WAIKATO MEDICAL
RESEARCH FOUNDATION

Discovery, Innovation, Progress.

2016

ANNUAL REPORT

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

CHAIRMAN'S REPORT

It is my privilege to currently Chair the Waikato Medical Research Foundation. The Foundation, established in 1986, plays a unique and extremely important role in promoting and supporting high quality medical and health research in the Waikato Region for the benefit of both our local and wider communities. Our role assisting emerging Waikato based researchers, early in their career, remains a priority.

There are a large number of people and organisations to thank for their interest in and support of the Foundation.

Our Trustees bring professionalism, expertise and altruism in promoting the goals of the Foundation. It is a pleasure to work with them. I wish to acknowledge the leadership and vision of our outgoing Chair, Dr Noel Karalus, who continues as Patron, and the outgoing Deputy Chair, Mr Geoff McDonald. Both have played a significant role in recent years, raising the profile of the Foundation and initiating and maintaining a very successful fundraising campaign. Prof Vic Arcus, Professor of Molecular Biology at Waikato University, current Trustee and member of the Grants committee, has taken on the role of Deputy Chair. We welcome two new trustees, Dr Deborah Harris, current member of the Grants Committee, and local lawyer Gillian Spry who joins the Finance Committee.

The Finance Committee, under the Chair of Ian Jennings, has provided sound financial stewardship and strategic planning. They continue to work on developing partnerships to enable us to expand the work of the Foundation.

The Grants Committee is chaired by Dr Adrian Molenaar and has remained busy with a supplementary Grants round at the end of 2015. Many hours were spent evaluating grant applications and their expertise is appreciated. In total, for 2015, twelve grants were awarded with a value of $221,606. In 2016, nine grants with a value of $191,030 have been awarded. As always, more grant applications reaching the threshold for funding are received than we are able to fund.

This drives the ongoing efforts for fundraising, with all donations and income generated directly going to fund research projects. We remain indebted to Trust Waikato for their significant and longstanding support. More recently we have received funding from Braemar Charitable Trust, the Waikato Branch of the Cancer Society, WEL Energy Trust, Pinnacle (to support primary health care research) and the Respiratory Research Unit, who have established the Noel Karalus Research Scholarship.

With increasing public awareness of the research undertaken as a result of the work of the Foundation there has been very strong interest from our local community. Our thanks go to the generous local donors who have seen our capital base increase in value. This includes a number of medical colleagues. We have been strongly supported by local businesses and a group of local business people headed by Mr Peter De Luca continue to work on promotion and future fundraising for the Foundation.

Our thanks go to our WMRF Administrator, Robyn Fenneman, who is responsible for the smooth running of the Grants Round, administration of the grants and supports the fundraising activities.

It has been very rewarding to see the increasing community recognition of the role that local basic science and clinical research plays in enhancing delivery of healthcare of the highest standard, which is evidence-based and meets specific needs of our community. Our departing Trustees have left a solid base for us to continue the work promoting medical research in the Waikato.

GRANTS CHAIRMAN'S REPORT

The WMRF were delighted to be able to support a Supplementary Grant Round in December 2015 for four applications totalling $73001. Additional financial assistance from WEL Energy Trust was gratefully received.

For 2016, the WMRF received 18 applications requesting a total of $378,825. Due to the efforts of the fundraising committee and welcome financial assistance via sponsorship grants from Trust Waikato, Pinnacle Health, Waikato BOP Division of the Cancer Society, the Noel Karalus Respiratory Research Scholarship and Braemar Charitable Trust, the committee recommended supporting 9 applications, (listed in no particular order in the table below, naming just the lead investigators), and have been able to support projects totalling $191,030.14

WMRF FUNDED PROJECTS GRANT ROUND 2015	
• Dr Charis Brown, NIDEA, The University of Waikato, Hamilton *Improving the Outcomes for men with prostate cancer : A local approach*	$17,546
• Dr Mariza Reis, Food & Bio-based Products AgResearch, Hamilton *Does bacterial transformation of milk lipids occur in the infant bowel?*	$16,000
• Dr Hollie Ellis, Waikato Hospital, Hamilton *Hospital admissions for acute exacerbations of COPD, contributing factors risk prediction and prognosis*	$13,500
• Dr Deborah Harris, Neonatal Nurse Practitioner, Waikato Hospital, Hamilton *Glucose in Well Babies (GLOW)*	$29,675
• Professor Ross Lawrenson, NIDEA, The University of Waikato, Hamilton *Understanding the importance of tumour biology and socio-demographic difference in cancer stage at diagnosis using the Midland Lung Cancer Registry*	$20,000
• Mr Tim Norman, Pinnacle Health, Hamilton *Measured Implementation of an Accelerated Chest Pain Pathway in Rural Practice*	$26,300
• Dr Gregory Jacobson, University of Waikato, Hamilton *Does Herpes simplex virus type 1 in heart valves contribute to Rheumatic Heart Disease?*	$31,046
• Dr Miina Karalus, Population Health, Waikato DHB, Hamilton *Virtual health care trial to prevent recurrent Rheumatic Heart Disease amongst Waikato young people with Rheumatic Fever*	$17,000
• Dr Kelly Jones, School of Psychology, University of Waikato, Hamilton *Six-Year Outcomes following Traumatic Brain Injury (TBI) in Childhood*	$19,962

I thank the Grants Committee (Maggie Fisher, Amanda Oakley, Vic Arcus and Deborah Harris and our new member, Tahu Kukutai (from the University of Waikato), plus Ian Jennings, Finance Committee Chairman, for doing an excellent job in reviewing, discussing and scoring the applications. Michael Jameson, our other grants committee member, was on overseas sabbatical leave during the review process; hence unavailable as a reviewer in this round.

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

MEET TWO NEW MEMBERS TO OUR TEAM AT THE FOUNDATION

TAHU KUKUTAI, GRANTS COMMITTEE MEMBER

Dr Tahu Kukutai (Ngāti Tipa, Ngāti Mahanga, Ngāti Maniapoto, Te Aupōuri) is Associate Professor at the National Institute of Demographic and Economic Analysis at the University of Waikato. Tahu specialises in Māori and Indigenous demographic research and has written extensively on issues of Māori population change, identity, and inequality. Tahu has worked on a wide range of demographic projects for hapū, iwi and Māori communities, and has ongoing collaborations with researchers at the Centre for Sami Research, Umeå University (Sweden) and the Centre for Aboriginal Economic Policy Research at the Australian National University.

Tahu currently leads a major project on ethnic classification in censuses worldwide, and is part of a research team, funded by the Swedish Research Council, that is investigating the impacts of colonisation on Indigenous population health in Sweden, Australia and New Zealand. Tahu is a Deputy Director of the Ageing Well National Science Challenge, Vice President of the Population Association of New Zealand and a founding member of Te Mana Raraunga: the Māori data sovereignty network. She has degrees in history and demography from the University of Waikato and a PhD in sociology from Stanford University.

GILLIAN SPRY, TRUSTEE

Gillian is a Partner in Waikato Law Firm, Norris Ward McKinnon, specialising in solving Estate, Trust, Relationship Property and Power of Attorney Disputes.

Gillian grew up on a farm at Richmond Downs, between Matamata and Cambridge, and she and her family returned to live in the Waikato 31 years ago. Her husband, Paul, is a Hamilton GP. During the time she has lived in Hamilton, Gillian has been involved with several local organisations including being a member of Tamahere School Board of Trustees, Chairing Waikato Diocesan School Board of Trustees for 7 years, and Board member of Hamilton Abuse Intervention Programme.

From a lay perspective, Gillian is particularly interested in medical research and is very much looking forward to helping the Waikato Medical Research Foundation achieve its goals.

2015 SUPPLEMENTARY GRANT ROUND ABSTRACTS

GRANT #251 // DR HUGH GOODMAN, HAEMATOLOGIST, WAIKATO HOSPITAL, HAMILTON

Adults with Acute Myeloid Leukaemia or High-Risk Myelodysplastic Syndrome (AML19)

Abstract

Acute myeloid leukaemia (AML) is a common, aggressive and often fatal haematologic cancer affecting adults worldwide. Treatment remains challenging. Currently, the only curative options are intensive multi-agent chemotherapy with or without an allogeneic bone marrow transplant. Successive generations of cooperative-group trials have seen steady improvements in outcome.

NZ is proud to have been a useful contributor to the AML trials of the United Kingdom (UK) Medical Research Council (MRC), latterly renamed the National Cancer Research Institute (NCRI). Every AML-treating centre in NZ has participated in some or all of successive trials AML10 (1988-1995), AML12 (late 90s to 2002), AML15 (~2004 to 2009) and AML17 (2011-2014). Waikato Hospital Haematology Department participated in AML12, 15 and 17, recruiting 3, 12 and 19 patients respectively. The WDHB Haematologists believe strongly that participation in these state of the art protocols has been to the great benefit of patients in the region treated for AML.

Unfortunately, although improvements in outcome are clearly evident, great challenges remain and the likely cure rate for a newly diagnosed adult with AML, treated with intensive chemotherapy, remains no better than 50-60%. The molecular and immunologic research revolution that has led to important gains in some other cancers, such as Herceptin in breast cancer or rituximab in B-cell lymphomas, has yet to create large gains in AML. Nevertheless, the basic science leads to new approaches that need to be tested in phase 3 studies.

AML19 is the latest generation of the NRCI AML studies. It is a large, non-Pharma, international phase 3 study with a factorial design that maximises the number of research questions. Its research aims are to:

- further optimise the use of existing chemotherapy agents (randomising regimens and numbers of cycles),
- examine the efficacy of a new combined formulation of 2 existing chemotherapy agents,
- compare 2 schedules of a targeted antibody treatment,
- examine the efficacy of a targeted therapies for molecular-defined subsets of patients,
- further examine the place of allogeneic bone marrow transplantation in AML,
- establish the value of monitoring for minimal residual disease (MRD).

The trial will run for approximately 5 years and based on enrolment for AML17 we expect to enrol approximately 5 patients per year. The trial has no funding from the UK NCRI, Pharma (although drugs are supplied free of charge), the NZ government or Waikato DHB. We are applying for set up costs (approximately $6000) and per patient trial coordinator costs (approximately $1600) for the first 15 patients (or a maximum of 3 years, whichever comes first) for a total of just over $30,000.

Outcome Statement

This study will continue the gradual optimisation of therapy and improvement in outcome for adult AML. Successive MRC/NCRI protocols have been very successful scientifically and, most importantly, repeatedly have established standards of care for AML patients treated outside clinical trials. It is highly probable that AML19 will again re-define the best available standard of care. Additionally, it will clarify the role of some targeted therapies in AML, such as gemtuzumab ozogamicin (Mylotarg, a targeted antibody), ganetespib (an HSP90 inhibitor) and ponatinib (a FLT3 inhibitor).

GRANT #261 // DR DELPHINE RAPP, SCIENTIST, AGRESEARCH, HAMILTON

Investigation into the genome of *Escherichia coli* 026 from the Waikato bovine reservoir

Abstract

Escherichia coli 026 is a foodborne-associated bacterium that may cause severe cases of diarrhoea, haemolytic uraemic syndrome and renal failure in humans (particularly children). The incidence of the disease and the severity of symptoms have been associated with the bacterial expression of virulence characteristics such as an adherence determinant encoded by the *eae* gene, and shiga toxins encoded by *stx* genes. Dairy cows are recognised as an important reservoir of *E. coli* 026 with carriage and excretion associated with no obvious signs of infection. However, the eae gene and more commonly, the *stx* genes may not be present in 026 strains isolated from the bovine reservoir while they are found in 026 strains isolated from human clinical cases. For improved public health microbiological risk analyses and to support efforts to understand and contain the dissemination of highly virulent 026 in the community, it is important to determine whether bovine isolates have the genetic background that may be suitable for the acquisition of key virulence genes and evolution to a pathogenic variant. We propose to sequence the genome of seventeen *E. coli* 026 strains isolated between April 2014 and January 2016 from fresh effluent on seven dairy farms in the Waikato. The seventeen bovine isolates are either (i) positive for both *stx* and *eae* genes, (ii) positive for eae gene but negative for *stx* genes, or (iii) negative for both *stx* and *eae* genes. The objectives are to compare the genetic background among the bovine 026 isolates and to provide data on the likelihood for bovine strains to acquire clinical relevant virulence determinants.

Outcome Statement

To enhance public health microbiological risk analyses and support efforts to understand and contain the dissemination of STEC in the community.

GRANT #278 // DR MARIZA REIS, SCIENTIST, AGRESEARCH, HAMILTON

Does bacterial transformation of milk lipids occur in the infant bowel?

Abstract

Microbial colonisation of the infant bowel is influenced by many factors, including child's nutrition (breast milk, milk formula). The resulting microbial community is referred to as the bowel (gut) microbiota (microbiome). By 3 months of age, the infant bowel microbiota of both breast milk-fed and formula-fed infants is comprised of a relatively simple collection of bacterial species, although that of formula-fed babies is more diverse. We and other researchers have found that bacteria cultured from faeces can metabolise dietary fats, including polyunsaturated fatty acids, under controlled laboratory conditions. These chemical transformations of fatty acids generate unique products such as hydroxyl fatty acids, oxo fatty acids and conjugated fatty acids. These metabolites are reported to benefit health. For example, a gut microbial metabolite of linoleic acid, (10-hydroxy-cis-12-octacecenoic acid – HYA), ameliorates intestinal epithelial barrier impairments. Other metabolites of linoleic acid regulate energy metabolism of the host. Together, these fingers suggest that microbial fatty acid metabolites produced in the bowel may have health effects on the host, and indicate exciting prospects for NZ dairy-based research. We aim to determine whether transformation of fatty acids occurs in the infant bowel by analysing faeces for fatty acid metabolites. Detection of these metabolites in faeces will inform us as to whether *in vitro* observations reflect real life, and thus determine whether further research on fatty acid metabolites is worthwhile in relation to the effects of the bowel microbiota on infant nutrition.

Outcome Statement

In the longer term, this new knowledge may contribute to the development of novel supplementary feeding regimes for babies that will enhance health of the infant bowel with metabolic profiles that meet the needs of optimal infant development.

2016 GRANT ROUND ABSTRACTS

GRANT #271 // DR GREGORY JACOBSON, MOLECULAR GENETICS LAB, UNIVERSITY OF WAIKATO, HAMILTON

Does Herpes simplex virus type 1 in heart valves contribute to Rheumatic Heart Disease?

Abstract

Rheumatic heart disease (RHD) is rare in most developed nations but is unfortunately still a health concern in New Zealand. The incidence of the disease is linked to overcrowded living conditions and poor access to primary healthcare. RHD occurs following recurrent bouts of acute rheumatic fever (ARF) after an initial throat infection by bacterial called Group A Streptococci. While the exact physiological events that lead to RHD are not completely known, it is proposed that it arises because immune responses to streptococcal proteins can also target "innocent bystander" proteins – these are a subset of the body's own proteins which have a similar structure to the streptococcal proteins. Chronic ARF effectively leads to an "autoimmune" response causing damage to the valves in the heart, affecting their function and leading to a set of debilitating cardiac symptoms found in RHD. Sometimes the damage to these cardiac valves is so severe that surgical repair or replacement is the only appropriate clinical intervention (in New Zealand this surgery costs over $8.5 million/yr) (Milne et al., 2012). In investigating features of RHD a previous study found that over 90% of valves were infected with the cold sore virus, herpes simplex type 1 (HSV-1). Interestingly, HSV-1 has been shown to cause cardiac symptoms in humans, and experimental HSV-1 infection in mice can cause cardiac inflammation similar to RHD in humans. Here we proposed to investigate the contribution of HSV-1 to cardiac inflammation in RHD.

Specifically we will

1. Use antibody and PCF based laboratory methods to measure the presence of the virus in cardiac valves taken from RHD patients from a Waikato population.
2. Use the recently developed deep sequencing technology to read all gene messages (mRNA) that are expressed by the endothelial cells and any viruses present within these diseased valve samples.

Our findings will be compared with clinical data to determine if HSV-1 viral infection is associated with an increased severity of RHD symptoms and/or valve damage. Our findings will help inform whether other treatments, such as early intervention with anti-viral therapy, could be used to alleviate the need for invasive and costly heart valve surgery.

Outcome Statement

Primary outcomes: If HSV-1 infection is found in a high percentage of the valves, this would highlight viral infection as a potentially important feature of valve disease in the patients. This would also confirm observations from overseas studies (in predominantly Caucasian and Asian populations) that show a high frequency of HSV-1 positivity in valves from RHD patients. Such findings would justify extending the study to a larger New Zealand-wide project focusing on different ethnic groups, in particular Polynesian populations (who have disproportionately high rates of RHD).

Also, understanding if HSV-1 infection predisposes the valves to become damaged by autoimmune responses will provide support for the screening of patients (e.g. by serology) to allow therapeutic intervention such as using antiviral drugs as secondary prophylaxis (Kimberlin and Whitley, 2007).

Secondary Outcome: We will begin to describe the immune responses within the diseased valves and use an unbiased deep sequencing method for detection of both human viral gene expression in each diseased heart valve under investigation.

GRANT #262 // DR CHARIS BROWN, SENIOR RESEARCH FELLOW, NIDEA, THE UNIVERSITY OF WAIKATO, HAMILTON

Understanding the importance of tumour biology and socio-demographic difference in cancer stage at diagnosis using the Midland Lung Cancer Register.

Abstract

Prostate Cancer is the most commonly registered cancer and the third most common cause of cancer death for men in New Zealand. However, information on prostate cancer can be difficult to evaluate due to missing data, lack of recorded stage and inconsistencies in follow-up. It was identified that there was a need for the local collection of information about men with a prostate cancer diagnosis after the completion of two seminal NZ studies, the Midlands Prostate Cancer Study and the Management of Metastatic Prostate Cancer. The intention of the database is to facilitate the collection of more accurate and specific information regarding tumour biology, the management of the disease, and the needs of men dealing with this significant health issue. This prospective database facilitates the timely, accurate and confidential manner of information of collected data on the diagnosis, current management and outcomes of men with prostate cancer.

Both public and private sector prostate cancer patients will be invited by post to participate in the study and men will be asked to complete a wellness survey. Instruments that are comparable with international studies will be incorporated with the intention to seek input from men at least once every 12 months. Questionnaires will include a mix of the following domains: quality of life, supportive care needs, mobility, information seeking, anxiety, stress, depression, deprivation and health literacy measures. Participation is voluntary and all participants invited will be required to sign a consent form before being included in the database. The database will include prostate cancers of all stages, i.e., local to metastatic, and in addition will seek feedback from men to facilitate learning about the experiences of living with a prostate cancer diagnosis, for the purpose of developing and tailoring future interventions.

The database is currently in an excel format but we will develop an Access database with specialist assistance. The investigators are a group of researchers and clinicians with a long-term, shared interest in the management of prostate cancer. With a strong mix of researchers and clinicians on the project we believe that the research has the direct potential to not only provide information on current management of patients, identifying delays in referrals and gaps in current care practices but also creates the ability to track men long term throughout their prostate cancer journey, including their survivorship period. We believe this will add timely and informative information to health care providers, enhancing outcomes for men.

Outcome Statement

Prostate cancer impacts the lives of many NZ men. From previous work in the region and across NZ we know that in the past men have experienced avoidable hardships after their cancer diagnosis, with gaps in their knowledge, support and/or care existing up to 6 years post diagnosis and/or treatment. This study aims to quantitatively document: 1. patient and tumour characteristics, current treatments, management pathways and referrals; 2. patient progress and outcome; 3. patterns of care, and 4. compare actual pathways to best practice pathways. The analysis will be critical in helping to define the current position regarding patient management, further directing changes to improve outcomes for men. This study also incorporates patient feedback through patient reported measures. This will enable an accurate review of multidisciplinary aspects of prostate cancer management in the Waikato with clinicians in the field, for which we have excellent clinical engagement in our work.

GRANT #275 // MR TIM NORMAN, PROJECT MANAGER, PINNACLE, MIDLAND HEALTH NETWORK, HAMILTON

Measured Implementation of an Accelerated Chest Pain Pathway in Rural Practice

Abstract

Ischaemic heart disease is a major health system burden that affects about 200,000 New Zealanders. This has a signifiant impact on acute demand in the Midland region. The Midland region has the highest number of rural residents of all District Health Boards, and faces a number of geographical challenges with areas of isolation and long distances to primary, secondary and tertiary support. Some rural areas also have limited on-road emergency services and rely on helicopter rescue services. Patients with symptoms suggestive of a possible "heart attack", account for a significant number of presentations to New Zealand Emergency departments. Assessing whether a patient is having a "heart attack" or not is time-consuming, and requires intensive healthcare resources. The ability to quickly determine whether a patient has a low- or high-risk for "heart attack" is a major challenge for clinicians because approximately 80-85% of patients presenting with symptoms of possible "heart attacks" are NOT subsequently diagnosed with a "heart attack". Patients presenting with possible "heart attack" account for approximately 10% of Emergency department presentations and up to 25% of hospital admissions. Patients usually undergo lengthy assessents in the Emergency department or hospital ward. Prolonged assessment is a significiant contributor to hospital overcrowding, and is well documented to impact negatiely on patient outcomes, in addition to increased health care costs.

Accelerated Chest Pain Pathways have been introduced in all Emergency departments across New Zealand as part of a Ministry of Health initiative over the last two years. These have been shown to allow patients who are not having a "heart attack" to be discharged from the Emergency Department sooner. The next logical step is to assess an accelerated chest pain pathway in the rural community in patients presenting with possible "heart attack".

This will be the first time that such an accelerated chest pain pathway, specifically adapted for rural use, will be used in patients with possible "heart attack" who attend General Medical Practices in a rural New Zealand community. The study will assess the feasibility, effectiveness and safety of this accelerated pathway in the Midland rural setting. Sucessful implementation of this accelerated chest pain pathway in participating Midland rural practices would increase the number of low-risk patients who were not having a "heart attack" to be successfully managed in the primary care setting, without the need to travel potentially long distances to hospital. This would reduce unnecessary Emergency pr esentations as well as imporve identification of those patients at high risk of "heart attack", who would require urgent transfer to hospital. This pathway would reduce the stress on hospital staff and resources, and lead to improved patient health outcomes. It would support the translation of the accelerated protocol into the wider Primary Care setting in New Zealand, and into acute demand services, where higher patient volumes would be expected tdo have a greater impact on reducing unnecesasry healthcare costs and enhancing patient mangaemetn and health outcomes.

Outcome Statement

This grant proposal directly aligns with Ministry of Health initiatives to implement an accelerated assessment pathway for suspected acute ischaemic heart disease into the Regional Service Frameworks, and also to reduce ambulatory sensitive hospital admissions. The study will pilot implementation of a new accelerated diagnostic pathway/protocol using improved point-of-care troponin testing for patients with suspected acute coronary syndromes in participating General Medical Practices in the rural Midland community. Successful implementation of this pathway will lead to reductions in the number of ambulatory sensitive hospital chest pain admissions, and increase the proportion of low-risk patients who can be successfully managed in the rural primary care setting, without the need for secondary and tertiary support. Improvements in community-based care will reduce chest pain GP referrals to the Emergency Department, and reduce avoidable hospitalisations, and free up hospital staff and resources, and provide significant health care cost savings, whilst enhancing primary care in managing these types of presentation. Thus implementation of this model of care will have potential benefit for patients and health care resources in the Waikato region.

GRANT #273 // DR MIINA KARALUS, 6TH YEAR MEDICAL STUDENT, C/O POPULATION HEALTH, WAIKATO HOSPITAL, HAMILTON

Virtual health care trial to prevent recurrent Rheumatic Heart Disease amongst Waikato young people with Rheumatic Fever

Abstract

We propose to use a virtual care approach with incentives to ensure that youth who have had Rheumatic Fever (RF) continue treatment to prevent Rheumatic Heart Diseases (RHD). We also aim to re-engage youth who have already become non-compliant with treatment. Monthly penicillin injections required to prevent recurrent RF and subsequent RF are painful and 21% of 14-21 year olds on the Waikato RF Registry are currently non-compliant. The cost of non-compliance is large – recurrent RF causes damage to heart valves/RHD. RHD causes illness and death plus considerable cost. It has been shown that 60-70% of those with RF who do not have monthly penicillin injections will go on to develop permanent heart valve damage/RHD.

Secondary prevention with long term antibiotic delivery to acute RF cases prevents up to 97% of recurrence. However, adherence to monthly injections is recognised internationally as a major challenge. Much of the fiscal cost of recurrent RF is from hospitalisations and heart valve surgery. A New Zealand study found that two-thirds of the mean lifetime cost of RF and RHD occurs after the age of 30 as cardiac valves degenerate. Across all age groups, heart valve surgery accounted for 28% of admissions and 72% of the cost.

Anecdotal reports suggest that loss to follow up in secondary prophylaxis (SP) programmes occurs most commonly amongst youth aged 14-21 years of age, correlating with the evidence suggesting 77% of recurrence occurs within the first 7 years post-initial episode of RF. This gap in service provision and risk to patients prompted a group of 5th year medical students as part of the University of Auckland Population Health Intensive Week to formulate the innovative "Top up 4 yr top up" solution.

We will work with District Nurses and a rangatahi group to engage all 87 of the 14-21 year olds in the Waikato currently on monthly penicillin injections for prevention of RHD. We will also attempt to re-engage with the 23 young people who have stopped having the monthly injections. These two groups will be provided with a smart phone loaded with the Health Tap application. The phone will be programmed with the contact numbers of their District Nurse and GP. It will also contain links to youth appropriate websites on preventing recurrent RF. An additional incentive will be one month of unlimited texting per monthly injection.

It is likely that this intervention will be cost effective as secondary prevention using monthly penicillin injections have been shown to be the most cost effective strategy to prevent RHD. Evidence suggests the use of monetary incentivisation in addressing undesirable health care behaviours is effective, including medication adherence in adolescent populations. We will work with a health economist and biostatistician to do a formal cost benefit analysis after 1 year and will apply for separate funding to do this. We expect the results of this research will be of major international interest.

Outcome Statement

This research proposal aims to not only improve long-term outcomes for current RF patients, but also provide new evidence to directly improve future secondary prevention management, as well as long term economic gain. With 72% of New Zealand's (NZ's) 12 million annual expenditure on RF/RHD being attributed to valvular surgery, there is significant economic benefit to be achieved. The opportunity to intervene with an **innovative** youth led project addresses deficiencies in current secondary prevention of RF policy. v

The project will use existing systems and key stakeholders which facilities a collaborative project and contributes to the potential cost-effectiveness of the campaign. **End-user engagement** is a strong focus throughout the project through the involvement of existing health providers who have established relationships with the target population.

A youth advisory group will have active involvement in the project from the outset, will provide understanding into aspects of accessibility, responsiveness and relevance for youth as well as foster leadership and connection with the target population.

A steering group will ensure **knowledge transfer** occurs to DHB, Ministry of Health (MoH), communities and Primary Health Organisations (PHO). Sustainability for the intervention will be founded upon the research findings and driven by local leaders. External groups such as mobile phone companies and other potential sponsorship partners will be approached. The long term goal will be integration of the strategy into usual practice.

FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MAY 2016

Statement of Financial Position as at 31 May 2016

	2016	2015
Current Assets		
Cash & Bank Balances	**803,377**	414,008
GST Receivable	**0**	1,785
Prepayments	**0**	6,708
Term Deposits	**1,508,170**	1,803,429
	2,311,547	2,225,930
Non Current Assets		
Term Investments	**797,676**	344,822
Total Assets	**3,109,223**	2,570,752
Current Liabilities		
Bank Overdraft	**5**	0
Accounts Payable	**16,176**	48,478
Related Party Payables	**506**	0
Grant Funds Not Yet Spent	**40,000**	**20,000**
	56,687	**68,478**
Net assets	**$3,052,536**	**$2,502,274**
Accumulated Funds		
Capital	**3,052,536**	2,502,274
Total Accumulated Funds	**$3,052,536**	**$2,502,274**

Statement of Financial Performance for the year ended 31 May 2016

	2016	2015
	$	$
Revenue		
Donations, fund raising and other similar revenue	**733,380**	385,660
Interest, dividends and other investment revenue	**115,061**	134,904
Total Revenue	**848,442**	520,564
Expenses		
Expenses related to public fundraising	**0**	63,000
Grants and donations	**247,606**	1,000
Other expenses	**50,573**	46,528
	298,179	110,528
Surplus	**$550,262**	$410,036

DONATION - RICHARD BATE TRUST

During the fundraising campaign, the Foundation Trustees were absolutely delighted to receive a very generous donation from the Richard Bate Trust, a well-known Hamilton restaurant entrepreneur.

Richard Bate's career as an entrepreneur in Hamilton's hospitality industry began in the early 1990's. He set up "The Bank Bar & Brasserie" in 1994, "The Outback Inn" shortly after that and was a Foundation Partner in Iguana Restaurant. He was responsible for changing the face of hospitality in Hamilton, raising standards and bringing Hamilton's south-end to life. Richard continued to make a major contribution to hospitality in Hamilton until he sold his hospitality business interests in 2010 and retired to his farm near Hamilton.

Richard's wealth grew significantly up until his retirement. Sadly Richard developed a brain tumour a couple of years after retirement and passed away at the age of 53 on 10 November 2013. Through his Trust, Richard was a generous benefactor and his trustees decided to provide a gift of $450,000 to the Foundation.

Peter De Luca, [Chairman Corporate Fundraising Team], Linda Rademaker [Co-Chair Fundraising Medical Team] Michael Jameson [Grants Committee Secretary/Foundation Trustee], Noel Karalus [Foundation Chairman/Trustee], Geoff McDonald [Foundation Deputy Chairman/Trustee], Peter Rothwell, [Foundation Patron], Scott Ratuki [Tompkins Wake Lawyers]

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 2016, 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 rebatable.
Please complete your details and post / fax for a receipt.

Name of donor: _____

Address: _____

Daytime telephone: _____

For future contact, we would like to e-mail interested parties, and if you wish to receive information from us, please complete below:
Email address: _____

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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