started formal operations in 2000, with two Laboratories. In the Medical Faculty, the Medical Informatics Laboratory was headed by Professor Enrico Coiera and focussed on Clinical Decision Support, and Clinical Communication. In the Engineering Faculty, Professor Branko Celler headed up the Biomedical Systems Laboratory, focussing on Telemedicine and Home Care.

The ensuing ten years have seen e-health move to centre stage nationally, and the work of CHI is now internationally recognised in fields as diverse as patient safety informatics, clinical decisions support, translational bioinformatics and infectious diseases informatics.

To celebrate this major landmark, the national growth of the e-health research community, and in particular, the tremendous efforts of the many researchers, research students and staff who have worked at CHI over the last decade, a one day symposium was held in June 2010. The day was attended by 170 participants, who heard a series of talks from some of Australia's e-health research leaders, as well as presentations from the leaders of the different research streams at CHI.

The day was opened with an upbeat presentation by Professor Michael Kidd, a long time collaborator with CHI researchers, and now Executive Dean for the Faculty of Health Sciences at Flinders University. Michael's reflections on the many twists and turns in the national move to an e-health system underscored the key role the research community has had in shaping national policy. He specifically reminded the audience of the key role research leaders had in identifying the need for a national standards body, which eventually became our National E-Health Transition Authority (NEHTA).

Talks from Professors Johanna Westbrook and Penny Sanderson reported on world-leading Australian work focusing on understanding clinical work, communication and the way IT and work processes shape each other. The growing importance of consumer-focused informatics was a clear theme for the day. Dr Shaun Larkin, the new Managing Director of HCF presented their experiences in providing consumers online wellness programs, and demonstrated the very real impact these models of care were having on their members. Professor Gavin Andrews also presented very positive evidence for the effectiveness of online therapies in anxiety and depression. Stuart Babbage from Accenture provided an overview of the current Federal Government thinking behind proposals for a Patient Controlled Electronic Health Record.



Statement of Financial Performance

FOR THE YEAR ENDED 31 DECEMBER 2009

	2009	2008	Notes
	\$	\$	
Income			
External Funds	1,454,414	1,591,899	1
Faculty Contribution	561,010	497,879	2, 3
Total Income	2,015,424	2,089,778	

Expenses			
Payroll	1,719,091	1,554,661	
Equipment	56,292	30,352	
Materials	275,957	170,560	4
Travel	48,160	52,051	
Total Expenses	2,099,500	1,807,624	

Operating result	(84,076)	282,154	5
Surplus (Deficit) Bfwd from Prior Year	1,539,138	1,256,984	
Accumulated Funds Surplus (Deficit)	1,370,986	1,539,138	

Notes to the Statement of Financial Performance

1. External revenue includes CHI component of the Institute of Health Innovation NHMRC Patient Safety Grant for 2009.
2. Faculty contribution in 2009 includes salary support for two academic and one general administration position and in kind contribution for infrastructure.
3. Faculty contribution also includes one fellowship and one Goldstar award in 2009.
4. Stipends for 3 full time and 1 part time Ph D students included in Materials.
5. The small deficit is due to increased payroll as a result of overlap between start and end time for research grants and employment of researchers on these grants.

Management Committee

COMMITTEE ROLE

The management committee's role is to monitor the financial performance of the centre and ensure that the business objectives of the centre are pursued. The committee meets at least three times a year and meetings are properly minuted and distributed to committee members.

COMMITTEE MEMBERS

Professor Denis Wakefield (Chair)

Professor Paul Compton

Professor Gavin Andrews

COMMITTEE MEETINGS 2009

1 April 2009

26 August 2009

10 December 2009

Staff



Professor Enrico Coiera
Director



Dr Tatjana Zrimec
Senior Lecturer



Gerard Viswasam
Business Manager



Dr Farah Magrabi
Senior Research Fellow



Dr Guy Tsafnat
Senior Research Fellow



Dr Blanca Gallego
Senior Research Fellow



Dr Miew Keen Choong
Research Fellow



Dr Geoff McDonnell
Research Fellow



Dr Hieu Phan
Research Fellow



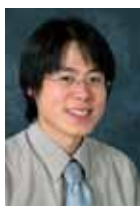
Dr Annie Lau
Research Fellow



Dr Adam Dunn
Research Fellow



Dr Vitali Sintchenko
NICS Research Fellow



Dr Frank Lin
Research Fellow



Denise Tsiros
Finance &
Administration



Danielle Del Pizzo
Administrative &
Executive Assistant



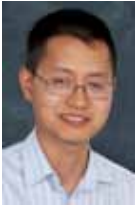
Dr Simon Li
Research Associate



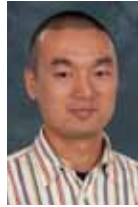
Dr Stephen Anthony
Computational Linguist



Farshid Anvari
Software Engineer



Vitaliy Kim
Java/Jee Programmer



Jay Liu
Java/Jee Programmer



Jingbo Liu
Java/Jee Programmer



David Lyell
PhD Candidate



Mei Sing Ong
PhD Candidate



Rosemarie Sadsad
PhD Candidate



Zafar Hashmi
PhD Candidate



Diane Rock
PhD Candidate



Tanya Vavilova
Research Assistant



Elin Lehnbom
Research Assistant

Andrew Clayphtan
Programmer

Noella Sheerin
Research Assistant

Amanda Parker
Research Assistant

Visiting Master Students
Ann Merete Duedal Jensen
Anne Sofie Korsager
Merete Martlev Jensen
Paul Setzermann
Dominik Grimm

Grants

Capacity Building Infrastructure Grants Program Round 2

Funding Source:	NSW Health	
Investigator:	Professor Enrico Coiera	
Funds:	2006	\$234,041
	2007	\$459,058
	2008	\$446,755
	2009	\$443,756

Agent-based methods for communication system design in complex organizations

Funding Source:	Australian Research Council (ARC) Linkage Grant LP0775532	
Investigators:	Professor Enrico Coiera, Professor Johanna Westbrook, Professor Wayne Wobcke, Dr Farah Magrabi	
Funds:	2007	\$182,156
	2008	\$196,986
	2009	\$188,739

Engineering safe decision support systems for healthcare

Funding Source:	Australian Research Council (ARC) Discovery Grant DP0772487	
Investigator:	Dr Farah Magrabi	
Funds:	2007	\$74,887
	2008	\$82,521
	2009	\$85,781

An Independent National Clinical Evidence Service

Funding Source:	HCF Health and Medical Research Foundation	
Investigator:	Professor Enrico Coiera	
Funds:	2008	\$509,197
	2009	\$479,658

Accelerating our understanding of the causal pathways to Cerebral Palsy with a computer supported discovery system

Funding Source: Cerebral Palsy Institute
Investigator: Dr Grace Chung
Funds: 2008 \$40,000
2009 \$40,000
2010 \$40,000

General Practice IM/IT Capacity Building Resource

Funding Source: Department of Health and Ageing
Investigator: Professor Enrico Coiera, Dr Farah Magrabi
Funds: 2008 \$158,782
2009 \$105,854

Learning from Patient Safety Incidents; Classifications using machine learning algorithms

Funding Source: Australian Patient Safety Foundation (APSF)
Investigator: Professor Enrico Coiera, Dr Farah Magrabi
Funds: 2009 \$39,000

Patient Safety: enabling and supporting change for a safer and more effective health System

Funding Source: NHMRC
Investigators: Professor Jeffrey Braithwaite, Professor Enrico Coiera, Professor Johanna Westbrook, Professor William Runciman, Professor Richard Day
Total Funds: \$8,400,000
CHI Funds: 2009 \$630,914
2010 \$778,352
2011 \$809,726
2012 \$540,465

Computational Discovery of Cancer-Affiliated Lon-Range Methylation Sites

Funding Source: Cancer Australia
Investigator: Dr Guy Tsafnat
Funds: 2010 \$84,987
2011 \$4,263

Evaluating the safety of computer decision support systems in general practice

Funding Source: NHMRC
 Investigator: Dr Farah Magrabi
 Funds: 2010 \$103,250
 2011 \$88,250
 2012 \$98,250

An International antibiotic-resistance gene cassette database

Funding Source: Australian National Data Service
 Investigator: Dr Guy Tsafnat
 Funds: 2010 \$60,000

FACULTY RESEARCH GRANT

Safety of computer-decision support systems in general practice

Funding Source: NHMRC Goldstar 2009
 Investigator: Dr Farah Magrabi
 Funds: 2009 \$30,000

Discovering bacterial antibiotic resistance genes and transmission patterns using computational grammars

Funding Source: ARC Goldstar Award 2010
 Investigator: Dr Guy Tsafnat
 Funds: 2010 \$40,000

Funding Source: Career Advancement Fund, Faculty of Medicine
 Investigator: Dr Blanca Gallego Luxan
 Funds: 2009 \$10,000

Publications

2009 PEER REVIEWED JOURNAL ARTICLES

Chan W, Maharjan R, Reeves P, Sintchenko V, Gilbert G, Lan R (2009), **Rapid and accurate typing of Bordetella pertussis targeting genes encoding acellular vaccine antigens using real time PCR and High Resolution Melt analysis.** *Journal of Microbiological Methods* (Accepted 19 March 2009).

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Richard Aedy interviews Professor Enrico Coiera for Life Matters

ABC Radio National – 2 April 2009

Margaret Throsby interviews Professor Enrico Coiera

ABC Classic FM – 3 February 2009

Discussing the idea of using cap and trade markets to manage adverse events and improve patient safety.

NEWSPAPER

IVF patients to keep tabs on treatment with iPhones

Sydney Morning Herald – 15 June 2010

The net can be good for your health

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