WAIKATO MEDICAL RESEARCH FOUNDATION

Discovery, Innovation, Progress.

2017 ANNUAL REPORT

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THE IMPORTANT THING IN SCIENCE IS NOT SO MUCH TO OBTAIN NEW FACTS AS TO DISCOVER NEW WAYS OF THINKING ABOUT THEM

- WILLIAM HENRY BRAGG

CHAIRPERSON'S REPORT

It is with pleasure I present the Annual Report on the activities of the Waikato Medical Research Foundation for the 2017 financial year.

During this year the Foundation has funded grants totalling $198,770 (2016: $221,606). Total grants, donations and legacies received from outside organisations and individuals totalled $226,119. The capital of the Foundation increased by $76,446 to $3,128,982.

Since the Waikato Medical Research Foundation was established in 1986, grants totalling $3,146,667 have been awarded to support medical and health research in the Waikato region. The grants have been distributed between researchers at the Waikato DHB, University of Waikato, the Waikato Clinical Campus, Wintec, AgResearch and in Primary Health Care.

We remain very grateful for the continuing support of Trust Waikato, Braemar Charitable Trust, the Waikato / BOP branch of the Cancer Society, Pinnacle Health and the Respiratory Research Unit. We are also indebted to individuals, including a number of our medical colleagues, and community members for their ongoing support. This includes both financial support but also in promoting awareness of the importance of medical research in improving the health and wellbeing of our local community.

In May of this year we were delighted to be informed of a very generous legacy of $150,000 to be gifted from the Hamilton Club. Our thanks go to Mr Gordon Chesterman (President), Mr Cliff Bindon (Vice-President) and Board members, including Mr Murray Day. The gift is to be added to the WMFR capital account, with the interest used to fund a scholarship known as 'The Hamilton Club Emerging Researcher Scholarship". This creates a legacy, acknowledging The Hamilton Club, and fits very well with one of the priorities for WMRF in assisting Waikato based researchers, early in their career.

I wish to acknowledge the work of the Trustees. The Finance Committee, under the Chair of Prof Frank Scrimgeour, continues to manage the challenge of growing our capital base while continuing with a low risk investment policy. This emphasises the importance of ongoing strategies to raise the profile of the Foundation, the work and the researchers it supports. In April, Gillian Spry attended a very worthwhile Combined Medical Research Foundations fundraising workshop where representatives from five MRFs shared their experience and strategies for fundraising.

Our Treasurer, Ms Rosanna Baird has announced her resignation from the end of this financial year. We have greatly appreciated her professionalism in this role, starting July 2004, and feel very fortunate to have the benefit of her expertise.

The Grants Committee, with Chair, Mr Adrian Molenaar has recently met and approved further projects totalling $143,335. Our thanks go to the members of this committee who spend considerable time providing expert opinion in evaluating the grant applications. This current Grants round introduces a new Clinical Research Fellowship, supported by the Waikato / Bay of Plenty Cancer Society, This provides the opportunity for a clinical healthcare professional to develop their career in New Zealand, undertaking cancer-related clinical research while based in this region.

Our thanks go to our WMRF Administrator, Robyn Fenneman, who is responsible for the organisation of the Grants Round and administration of the grants, as well as the smooth and friendly day to day running of the Foundation.

It is with regret we have received a letter of resignation from our Patron and previous Chair, Dr Noel Karalus. Dr Karalus has served the Waikato Medical Research Foundation as a trustee from 1994, Grants Committee Chairman from 2001 to 2006, Chairman from 2007 to 2015, and Patron from 2016 to 2017. He has been instrumental in raising the community profile of the WMRF, initiating a successful fundraising campaign. Dr Karalus has now retired from his work with the Waikato DHB and we farewell him with our warmest wishes for the future.

I am looking forward to the ongoing work of the Foundation in the next year. With the current interest in tertiary medical education and rural medicine in the region, the ability to fund and promote local basic science and clinical research, in order to evaluate and enhance delivery of high quality healthcare, that meets the needs of our community, becomes critical.

GRANTS CHAIRMAN'S REPORT

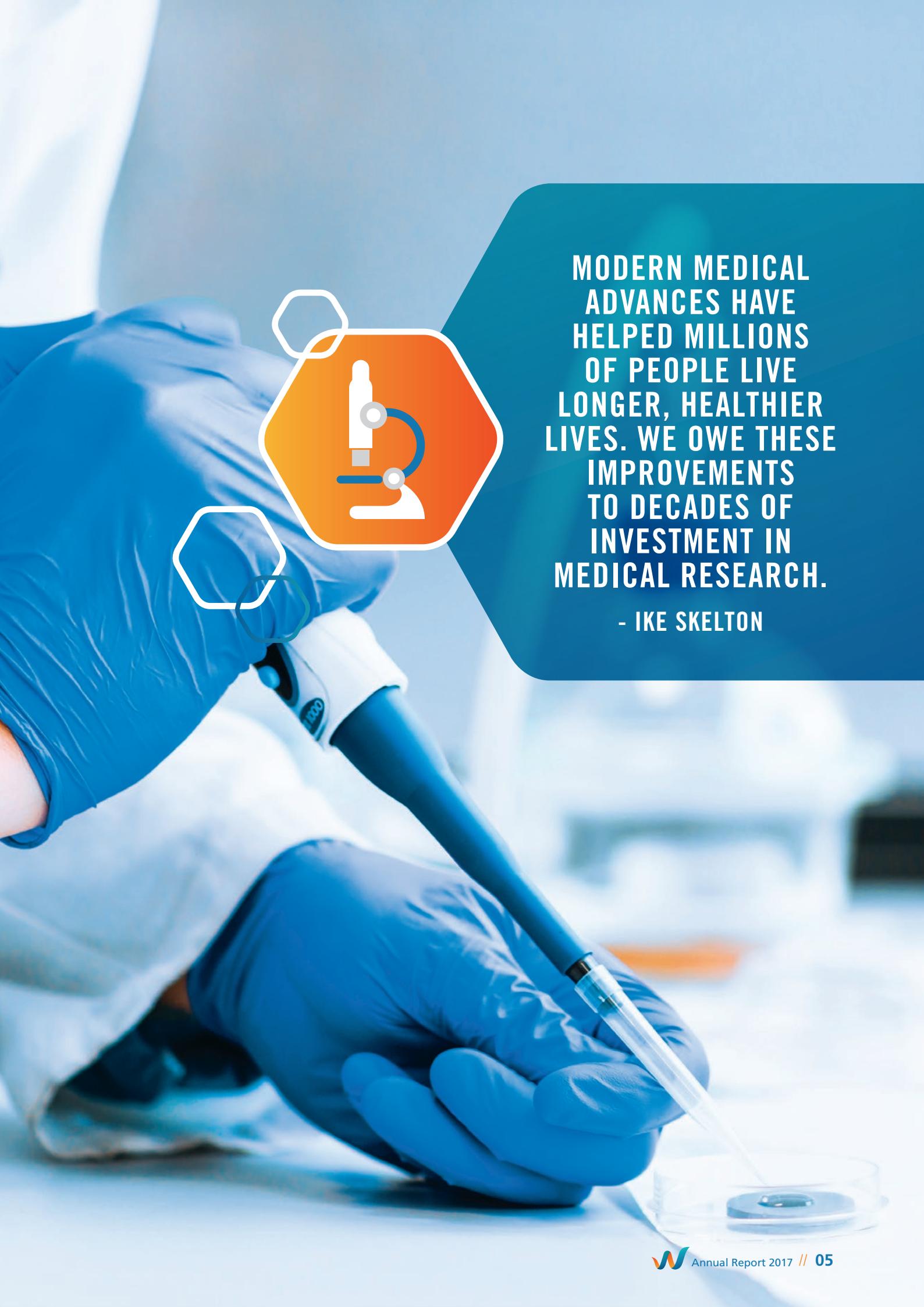
For 2017, the WMRF received twelve applications requesting a total of $291,787. Due to the efforts of the fundraising committee and welcome financial assistance via sponsorship grants from Trust Waikato and Pinnacle Health, the committee recommended supporting six applications, and have been able to support projects totalling $143,335.

WMRF FUNDED PROJECTS GRANT ROUND 2017	
Dr EDWARDS Timothy, Dr Cat Chang, Dr Clare Browne, Assoc Prof Michael Jameson. *Using Dogs for Lung Cancer Screening*	$29,337
Dr HARRIS Deborah, Prof J Harding, Prof C Crowther, Dr J Hegarty, Dr J Alsweiler, Dr Richard Edlin, Mr Greg Gamble *hPOP - hypoglycaemia Prevention in newborns with Oral Dextrose*	$21,486
Dr POPPE Katrina, Dr Gerry Devlin, Anna Rolleston, David Oldershaw, Prof Rob Doughty. *Systematic improvement in the detection of atrial fibrillation in primary care and assessment of evidence-based vascular risk management*	$21,754
Dr JACOBSON Gregory, Dr Martyn Harvey, Prof Jamie Sleigh. *Identification of protein targets of novel ketamine-like drugs*	$25,746
Prof. STARKEY Nicola, Dr Kelly Jones, Dr Alice Theadom, Prof Suzanne Barker-Collo, Brittney Duffy, Prof Valery Feigin. *Eight years later : Long-term outcomes from Traumatic Brain Injury in Adults*	$22,137
Dr STEWART Kevin, Assoc Prof Anthony Phillips, Professor John Windsor, Dr Jiwon Hong. *The pathogenesis and treatment of lung oedema in critical illness*	$22,874

I thank the Grants Committee (Maggie Fisher, Michael Jameson, Amanda Oakley, Vic Arcus Deborah Harris and Tahu Kukutai) plus Noel Karalus, former Board Chairman and Ian Jennings, Finance Committee Chairman, for doing an excellent job in reviewing, discussing and scoring the applications.

A special thank you goes to the WMRF administrator Robyn Fenneman for gathering, organising and meticulously presenting the applications to the committee and responding to applicants.

Dr Adrian Molenaar
Chair, Grants Committee



MODERN MEDICAL ADVANCES HAVE HELPED MILLIONS OF PEOPLE LIVE LONGER, HEALTHIER LIVES. WE OWE THESE IMPROVEMENTS TO DECADES OF INVESTMENT IN MEDICAL RESEARCH.

- IKE SKELTON

2017 GRANT ROUND ABSTRACTS

GRANT # 283 // DEBORAH HARRIS, NEONATAL NURSE PRACTITIONER, WAIKATO HOSPITAL, HAMILTON

hPOD – hypoglycaemia Prevention in newborns with Oral Dextrose

Abstract

Hypoglycaemia (low blood glucose concentration) is the most common metabolic disorder of the newborn, and the only known common preventable cause of brain damage in newborn babies. Approximately 30% of newborn babies (about 21 000 in New Zealand each year) are born at risk of hypoglycaemia, and require repeated blood glucose monitoring.1 Half of these (10 500 per year) will develop hypoglycaemia, and an unknown number will experience brain damage or developmental delay as a result. Treatment of neonatal hypoglycaemia commonly requires admission to Newborn Intensive or Special Care Units (NICU/SCBU).

In a clinical trial undertaken at Waikato Hospital we have previously shown that dextrose gel is an effective, safe and inexpensive treatment for babies with hypoglycaemia.2 We have subsequently demonstrated in a dosing trial, the pre-hPOD Trial, that dextrose gel can be used to prevent hypoglycaemia in babies at risk, reducing the incidence of hypoglycaemia by approximately 30%. We are now undertaking a multicentre trial, hPOD (Hypoglycaemia Prevention with Oral Dextrose) to determine if a single dose of oral dextrose gel, given to babies at risk of hypoglycaemia shortly after birth, can also avoid admission to NICU/SCBU. Waikato Hospital has been the most successful recruiting centre for this trial to date, due largely to the additional research nurse resource. We seek funding to support continuation of this additional support for recruitment to the hPOD study in Waikato Hospital. Should oral dextrose gel be effective in preventing hypoglycaemia and reducing admissions to NICU/SCBU, this would avoid the need to separate mother and baby and save millions in healthcare related costs; improve breastfeeding rates, with long-term health, cognitive and social benefits; and improve developmental outcomes by preventing hypoglycaemia-induced brain injury.

GRANT # 284 // GREGORY JACOBSON, DR/POSTDOCTORAL SCIENTIST, MOLECULAR GENETICS LAB, UNIVERSITY OF WAIKATO, HAMILTON

Identification of protein targets of novel ketamine-like drugs

Abstract

Ketamine, although widely used in medicine as an anaesthetic drug, has a number of undesirable side-effects, including a long recovery period, poor pain-relieving potential and psychological disturbances, including visual distortions and hallucinations. There are opportunities to improve this drug by altering its chemical structure. Accordingly, our group has begun to develop and test novel ketamine-like drugs, and have identified two variants that may be better than standard ketamine. These variants cause a shorter sleep but longer pain relieving period (which has the potential to alleviate some of the unpleasant side-effects of the original drug).

Interestingly, the binding data showed that these analogues do not bind strongly to the same protein targets in the brain, leading to uncertainty about how they actually work. We hypothesise that, unlike ketamine (which binds to cell surface proteins), the variants may be entering the brain cells to produce their effects by binding to small proteins within these cells. To begin to address the unknown 'mode of action' questions, the proposed project will use a simple laboratory method to identify the proteins that the new drugs are binding to in the brain. Better understanding the mode of action of these analogues is crucial to advancing them to larger studies and, eventually, to human trials.

GRANT # 288 // KATRINA POPPE, SENIOR RESEARCH FELLOW, EPIDEMIOLOGY & BIOSTATISTICS, UNIVERSITY OF AUCKLAND, AUCKLAND

Systematic improvement in the detection of atrial fibrillation in primary care and assessment of evidence-based vascular risk management

Abstract

Atrial fibrillation (AF) is the most common sustained abnormal heart rhythm and is associated with an increased risk of stroke and other cardiovascular disease. While effective therapies exist to improve clinical outcomes for people with AF, improvements in the detection, assessment and management of people with AF are needed.

At least one third of patients with AF do not experience symptoms and so remain undiagnosed. The prevalence of AF increases with age and it is recommended that doctors start to look for AF in people aged ≥65 years. However recent data have shown that Maori and Pacific peoples have a higher burden of AF at younger ages than non-Maori, non-Pacific, and as many may not have any symptoms associated with the AF the condition can go undiagnosed for longer. Thus, in NZ, programmes to detect AF should be planned for people younger than 65 yrs. AF can be detected on an electrocardiogram (ECG), and ECG devices that can be linked to smartphones are now available. We propose using these relatively low cost, easy to use smartphone devices to test for AF among people aged 35 and over when they attend a GP appointment. We will assess the practicalities of implementing a process of systematic testing for AF in routine clinical practice.

Atrial fibrillation and cardiovascular disease share many of the same risk factors and often co-exist.Assessment of stroke risk is a focus of management for patients with AF; however the assessment and management of overall cardiovascular risk is at least as important. Risk scores are available that predict either a person's risk of a stroke or their risk of a cardiovascular event, and clinical guidelines advise treating people classified as being at high risk of either outcome. Stroke risk can be significantly reduced with anticoagulant (blood-thinning) medication and people at high risk of cardiovascular disease can take medications to lower that risk (in addition to lifestyle modifications). Through anonymised linkage to national records of medication dispensing, we would like to assess how many people in the study at high stroke or cardiovascular risk received the medications recommended by the guidelines. The detection of previously undiagnosed AF is of immediate benefit to study participants as they will have their risk of stroke and cardiovascular disease assessed and, if appropriate, will have the opportunity to start medications to lower their risk. Analysis of pharmacological management of study participants with AF, whether established or newly diagnosed, will inform any need for improvement in the management of stroke and cardiovascular risk in primary care. The demographic and risk profile information obtained through this study will also be linked to data from other similar studies in NZ and, in the longer term, contribute to the development of new stroke and vascular risk scores that are appropriate for the multi ethnic NZ population.

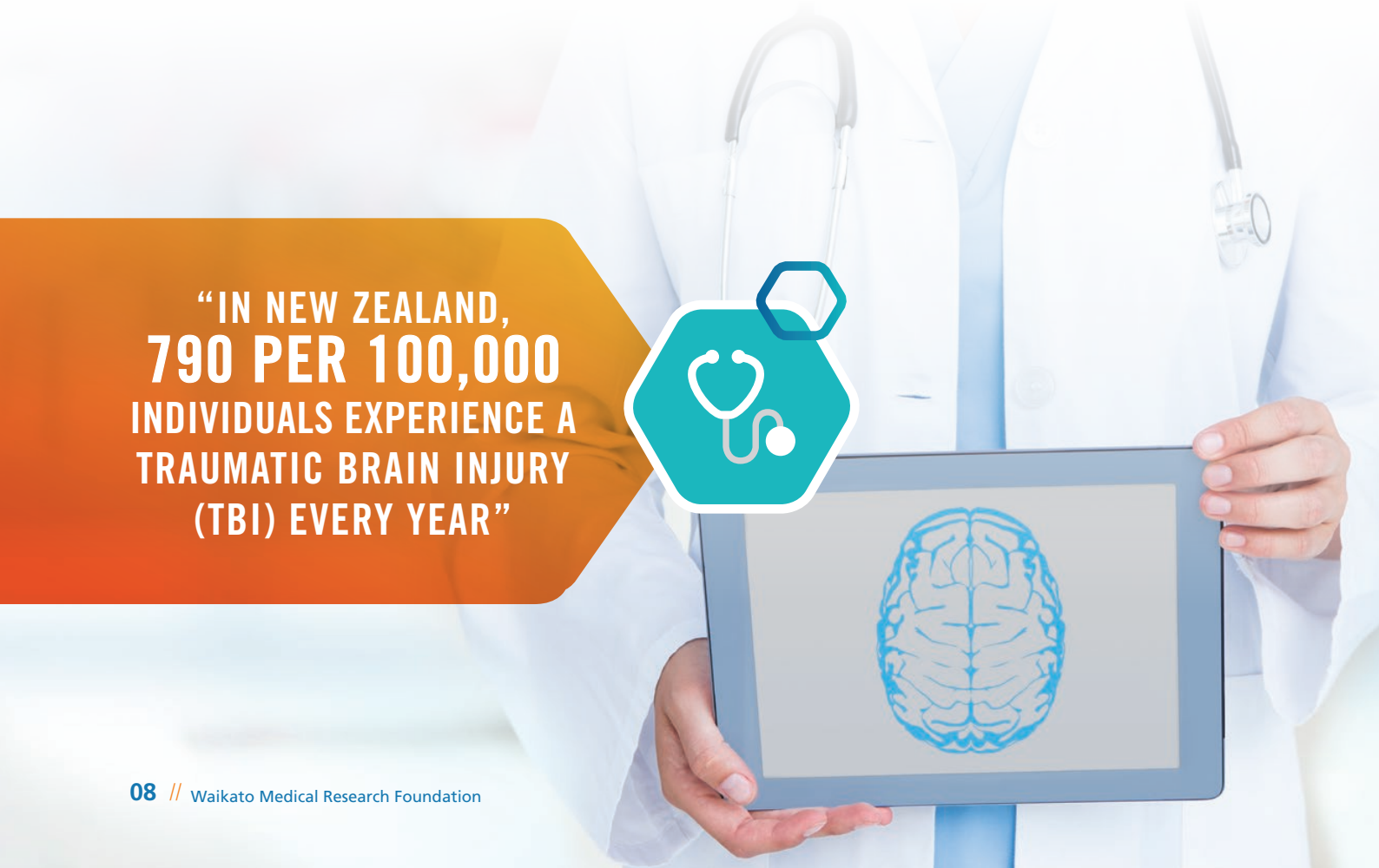
GRANT # 289 // NICOLA STARKEY, PROFESSOR OF PSYCHOLOGY, UNIVERSITY OF WAIKATO, HAMILTON

Eight years later: Long-term outcomes from Traumatic Brain Injury in Adults

Abstract

Traumatic brain injury (TBI) is a leading cause of death, long-term disability and decreased productivity in adults. In New Zealand, 790 per 100,000 individuals experience a TBI every year. Most of these injuries are classed as 'mild' but can still result in adverse outcomes which may not be fully apparent until some years post-injury. In spite of the high rates of TBI, the long-term consequences of these injuries are not well understood, limiting the provision of appropriate health care. The study aims to address this gap in knowledge by examining the long-term outcomes (eight years post-injury) of a cohort of adults with TBI, originally identified as part of the HRC funded Brain Injury Outcomes New Zealand in the Community (BIONIC) in 2010- 2011 who have completed assessments up to 12 months and 4 years post-injury.

Adults in the BIONIC study, who consented to future follow up (N= 259 at 1 and or 4 years post-injury) will be approached to complete a questionnaire (online, in-person or over the phone) about their current health (including subsequent TBIs), mood, cognitive functioning, post-concussive symptoms, participation and employment, 8 years after their index injury. Once data collection is complete we will examine outcomes in each of these domains at 8 years post-injury by comparison with normative data and an age and gender matched comparison group. We will also examine recovery trajectories over time (using data collected as part of the earlier studies) to identify potential predictors of good and poor outcomes, and to identify areas where people are having persistent problems. The study findings will help researchers and health professionals to better understand the long-term outcomes from brain injury, which support services have been used, and where additional help or intervention is most needed (to prevent recurrent injuries or to improve outcomes). It will also help to identify who is most at risk of poor long-term outcomes so that we can target interventions to those most likely to need it.



GRANT # 290 // KEVIN STEWART, SENIOR LECTURER IN PHYSIOLOGY, WINTEC, HAMILTON

The pathogenesis and treatment of lung oedema in critical illness

Abstract

Dr Kevin Stewart from Wintec has installed an isolated perfused rat lung system in a laboratory at the City Campus in Hamilton. This system, which was purchased by the University of Auckland, enables lungs to be kept alive and breathing normally for several hours after being removed from an anaesthetised laboratory rat. It has sensitive transducers that can record many respiratory parameters and enables the introduction of chemicals via inhalation or the blood supply. It is the most commonly used system for the detailed study of lung function, although as far as we are aware, this is the only one in Australasia.

The rationale for locating this lung system in Hamilton is to establish an advanced respiratory research facility at Wintec that will facilitate and enhance research at Wintec for the benefit of staff and students. It is also hoped that the research team can be extended to include researchers from the Waikato DHB. The ongoing research also has the potential to benefit the patients and members of the general public in the Waikato as it will contribute to understanding the mechanisms involved in the deterioration of lung function in patients with relatively common diseases, such as acute pancreatitis and sepsis, that have a high mortality rate, and for which there are currently no specific treatments.

This project will investigate pathological changes in respiratory function that commonly occur in patients with acute pancreatitis or sepsis, and whether they are mediated via toxic chemicals in the lymphatic system. Kevin is supported by highly experienced collaborators from the University of Auckland (Associate Professor Anthony Phillips, Professor John Windsor and Dr Jiwon Hong). These researchers have been investigating whether the deterioration in lung function that occurs in many patients with acute and critical diseases is mediated by factors from the intestinal lymphatic system which enter the circulation just before the lungs. Lymph from experiments carried out in rats with acute pancreatitis and sepsis at the University of Auckland will be introduced into the circulation of healthy rat lungs in the isolated perfused lung system to further investigate this theory.

The second component of the project will investigate whether deterioration in lung function can be slowed or prevented by a new phraseological treatment. We wish to test a new drug that may reduce the leakiness of the endothelial lining of the lungs and hence reduce the lung odema that is a key component in deterioration of lung function with acute critical diseases.

GRANT # 281 // TIMOTHY EDWARDS, LECTURER, SCHOOL OF PSYCHOLOGY, UNIVERSITY OF WAIKATO, HAMILTON

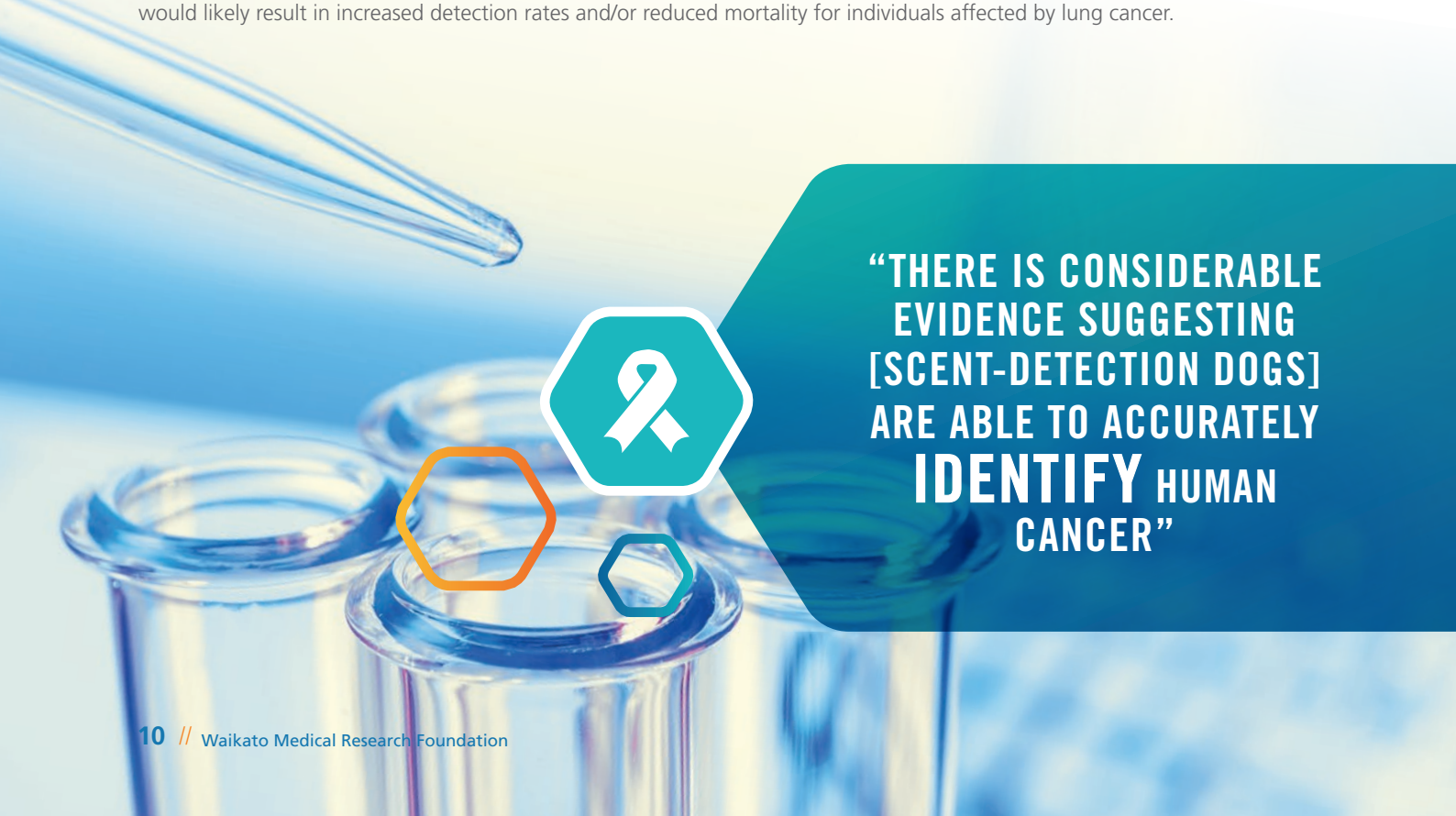
Using Dogs for Lung Cancer Screening

Abstract

Lung cancer is the leading cause of cancer-related death in New Zealand, mainly because of the high cost of current lung-cancer screening methods, which results in late detection. Scent-detection dogs serve a valuable role in many detection applications, and there is considerable evidence suggesting that they are able to accurately identify human cancers. Several studies have examined the ability of dogs to detect lung cancer with promising results, but most of these studies were not conducted using methods that can be used in a clinical setting. Additionally, in all of these studies, participants provided breath samples by breathing into a filter material, and no studies have used saliva samples, which would be less intrusive to collect and easier to store.

We have developed and tested an automated scent-detection apparatus at the University of Waikato that allows training and testing of scent-detection dogs without the possibility of human cueing or judgement interfering with the results. These are common issues in typical scent-detection research and practice. With this apparatus, we plan to train and test six dogs for lung-cancer detection using methods that can be applied to clinical settings. We also plan to compare the performance of the dogs when working with breath samples and saliva samples. Samples will be collected from patients visiting the Waikato DHB Respiratory Clinic. We aim to recruit 400 patients for the training phase of this study, for which we are seeking funding with this application.

The dogs will be trained until they are no longer making significant improvements in accuracy. At this point, a blind test will be conducted to determine the diagnostic accuracy of this scent-detection system. Additional funding will be sought for the blind test and subsequent phases of this research project. Based on the results from the blind test, the dogs will be tested at suitable points in the diagnostic pathway to determine what additional value they might offer. Significant gains in the economic feasibility of early screening programmes, or improvements in accuracy or speed of diagnosis in existing diagnostic pathways, would likely result in increased detection rates and/or reduced mortality for individuals affected by lung cancer.



"THERE IS CONSIDERABLE EVIDENCE SUGGESTING [SCENT-DETECTION DOGS] ARE ABLE TO ACCURATELY IDENTIFY HUMAN CANCER"

PAST GRANT RECIPIENTS: FINAL REPORTS AND FINDINGS

GRANT # 221 // JO HEGARTY, PHD STUDENT/NEONATOLOGIST, UNIVERSITY OF AUCKLAND, AUCKLAND

hPOD – Hypoglyaecaemia prevention in Newborns with Oral Dextrose

Background

Low blood sugar in newborns (neonatal hypoglycaemia) is widely regarded as the single most preventable cause of brain injury in newborns.

Approximately 30% of babies born in New Zealand each year (that is about 21 000 babies) are at-risk of developing low blood sugars, and subsequently undergo numerous blood sugar tests as part of standard monitoring. Half of these babies (10 500 babies) will develop low blood sugars, and an unknown number will experience brain damage or developmental delay as a result.

Treatment for persistent or severe low blood sugars typically involves the admission of baby to Neonatal Intensive Care Units (NICU) for specialist care, and therefore separation of Mum and baby at a time when breastfeeding is being established.

We have recently proven the effectiveness of dextrose gel as a treatment for low blood sugars in newborns (the Sugar Babies Study).

Aim

The hPOD (hypoglycaemia Prevention with Oral Dextrose) Study aims to determine if dextrose gel, gently rubbed into the inside of a baby's cheek within the first hour of birth, can prevent low blood sugars in babies at risk, and therefore reduce admission rates to NICUs.

Methods

The hPOD Trial is a multi-centre, double-blinded, randomised, placebo-controlled trial, comparing 40% dextrose gel with an identical appearing placebo gel. Babies who are at risk of hypoglycaemia (infants of diabetic mothers, preterm, small or large) and unlikely to require NICU admission for other reasons are randomised to receive 40% dextrose or placebo gel massaged into the cheek one hour after birth. After this babies are managed according to the usual hospital protocol, including blood glucose measurement at 2 hours of age and intermittently thereafter.

Study Progress

Recruitment for the Pre-hPOD (dosage) trial was completed in November 2014. A total of 415 babies participated in this study, which showed that a single dose of 40% Dextrose gel 0.5kg/ml given at one hour after birth was both effective and well tolerated. Findings from this study were published on the 26th October 2016 in the prestigious international on-line journal, PLoS One. Main findings were:

- A single-dose of prophylactic oral dextrose gel was the most effective, and well-tolerated dose for this purpose.
- Oral dextrose gel can reduce the risk of low blood sugars in babies born at risk, by approximately 30%.

This exciting finding means that for the first time we have an effective intervention to reduce the risk of low blood sugar concentrations in babies at risk. We are now recruiting to the main hPOD trial, to determine whether this approach also has "real world" benefits by reducing the risk of NICU admission.

We have now recruited 641 of the target of 2129 babies to our main hPOD Trial (as at 14th February 2017), 158 of whom have been recruited at Waikato Hospital. Indeed, Waikato Hospital has been the best performing recruitment centre in New Zealand for this Trial, due largely to the leadership of Dr. Deborah Harris and Research Nurse Alana Cumberpatch. This primarily reflects the ongoing salary support for the research nurse by the Waikato Medical Research Foundation which is not available elsewhere. It also reflects Waikato Hospital's pride and strong sense of ownership and contribution to the world's knowledge around hypoglycaemia management in newborns stemming from almost a decade of research on this topic (BABIES, Sugar Babies and the CHYLD 2 year and 4.5 year follow up studies). Much of this research has also been supported by the Waikato Medical Research Foundation.

GRANT # 221 // JO HEGARTY // CONTINUED...

The two-year follow-up of children who participated the pre-hPOD dosage study is almost complete. Children who have participated in the main trial are now being invited to take part in follow-up to determine whether there are any later benefits or risks of this treatment up to two years of age.

Financial Statement

The funding awarded by WMRF to hPOD ($21,000) is for research nurse salary at the Waikato Hospital site. Although WMRF funding was initially awarded in 2014, and we have been grateful to receive extensions to make the greatest use of these allocated funds.

Waikato Hospital has invoiced us quarterly, at a rate of $1000/month. The last invoice received was for the period November 2016 to January 2017. All monies have now been spent.

Dissemination

- As mentioned above, findings from the pre-hPOD Trial were published in October 2016.
- Dr Jo Hegarty has now completed and submitted her thesis, and will defend her oral exam this next week.
- Recruitment to the main hPOD Trial continues. We hope to complete recruitment by December 2019.

Conclusion

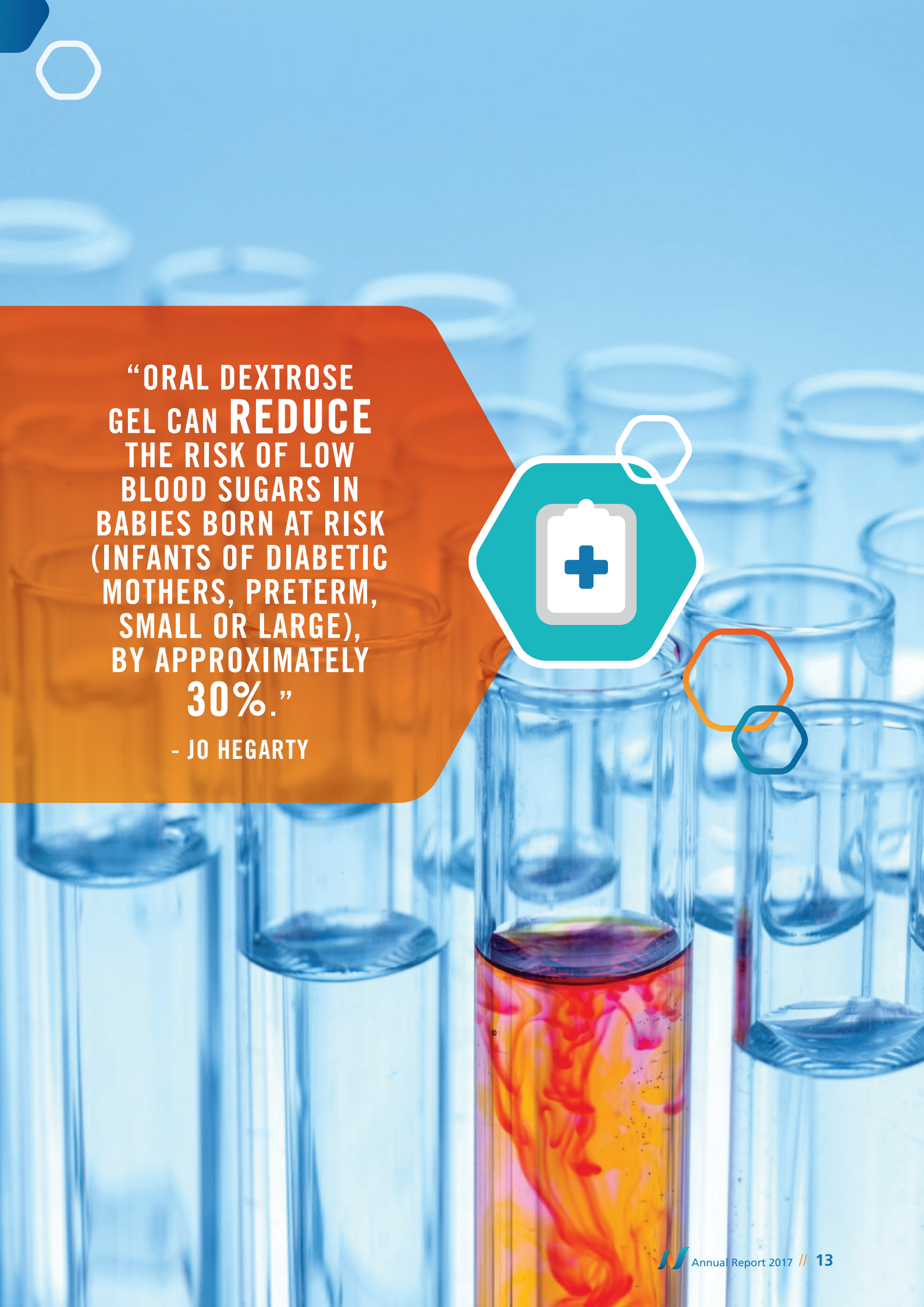
Waikato Hospital continues to make an enormous and much valued contribution to recruitment to the hPOD Trial and we look forward to their continued support

Should oral dextrose gel be effective in preventing low blood sugars in these babies, this will revolutionise how low blood sugars are managed both nationally and internationally. We expect such a finding will:

- reduce the number of admissions to NICU for low blood sugars; avoiding the need to separate mother and baby and save millions in healthcare-related costs,
- positively impact breastfeeding rates in this group, and
- most importantly, improve later developmental outcomes for these babies who may have otherwise been affected by their experience of low blood sugars in early life.

We would like to sincerely thank the Waikato Medical Research Foundation for your support. We believe this trial has the potential to make a difference to the early life experiences of babies in the Waikato, and their families.

Thank you for your support for the hPOD Trial by supporting recruitment at Waikato Hospital.


"ORAL DEXTROSE GEL CAN REDUCE THE RISK OF LOW BLOOD SUGARS IN BABIES BORN AT RISK (INFANTS OF DIABETIC MOTHERS, PRETERM, SMALL OR LARGE), BY APPROXIMATELY 30%."
- JO HEGARTY

GRANT # 265 // HOLLIE ELLIS, RESPIRATORY RESEARCH FELLOW, WAIKATO HOSPITAL, HAMILTON (RECIPIENT OF NOEL KARALUS RESEARCH SCHOLARSHIP 2016)

Hospital admissions for acute exacerbations of COPD; Contributing factors, risk prediction and prognosis

Following my successful application for a WMRF Research Grant in 2016 I have submitted my thesis for a Masters of Medical Science degree through the University of Otago, pending examination, on the 26th July 2017. Acknowledgement is made to the Health Innovation Partnership (co-funded by the Ministry of Health and the Health Research Council) for funding the original research study. Below is a summary of the findings of the project;

Background

Hospitalisations for acute exacerbations of Chronic Obstructive Pulmonary Disease (COPD) are associated with high mortality. Clinical indicators and prognostic scores have been explored previously to identify patients at heightened risk, but may also be useful in detecting patients with a good prognosis that could avoid admission. However, there are often additional social and environmental factors at play that influence patients' reasons for admission. We aimed to explore these potential contributing factors in conjunction with the development of a new prognostic tool.

Methods

Consecutive patients were recruited following hospitalisation with a primary diagnosis of acute exacerbation of COPD. Clinical data were collected and patient and admitting doctor questionnaires were completed to gather further information regarding the reasons for admission. The primary outcomes were all-cause mortality at 30-days and 1-year and cardio-respiratory related re-admissions over the same time period. This cohort was then used to externally validate a proposed prognostic tool, the CANT score, comprised of a composite score of CURB65 score ≥ 2, Acidaemia (pH <7.30), NT-proBNP >220pmol/L and Troponin >0.03µg/L.

Results

305 patients were recruited across 3 New Zealand sites. The majority of patients had severe COPD as classified by the GOLD spirometry guidelines, and 13.5% of patients had long-term oxygen therapy at home prior to admission. Inpatient mortality was 1.6% (n=5). At 30-days post admission, mortality was 3.6% (n=11) and at 1-year 19.0% (n = 52). Readmissions for cardiac or respiratory related illnesses were 22.6% and 62.8% at 30-days and 1-year respectively. Raised NT-proBNP (>220pmol/L) and troponin (>0.03µg/L) on admission were associated with death at 1-year (p <0.05). Elevated NT-proBNP was also associated with death at 30-days (OR 3.6, CI 1.06-12.22, p = 0.04).

The area under the receiver operating curve for mortality at 30-days post admission for the CANT score in this cohort was 0.68, which was lower than in the derivation (0.86) and internal validation cohorts (0.82).

The majority of patients were admitted due to the requirement for hospital level treatment, however the admitting doctors suggested that up to 30% of admissions could be avoided if additional support, such as acute personal cares or GP home visits, were available in the community. Over 40% of patients reported issues with GP availability, 25% reported avoiding seeing the GP due to cost and 17% due to lack of transport.

Conclusion

We have been unable to externally validate the use of the CANT score as an effective short-term prognostic tool following acute COPD exacerbation, due to a lower than expected mortality rate at 30-days in this cohort.

Elevated NT-proBNP and troponin on admission were associated with an increased mortality at 1-year and NT-proBNP with an increased mortality at 30-days, inferring that these cardiac biomarkers are predictors of short and long-term prognosis following COPD exacerbation.

Cost, lack of transport and availability of GP services may contribute to patient admissions in addition to the clinical need for hospital level treatment. The majority of admissions are likely to be unavoidable, unless considerable increased resources can be provided in the community.

ALL TRUTHS ARE EASY TO UNDERSTAND ONCE THEY ARE **DISCOVERED;** THE POINT IS TO DISCOVER THEM

- GALILEO

FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MAY 2017

Statement of Financial Position as at 31 May 2017

	2017	2016
Assets	**$**	$
Current Assets		
Cash & Bank Balances	**1,464,881**	803,377
Prepayments	**6,708**	0
Term Deposits	**777,292**	1,508,170
Total Current Assets	**2,248,881**	**2,311,547**
Non Current Assets		
Term Investments	**884,155**	797,676
Total Assets	**$3,133,036**	**$3,109,223**
Liabilities		
Current Liabilities		
Bank Overdraft	**-**	5
Accounts Payable	**3,669**	16,176
Related Party Payables	**385**	506
Grant Funds Not Yet Spent	**-**	**40,000**
Total liabilities	**4,054**	**56,687**
Net assets	**$3,128,982**	**$3,052,536**
Accumulated Funds		
Capital	**3,128,982**	3,052,536
Total Accumulated Funds	**$3,128,982**	**$3,052,536**

Statement of Financial Performance for the year ended 31 May 2017

	2017	2016
	$	$
Revenue		
Donations, fund raising and other similar revenue	**226,119**	733,381
Interest, dividends and other investment revenue	**106,370**	115,062
Total Revenue	**$332,489**	$848,442
Expenses		
Grants and donations	**202,780**	247,606
Other expenses	**53,264**	50,574
Total Expenses	**256,044**	298,180
Surplus	**$76,446**	$550,262

Financial Statements prepared by Staples Rodway Chartered Accountants, Hamilton
Financial Statements audited by Campbell & Campbell Accounting Associates Ltd, Hamilton

WAIKATO MEDICAL RESEARCH FOUNDATION – BEST PAPER AWARD

Each year, The Waikato Clinical Campus and Waikato Medical Research Foundation invite PhD and MD candidates to submit their publications for consideration for this award.

Papers are judged by senior academics from across the Faculty of Medical and Health Sciences and the Waikato Medical Research Foundation.

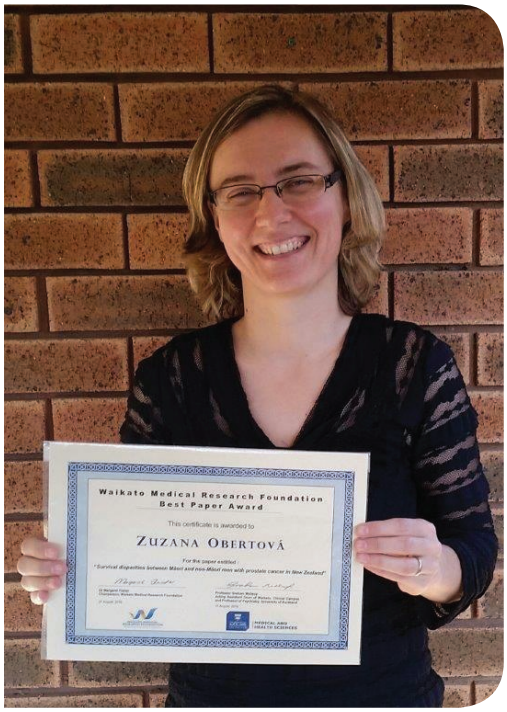
2015 Award was presented to Darren Hight

Emergence from general anaesthesia and the sleep-manifold. Frontiers in Systems Neuroscience.

2016 Award was presented to Zuzana Obertova

Survival disparities between Maori and non-Maori men with prostate cancer in New Zealand.

Darren Hight (2015)



Zuzana Obertova (2016)

TO OUR DONORS – THANK YOU

The Trustees of the Foundation wish to thank all who have generously donated since our inception in 1986. From 1986 to 2017, the Foundation has supported researchers in the following institutions:

Waikato District Health Board	$1,260,991
University of Waikato	$663,180
Faculty of Medical Health Sciences University of Auckland – Waikato Clinical School	$349,379
AgResearch	$624,788
Polytech	$41,310
Private researchers	$207,019
Totalling:	$3,146,667

Without your generous donations, the Foundation would not have been able to support 25+ years of research in the Waikato.

A detailed listing of donors is available via our website: www.wmrf.org.nz

DONATION FORM

This form can be downloaded from our website: www.wmrf.org.nz
I wish to make a donation to the Waikato Medical Research Foundation

Please tick one :

O $50 O $100 O $200

O $500 O $1000 O $2000 Other (Amount $_____)

O I enclose a cheque made out to: Waikato Medical Research Foundation

O I have made a direct payment to WMRF Bank Account: Westpac 030 306 0208170 01
(Please include your name as reference for the payment)

O Please send me a receipt

As we are registered with the Charities Commission (Charities Commission No: CC20443), all donations to Waikato Medical Research Foundation over $5.00 are tax deductible.
Please complete your details and post / fax for a receipt.

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For future contact, we would like to e-mail interested parties, and if you wish to receive information from us, please complete below:
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WAIKATO MEDICAL RESEARCH FOUNDATION
Discovery, Innovation, Progress.

Post to: Private Bag 3200, Waikato Mail Centre Hamilton 3240
Phone: (07) 839 8750 **Fax:** (07) 839 8712
Email: wmrf@waikatodhb.health.nz
Web: www.wmrf.org.nz

WAIKATO MEDICAL RESEARCH FOUNDATION HISTORY

In 1986 the Waikato Medical Research Foundation (Inc) was established and incorporated to promote, encourage and sustain medical research in the Waikato Region. At the time, Professor Michael Selby explains:

The aim was to undertake research that would be of benefit to the Waikato. Obviously we were hoping that the research would have wider applications than the Waikato. Inevitably, if you make any advances, the very nature of scientific work is that it gets published, and therefore you hope that the benefit will be widespread and therefore the people of the Waikato would benefit along with everybody else – that was the aim. So, we did put emphasis on publication, and therefore, of course quality – so that was part of the initial requirement.

The Waikato Medical Research Foundation has been established to enable ethical medical research to take place within the region. Medical Research will benefit everybody, and it warrants the support of all citizens.

In forming the Foundation, and going to the general public in the early years of fundraising, it stressed the importance that this is a local body. When initially formed, The foundation stressed to members of the general community in Hamilton and outlying areas that there were medical or health problems specific to the Waikato area, and that it was important to have a locally administered fund – and now 25 years on, the purposes of this Foundation are still as it was when initially formed.

The Trust was founded in 1986 with a capital pool of $1m.

"THE LEGACY OF THE PAST IS THE SEED THAT BRINGS FORTH THE PROSPERITY OF THE FUTURE"

Board of Trustees (1996)
Standing (left to right) Denis Jury, Andrea Donnison, Don Llewellyn, Ross McRobie
Sitting (left to right) Ken Mackay, John Gillies, Michael Selby, Brian Smith, James Grace

WAIKATO MEDICAL RESEARCH FOUNDATION
Discovery, Innovation, Progress.

Those who signed the Trust Deed in 1986 were:

Charles Beresford, Physician, Waikato Hospital,

John Gillies, Paediatrician, Waikato Hospital,

Jack Havill, Anaesthetist, Waikato Hospital,

Jim Grace, Solicitor,

Dryden Spring, a company director,

Michael Selby, Professor at the University of Waikato,

Jack Wilson, Head of TECH,

David Braithwaite, a company director,

Brian Smith, a chartered accountant and

Valerie O'Sullivan of Matamata.

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