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# EDGAR NATIONAL CENTRE FOR DIABETES RESEARCH

## ANNUAL REPORT 2008

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## 1. COMMENTS FROM LEADING THINKER

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The Edgar National Centre for Diabetes Research (ENC DR) has had a good year culminating in a highly successful open day attended by 150 people from around New Zealand. Some of our research highlights were presented and issues related to the diabetes and obesity epidemics in New Zealand and internationally were discussed.

We see ourselves as having a three pronged approach towards fulfilling our vision (“to make a significant contribution to reducing the global burden of diabetes through research and dissemination of knowledge”) and believe that there has been progress on all three fronts.

- Novel approaches to the prevention and treatment of obesity and type 2 diabetes  
Amongst the projects aimed to explore novel approaches to the prevention and treatment of obesity and type 2 diabetes we note several developments. Excellent progress has been made with the Lifestyle Over and Above Drugs in Diabetes (LOADD) study which aims to determine whether an intensive nutritional intervention can produce further improvement in blood glucose control and cardiovascular risk factors in people with diabetes who were considered to be on optimum drug treatment. The first paper describing Healthy Eating and Training (HEAT), a study which investigated approaches to achieving maintenance of weight loss in overweight and obese women has been accepted for publication in the *Canadian Medical Association Journal*.

Two new projects have attracted major funding from the Health Research Council of New Zealand (HRC). One forms the basis of Chris Booker’s PhD (‘Inflammatory markers and adipokines in type 2 diabetes’) and is being undertaken in the Department of Anatomy and Structural Biology. The other, jointly with the Department of Women’s and Children’s Health (Professor Barry Taylor and Dr Rachael Taylor co-principal investigators), extends our efforts to determine means of reducing childhood obesity to exploring approaches in infancy (‘Primary prevention of rapid weight gain in early childhood, a randomised controlled trial’. For details see Section 4 of this report and the report of the Karitane Products Society Senior Research Fellow in Early Childhood Obesity).

- Initiation and evaluation of preventive and therapeutic measures  
Under the heading of initiating and evaluating preventive and therapeutic measures, collaboration continues with Ngati Porou Hauora on the national award winning Ngati and Healthy Diabetes Prevention Project and a process evaluation is underway. Further papers have also been published describing the completed APPLE project, notably one relating to longer term follow-up and a cost-benefit analysis has been undertaken (See Section 3 of this report). Two successful funding applications to the new District Health Board Research Fund have initiated new collaborations with Counties Manukau, Canterbury and Capital and Coast District Health Boards (DHBs) and the Wellington Independent Practice Association and Mornington Health Centre (see Section 4 of this Report).

- Implementation of current knowledge

Much of the activity in terms of implementing current knowledge has centred around guidelines and policy development at national and international levels. In New Zealand we have played a lead role in developing obesity guidelines, updating cardiovascular guidelines and preparing for a full review of diabetes guidelines which will be one of our major tasks in 2009. Internationally, there has been a major involvement in policy development following the World Cancer Research Fund's recommendations relating to obesity and physical activity for the prevention of cancer, diabetes and coronary heart disease (report released 27 February 2009), and Jim Mann has chaired the International Task Force establishing criteria for evidence-based nutrition recommendations.

The formation of the Centre for Translational Research in Chronic Diseases (CTRCD) has enabled us to benefit from the expertise of colleagues whose fields of interest impact on most, if not all, aspects of our activities - Professor Janet Hoek (marketing), Professor Grant Schofield (physical activity), Dr Jackie Cumming (health economics and public policy) and Dr Louise Signal (health promotion and policy). The CTRCD has recently been awarded a \$4m contract from the Ministry of Health to evaluate the implementation of the national Healthy Eating-Healthy Action: Oranga Kai-Oranga Pumau (HEHA) strategy. HEHA is the principal public health approach in New Zealand to improving nutrition and physical activity and reducing obesity and its comorbidities. We will also benefit from the Advisory Group to this major project – Emeritus Professor Michael Cooper, Professor Robert Beaglehole and Dr Colin Tukuitonga.

We are immensely fortunate with regard to the calibre, enthusiasm and commitment of all the staff employed by and associated with the ENCDR (see Appendix 1). The standing of the Centre nationally and internationally and the acknowledged quality and volume of its outputs are entirely due to their efforts.

We have been fortunate both in terms of our endowment and in being able to attract reasonably substantial research grant contract funding. However we are all too well aware of the unpredictability of research funding and we have no funding for infrastructure and our wide ranging public service commitments which form a core component of our mission. We are undoubtedly overcommitted to an extent that is not sustainable in the long term without additional income. Thus we must attempt to increase our endowment income. In addition we remain committed to enhancing our activities relating to type 1 diabetes with exciting prospects on the horizon in 2009. Currently, most of our research in the ENCDR has related directly or indirectly to type 2 diabetes. This applies to other New Zealand-based research as well as the activities of relevant governmental and non-governmental organisations. Yet there is convincing research that rates of type 1 diabetes are escalating. The causes of this increased prevalence are unknown and services provided for those with type 1 diabetes are not taking into account the fact that type 1, along with type 2, diabetes, is rapidly acquiring “epidemic status”.

*Jim Mann*

**Otago Diabetes Project**  
Set up in 1996 to improve quality of diabetes care in Otago.  
Register established in 1998 to monitor and evaluate diabetes care.

**Healthy Eating And Training (HEAT)**  
*Aim:* to compare two weight loss maintenance strategies and two weight loss maintenance diets.

**Ngati and Healthy**  
A collaboration with Ngati Porou Hauora  
A community intervention on the East Coast of New Zealand.  
*Aim:* to reduce prevalence of insulin resistance (short term) and diabetes (long term).



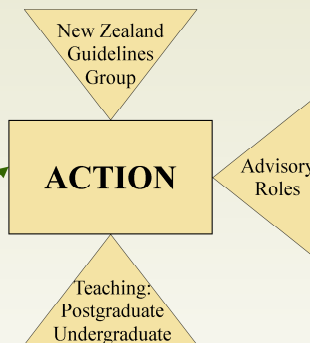
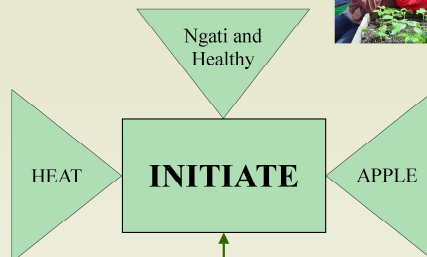
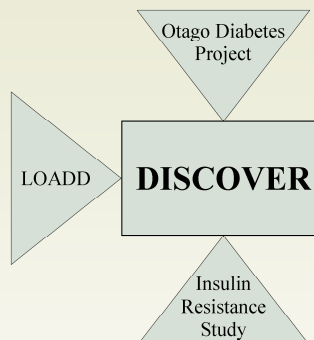
**A Pilot Programme for Lifestyle and Exercise (APPLE)**  
A community intervention to reduce excessive weight gain in children.



**Lifestyle Over and Above Drugs in Diabetes (LOADD)**  
*Aim:* to examine the effect of intensive dietary intervention over above that of medication.

**Insulin Resistance Study**  
*Aim:* to develop and validate a new, sensitive 30-minute test to identify insulin resistance within the general population.

**HEHA Evaluation**  
Collaboration between several institutions to evaluate the government Healthy Eating, Healthy Action strategy.



**CENTRE FOR TRANSLATIONAL RESEARCH IN CHRONIC DISEASES**



**ADVISORY COMMITTEE**



**New Zealand Guidelines Group**  
1. Management of type 2 diabetes  
2. Assessment of Cardiovascular Risk

**Advisory roles**  
1. WHO  
2. WCRF  
3. International Union of Nutritional Sciences  
4. European Association for the Study of Diabetes

**Teaching**  
1. Undergraduate medical and science students.  
2. Professional training.  
3. Supervision of postgraduate research students.

**EDGAR NATIONAL CENTRE FOR DIABETES RESEARCH**  
Prof Jim Mann  
Dr Kirsten Coppell Dr Kirsten McAuley  
Dr Rachael Taylor A/P Sheila Williams  
Dr Juliet Berkeley Chris Booker  
Victoria Farmer Margaret Johnston  
Minako Kataoka Sue Vorgers  
Claire Lamb

**MISSION STATEMENT:**  
Our vision is to make significant contributions to reducing the global burden of diabetes through research and dissemination of knowledge.

**MAJOR FUNDERS:**  
Karitane Products Society  
Health Research Council of New Zealand  
National Heart Foundation of New Zealand  
Otago Diabetes Research Trust  
Eion and Jan Edgar  
University of Otago  
Southern Trust  
Lottery Health New Zealand  
Community Trust of Otago  
Rotary Club of Otago and Zonta Club of Dunedin-Otago  
Bristol Myers Squibb/Mead Johnson Unrestricted Research Grant

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## 2. RESEARCH AND ACTIVITIES UPDATE

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### **RESEARCH UPDATE**

#### **Healthy Eating And Training (HEAT)**

This study attempted to determine the optimal macronutrient composition and the most appropriate (in terms of cost effectiveness and acceptability) support system for maintaining long term weight loss in overweight and obese women who had succeeded in losing 5% or more of their body weight. HEAT is HRC funded and is now virtually complete. The first paper has been accepted for publication in the *Canadian Medical Association Journal* (see Dale *et al* in Section 3 of this Report). Completion by 30 June 2009 is expected and further publications are planned. (This project formed the basis of Dr Kelly Dale's PhD thesis).

*Supervisors:* Jim Mann, Sheila Williams, Kirsten McAuley, Rachael Taylor.

*Other investigators:* Alex Chisholm, Paul Hansen, Victoria Farmer.

#### **Ngati and Healthy Diabetes Prevention Project (in collaboration with Ngati Porou Hauora)**

A process evaluation of this project, which was the overall Supreme Award winner and winner of the Whānau Whanui category at the Whānau Ora Award ceremony in Wellington in November 2006, has been commenced with HRC funding. Early outcome data have been accepted for publication in *Diabetes Research and Clinical Practice* (See Coppell *et al* in Section 4 of this Report).

*Principal investigators:* Kirsten Coppell, David Tipene-Leach, Jim Mann.

#### **Lifestyle Over and Above Drugs in Diabetes (LOADD)**

LOADD aims to determine whether intensive nutritional intervention improves glycaemic control and cardiovascular risk factors in people with type 2 diabetes who are on optimised drug treatment. The first analysis of this HRC funded research will be undertaken in 2009 based on the participants recruited and studied in 2007/08.

*Principal investigators:* Kirsten Coppell, Jim Mann, Minako Kataoka, Alex Chisholm, Sue Vorgers, Michelle McGrath, Chris Booker, Victoria Farmer.

#### **Evaluation of the implementation of the Healthy Eating-Healthy Action: Oranga Kai-Oranga Pumau (HEHA) Strategy**

Through the Centre for Translational Research in Chronic Diseases (CTRCD) which is affiliated to the ENCDR (see Section 5) an evaluation of the effectiveness of the HEHA strategy as a national strategy for improving nutrition, increasing physical activity and reducing obesity, will be undertaken for the Ministry of Health. Phase 1 which involved the development of a detailed Evaluation Methods Plan was completed in 2008 and the formal evaluation phase has commenced.

*Principal investigators:* Jim Mann, Rachael McLean, Janet Hoek (Massey University – relocating to Otago in February 2009), Grant Schofield (Auckland University of Technology, Centre for Physical Activity and Nutrition), Mike Lean (Glasgow University and University of Otago), Margaret Johnston.

### **Inflammatory markers and adipokines in type 2 diabetes**

This project, funded by the National Heart Foundation and HRC and commenced in 2008, aims to examine the extent to which nutritional intervention can influence selected inflammatory markers and adipokines in people with type 2 diabetes who are concurrently being treated with other medications according to cardiovascular and diabetes management guidelines. This is being conducted as part of the Lifestyle Over and Above Drugs in Diabetes (LOADD) study. In collaboration with A/Prof Dave Grattan at the Centre for Neuroendocrinology, this research will examine potential mechanisms by which interleukin-18 influences appetite, and examine how this pro-inflammatory cytokine interacts with other pathways in the brain which govern appetite. This research project forms the basis of Chris Booker's PhD thesis.

*Supervisors:* Dave Grattan, Jim Mann, Sheila Williams, Kirsten Coppel.

### **Validation of a new clinical test for insulin sensitivity**

The new clinical test for measuring insulin sensitivity developed by Dr Kirsten McAuley and colleagues (McAuley *et al.* Diabetes Care 2001;24:460-464) is being validated in collaboration with colleagues in Christchurch with the support of an HRC grant. Completion during 2009 is envisaged.

*Investigators:* Kirsten McAuley, Geoff Chase, Geoff Shaw, Thomas Lotz, Juliet Berkeley.

### **Primary prevention of rapid weight gain in early childhood, a randomised controlled trial: POI.nz**

Several strategies to prevent inappropriate weight gain in the first few years of life will be trialled in this 3-year randomised controlled trial funded by the HRC. 800 mothers will be randomised to one of 4 groups (including a control group) to receive additional education and support around issues including breastfeeding, food and nutrition, activity and sleep. Mothers will be recruited in mid-pregnancy and followed for 3 years.

*Investigators:* Barry Taylor and Rachael Taylor (joint principal investigators), Jim Mann, Kirsten Coppel, Anne-Louise Heath, Kelly Dale, Barbara Galland, Julie Lawrence, Rachel Sayers, Andrew Gray.

### **Impact of removing televisions from households on nutrition, physical activity and family functioning: feasibility study**

Because simply removing an item may be easier than restricting its use, this Lotteries funded study is assessing the feasibility of removing televisions from households (for a defined period of time). This will be compared with education targeting reducing television viewing. Focus groups have been held with 10-13 year old children and their parents surrounding how television is used in their lives, what they would do if they could not watch television and how they might be persuaded to give up their television for a short (2 month) time period. A pilot intervention is currently being planned.

*Investigators:* Rachael Taylor, Martha Bell, Oliver Davidson, Victoria Farmer, Jim Lewis (USA).

### **Screening, feedback and family-based treatment of overweight in 4-8 year old children**

This study aims to determine how best to inform parents of young children that their child is overweight. It is considered that only appropriate initial engagement facilitates lifestyle

changes required to impact on weight. 1500 children will be screened for overweight in the primary care context. The approximately 400 participants found to be overweight will be invited to participate in a randomised controlled trial comparing the efficacy of a tailored family-based approach using practice-nurse delivered support and limited “expert” involvement with usual care on weight and other health outcomes over 24 months.

*Investigators:* Rachael Taylor, Adell Cox, Deirdre Brown, Barry Taylor, Oliver Davidson, Sheila Williams, Jim Ross, Anna Dawson, Jill Haszard.

## **ACTIVITIES UPDATE**

**Symposium: Obesity and Diabetes: Are we doing enough?** (8 October 2008. Hutton Theatre, Otago Museum)

This symposium hosted by the ENCDR, chaired by Mr Eion Edgar *DCNZM* and Professor Jim Mann, was one of the highlights of the year. It attracted 150 participants from throughout New Zealand. The topics covered included:

- National Prevention and Treatment Strategies (with presentations by Drs Sandy Dawson and Pat Tuohy and Mrs Cynthia Maling of the Ministry of Health).
- Two of the Centre’s flagship projects – APPLE and Ngati and Healthy (presented by Drs Rachael Taylor and Kirsten Coppell).
- Type 1 Diabetes (with presentations from Dr Craig Jefferies of Starship Hospital and Craig Cumming).
- Regional Obesity and Diabetes Prevention Projects (with presentations from Professor Elaine Rush of Project Energize and Jody Warbrick of the Pacific Obesity Prevention In Communities (OPIC) project).

The enthusiasm of the participants has led to the decision to hold follow-up symposia in the major centres in the future.

## **Guideline Development**

Members of the ENCDR have continued to play a major role in national and international guideline work. Jim Mann has chaired the New Zealand Obesity Guidelines Development Group and has been working with the New Zealand Guidelines Group (NZGG) to prepare for the full review of diabetes guidelines. Kirsten Coppell will be a key member of this group and she and Jim Mann have also been members of the group responsible for updating the Cardiovascular Guidelines. Jim Mann also Chairs the international group responsible for developing guidelines for evidence-based nutrition recommendations, on behalf of the International Union of Nutritional Sciences (IUNS).

## **Research and professional training**

Eight PhD students (Kelly Dale [completed], Claire Cameron, Lorraine Brooking, Lisa Te Morenga, Chris Booker, Amber Parry-Strong, Anna Dawson, Philippa Carter) and one MSc student (Megan Levers) have been totally or partially supervised by staff of the ENCDR. The ENCDR has hosted a Summer Student, a Harvard Medical student during his elective and in 2009 two new PhD students (Jill Haszard and Katherine Baghurst – Curtin University of Technology, Perth) will commence the research projects which will form the basis of their PhD theses under the supervision of Rachael Taylor. Claire Roberston will also be initiating her MSc under the supervision of Rachael.

Under the direction of Dr Kirsten Coppel, the ENCDR has been recognised as a Public Health Medicine Registrar training site with an Advanced Trainee (Dr Rachael McLean) in post since July 2008.

### **New Zealand Society for the Study of Diabetes (NZSSD)**

The ENCDR has continued to provide the Secretariat for NZSSD, the professional and research organisation for all health professional and researchers working in the field of diabetes. Jim Mann acts as Chair of the Society, Kirsten Coppel, Victoria Farmer and Chris Booker serve on the Executive and Victoria and Chris act as Secretariat.

### **Teaching**

Jim Mann teaches undergraduate human nutrition students and he and Kirsten Coppel are involved in the teaching of medical students, GP trainees and medical and public health medicine registrars. Margaret Johnston and Rachael McLean tutor 2<sup>nd</sup> and 3<sup>rd</sup> year medical students.

### **Monthly journal club and research updates**

The ENCDR holds monthly journal club and research update meetings. This is an informal meeting to keep abreast of current national and international research. These meetings are well attended by staff from the Departments of Human Nutrition and Preventive and Social Medicine as well as members of the Department of Medical and Surgical Sciences and ENCDR group.

### **Visitors (all of whom presented seminars)**

Prof Haakon Eduard Meyer (University of Oslo)  
Prof Chris Melby (Colorado State University)  
Prof Vladimir Vuksan (University of Toronto)  
Dr Riitta Freese (University of Helsinki)  
Prof Dr Klaus Pietrzik (University of Bonn)



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### 3. NEW AND ONGOING RESEARCH PUBLICATIONS AND DISSEMINATIONS

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#### **PUBLICATIONS**

- Booker CS, Mann JI. *Trans* fatty acids and cardiovascular health: Translation of the evidence base. *Nutrition Metabolism and Cardiovascular Diseases* 2008; 18 (6): 448-456. doi: 10.1016/j.numecd.2008.02.005
- Coppell K, Williams S, Anderson K, Mann J. Characteristics and cardiovascular risk of new cases of type 2 diabetes in Otago, New Zealand, 1998-2004. *Diabetes Research and Clinical Practice* 2008; 82(3):396-401. doi: 10.1016/j.diabres.2008.09.038
- Cumming JH, Mann JI, Nishida C, Vorster HH. Dietary fibre: an agreed definition (Comment). *Lancet* 2009; 373: 365-366
- Goulding A, Taylor RW, Grant AM, Murdoch L, Williams SM, Taylor BJ. Relationship of Total Body Fat Mass to Bone Area in New Zealand Five-Year-Olds. *Calcified Tissue International* 2008; 82(4): 293-299. doi: 10.1007/s00223-008-9121-x
- Grant AM, Taungapeau FK, McAuley KA, Taylor RW, Williams SM, Waldron MA, Duncan AW, Harper MJ, Goulding A. Body mass index status is effective in identifying metabolic syndrome components and insulin resistance in Pacific Island teenagers living in New Zealand. *Metabolism* 2008; 57(4): 511-516. doi: 10.1016/j.metabol.2007.11.013
- Heydon EE, Thomson CD, Mann JI, Williams SM, Skeaff SA, Sherpa KT, Heydon JL. Iodine status in a Sherpa community in a village of the Khumbu region of Nepal. *Public Health Nutrition*. 2008; online, doi:10.1017/S1368980008004242
- Lotz TF, Chase JG, McAuley KA, Shaw GM, Wong XW, Lin J, LeCompte A, Hann CE, Mann JI. Monte Carlo analysis of a new model-based method for insulin sensitivity testing. *Computer Methods and Programs in Biomedicine* 2008; 89(3):215-225. doi: 10.1016/j.cmpb.2007.03.007
- Parnell W, Wilson N, Alexander D, Wohlers M, Williden M, Mann J, Gray A. Exploring the relationship between sugars and obesity. *Public Health Nutrition*. 2008; 11(8):860-866. doi: 10.1017/S1368980007000948
- Taylor RW, Williams SM, Grant AM, Ferguson E, Taylor BJ, Goulding A. Waist circumference as a measure of trunk fat mass in children aged 3 to 5 years. *International Journal of Pediatric Obesity* 2008; 3(4): 226-233. doi: 10.1080/17477160802030429
- Taylor RW, McAuley KA, Barbezat W, Farmer VL, Williams SM, Mann JI. Two-year follow-up of an obesity prevention initiative in children: the APPLE project. *American Journal of Clinical Nutrition* 2008; 88(5): 1371-1377. doi: 10.3945/ajcn.2007.25749

- Taylor RW, Murdoch L, Carter P, Gerrard DF, Williams SM, Taylor BJ. Longitudinal study of physical activity and inactivity in preschoolers: the FLAME study. *Medicine and Science in Sports and Exercise* 2009; 41(1):96-102. doi: 10.1249/MSS.0b013e3181849d81
- Williams SM, Venn BJ, Perry T, Brown R, Wallace A, Mann JI, Green TJ. Another approach to estimating the reliability of glycaemic index. *British Journal of Nutrition* 2008; 100(2): 364-372. doi: 10.1017/S0007114507894311

## **EDITORIALS**

- Lean MEJ, Mann JI, Hoek JA, Elliot RM, Schofield G. Translational research. From Evidence based medicine to sustainable solutions for public health problems. *British Medical Journal* 2008; 337(a863): 705-706. doi: 10.1136/bmj.a863.

## **SUBMITTED OR IN PRESS**

- Coppel KJ, Tipene-Leach DC, Pahau HLR, Williams SM, Abel S, Iles MA, Harré-Hindmarsh J, Mann JI. Two-year results from a community-wide diabetes prevention intervention in a high risk indigenous community: the Ngati and Healthy project. *Diabetes Research and Clinical Practice*. 2009. ***In press***.
- Dale KS, McAuley KA, Taylor RW, Williams SM, Farmer VL, Hansen P, Vorgers SM, Chisholm AW, Mann JI. Determining optimal approaches for successful weight maintenance: A 2 × 2 factorial randomized controlled trial. *Canadian Medical Association Journal*. ***In press***.
- Dale KS, Mann JI, McAuley KA, Williams SM, Farmer VL. Sustainability of lifestyle changes following an intensive lifestyle intervention in insulin resistant adults: Follow-up at 2-years. *Asia Pacific Journal of Clinical Nutrition*. 2009. ***In press***.
- Mann JI and Cumming JH. Possible implications for health of the different definitions of dietary fibre (Editorial). *Nutrition, Metabolism and Cardiovascular Diseases*. Submitted January 2009. ***In press***.
- Mann JI and Nye ER. Fad diets in Sweden of all places. Commentary. *Lancet*. Submitted July 2008.
- McAuley KA, Taylor RW, Farmer VL, Hansen P, Williams SM, Booker CS, Mann JI. Economic evaluation of a community-based obesity prevention program in children: the APPLE project. *Obesity*. Submitted July 2008.
- Nielsen G, Taylor RW, Williams SM, Mann JI. Permanent play facilities in school playgrounds as a determinant of children's activity. *Journal of Physical Activity and Health*. Submitted November 2008.

## **BOOK CHAPTERS**

- Mann JJ, Truswell AS. Chapter 10.1: Diseases of overnourished societies and the need for dietary change. In *Oxford Textbook of Medicine. Fifth edition*. Warrell DA, Cox TM, Firth JD (eds). Oxford University Press; 2007. *To be published 2009*.
- Toeller M, Mann J. Nutrition in the etiology and management of type 2 diabetes: (2008). In *Textbook of Type 2 Diabetes Principles and Practice, Second Edition*. BJ Goldstein and D Müller-Wieland (eds). Informa Healthcare (New York). Chapter 5, pp 59-71
- Mann J, Toeller M. Epidemiology of Nutrition and Diabetes Mellitus: Etiology and Environmental Factors (2008). In *The Epidemiology of Diabetes Mellitus Second Edition*, Ekoe et al (eds). John Wiley & Sons, Ltd. Chapter 7, pp 87-94.

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## 4. RESEARCH FUNDING

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### EXTERNAL FUNDING ATTRACTED

- Ministry of Health:
  - 'Implementation of the HEHA Strategy Evaluation'*. Start 01/06/2008 for 3.5 years. (\$4,000,000).
  - 'HEHA Strategy Evaluation'*. Jim Mann (PI). Start 01/12/2007 for 7 months (\$600,000).
  - 'Scoping the HEHA Strategy'*. Jim Mann (PI). Start 01/06/07 for 6 months (\$195,951).
- Health Research Council of New Zealand (Project Grant): *'Primary prevention of rapid weight gain in early childhood, a randomised controlled trial'*. Barry Taylor and Rachael Taylor (joint principal investigators), Jim Mann, Kelly Dale, Barbara Galland, Kirsten Coppell, Andrew Gray. Start 31/08/2008 for 3 years (\$2,221,742).
- Riddet Institute Centre of Research Excellence (CoRE) Research Programme: Start 01/07/2008 for 6 years.
  - Project within the Programme: *'Dietary intervention targeting physiological endpoints'*. Jim Mann (PI). Start 01/07/2008 for 6 years (\$1,480,680).
- Health Research Council of New Zealand (Programme Grant): *'Signalling pathways involved in the control of glucose metabolism'*. Peter Shepherd (PI) - University of Auckland. Start 01/08/2008 for 3 years.
  - Project within the Programme: *'Hypothalamic role of interleukin-18 in energy and glucose homeostasis'*. Dave Grattan, Chris Booker, Ilona Kokay.
- District Health Board Research Fund: Translational Research in Cardiovascular Disease, Diabetes and Obesity
  - 'New Zealand group-based self-management education for patients/whanau with Type 2 Diabetes'*. Jeremy Krebs, Kirsten Coppell, Eirean Kiely, Lynn McBain, Joe Howells, Lorna Bingham, Liz Dutton, Howard Metekingi, Sera Tapu-Taala, Robert Smith, Jim Mann. 12 months (\$133,772).
  - 'Factors affecting effective implementation of the National Diabetes Retinal Screening Grading System and referral guidelines: A multi centre analysis'*. Edward Hutchins, Gordon Sanderson, Anmar Rahman, Ainsley Morris, Kirsten Coppell. 8 months (\$103,030).
- Lottery Health Research: *'Impact of removing televisions from households: feasibility study'*. Rachael Taylor, Oliver Davidson, Grant Schofield, Martha Bell, Victoria Farmer. Start 01/01/2008 for 12 months (\$72,877).

- Otago Diabetes Research Trust Scholarship for Summer Research Scholar: Janet Lee a 3<sup>rd</sup> year medical student supervised by Dr Kirsten Coppel. Start November 2008 for 10 weeks (\$3,000).
- The National Heart Foundation of New Zealand (Travel Grant): Dr Kirsten Coppel to attend the 5th World Congress on Prevention of Diabetes and its Complications (WCPD 2008) held on 1-4 June, 2008 in Helsinki, Finland. (\$2,348).

## **ONGOING FUNDING**

- Health Research Council of New Zealand (Programme Grant extension): *'Lifestyle and nutritional approaches to reduce obesity, type 2 diabetes and its complications'*. Jim Mann, Rachael Taylor, Kirsten McAuley, Kirsten Coppel, Lorraine Brooking, Sheila Williams, Geoff Chase, Alex Chisholm, Geoff Shaw, Eleanor Murphy, David Tipene-Leach, Helen Pahau, Patrick Manning, Rob Walker, Wayne Sutherland, Victoria Farmer, Chris Booker. Start 01/07/2007 for 3 years (\$2,116,152).
- Health Research Council of New Zealand: *'Lifestyle Over and Above Drugs in Diabetes (LOADD) study'*. Jim Mann, Kirsten Coppel, Kirsten McAuley, Alex Chisholm, Sheila Williams, Chris Booker. Start 01/07/2006 for 2 years (\$669,076). This grant has been extended to 31/12/2009.
- Health Research Council of New Zealand: *'Determining optimal approaches for successful maintenance of weight loss'*. Kirsten McAuley, Jim Mann, Kelly Whiteford, Rachael Taylor, Alex Chisholm, Sheila Williams, Paul Hansen. Start 01/07/2006 for 3 years (\$533,445).
- Maurice and Phyllis Paykel Trust: *'The effects of IL-18 on body weight regulation'*. Dave Grattan, Chris Booker. Start 01/05/2007 for 3 years (\$22,000).

## **AWARDS AND INTERNAL FUNDING**

- Dunedin School of Medicine Conference Travel Grant: Kirsten Coppel to attend the 5th World Congress on Prevention of Diabetes and its Complications (WCPD 2008) held on 1-4 June, 2008 in Helsinki, Finland. (\$3,868).
- Support for Research within Medicine Section Grant: Kirsten Coppel (\$7,530.80).
- Dean's Bequest Fund, University of Otago: Dave Grattan and Chris Booker. *'Hypothalamic role of interleukin-18 in energy and glucose homeostasis'*. April 2008 (\$13,914).
- University of Otago Research Committee Grant: *Centre for Translational Research in Chronic Diseases*. December 2008 for 1 year (\$25,000).

## **DONATIONS AND BEQUESTS**

We have been fortunate to receive donations this year from several generous individuals, groups and companies such as Creative Conditioning, a fitness centre which donated proceeds from the 2008 10km Dunedin fun run/walk.

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## 5. COLLABORATIONS

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The ENCDR has collaborations with individuals and organisations within New Zealand and internationally. A long standing memorandum of understanding (which predates that signed by the University of Otago) with Ngati Porou Hauora has been in place to facilitate the conduct of the Ngati and Healthy Prevent Diabetes Project and other collaborative research.

The creation of the Centre for Translational Research in Chronic Diseases (CTRCD) as a separate entity within the ENCDR brings to our group expertise in social marketing (Professor Janet Hoek of Massey University, relocating to Otago in 2009), a range of research areas related to physical activity and health (Professor Grant Schofield, Drs Erica Hinckson and Scott Duncan, Auckland University of Technology) and health economics and public policy (Dr Jackie Cumming, Victoria University). Professor Mike Lean (Endocrinologist and Nutritionist), brings an international perspective to this group.

The work of the ENCDR involves collaboration with a number of Departments within the University of Otago, Dunedin. Strong links include those with the Departments of Medicine, Medical and Surgical Sciences, Human Nutrition, Preventive and Social Medicine, Women's and Children's Health, Psychological Medicine, Anatomy and Structural Biology and Biochemistry.

Within New Zealand there are also links with the University of Canterbury and the Christchurch School of Medicine in relation to insulin sensitivity research (Professor Geoff Chase and Dr Thomas Lotz, University of Canterbury; and Drs Geoff Shaw and Juliet Berkeley, Christchurch School of Medicine). Successful applications to the new District Health Board Research Fund have enabled new collaborations with Counties Manukau, Canterbury and Capital and Coast District Health Boards (DHBs) and the Wellington Independent Practice Association and Morningson Health Centre (see Section 4 of this report).

International longstanding research and professional collaborations continue with Professors John Cummings (University of Dundee), Margaret Thorogood (University of Warwick), Andrew Neil (University of Oxford), Monika Toeller (University of Düsseldorf), Hester Vorster (North-West University, Potchefstroom, South Africa) and Jim Lewis (University of New Hampshire, USA)

At the institutional level, there are very close links with the Nutrition and Chronic Diseases Departments at the World Health Organization with Jim Mann regularly acting as an advisor, the World Cancer Research Fund (WCRF) and the Nutrition Study Group of the European Association for the Study of Diabetes. Jim Mann played a lead role in developing the international policy document released by WCRF in 2007 relating to nutritional recommendations for the prevention of cancer and other chronic diseases. He was on the panel which produced the new WCRF policy report published in February 2009 - "Policy and Action for Cancer Prevention: Food, Nutrition, and Physical Activity. A Global Perspective".

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## 6. OTHER CONTRIBUTIONS TO THE RESEARCH ENVIRONMENT

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Members of the ENCDR have been regular reviewers for medical and scientific journals including: The Lancet; British Medical Journal; American Journal of Clinical Nutrition; Diabetes Care; Diabetologia; Nutrition, Metabolism and Cardiovascular Diseases; British Journal of Nutrition; Nature Clinical Practice Endocrinology and Metabolism; Obesity; International Journal of Obesity; Journal of Adolescent Health; Public Health Nutrition; Pediatrics; Canadian Medical Association Journal; Australian New Zealand Journal of Public Health; and Asia Pacific Journal of Clinical Nutrition.

Staff of the ENCDR have been reviewers for research granting bodies such as the Health Research Council of New Zealand, Australia National Health and Medical Research Council, UK Medical Research Council, Diabetes UK and the European Union.

Throughout 2008 all senior members of the Centre have acted as examiners of PhD and Master's theses.

Jim Mann has written invited Commentaries/Editorials for The Lancet, Nutrition, Metabolism and Cardiovascular Diseases and International Diabetes Monitor and serves on the Editorial Board of several international journals.



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## 7. CONFERENCE PRESENTATIONS, OTHER PROFESSIONAL ACTIVITIES AND COMMUNITY INVOLVEMENT

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### **KEYNOTE AND INVITED PRESENTATIONS**

Mann J. Nutrition Controversies. 7<sup>th</sup> International Diabetes Federation, Western Pacific Region Congress. Wellington (March 2008).

Mann J. Evidence-based Nutrition: Different from or the same as Evidence-based Medicine? 10<sup>th</sup> Nordic Meeting for Dietitians. Uppsala, Sweden (April 2008).

Mann J. Role of Diet in Prevention of Diabetic Complications. 5<sup>th</sup> World Congress on Prevention of Diabetes and its Complications. Helsinki, Finland (June 2008).

Mann J. 21<sup>st</sup> Century: The “Golden” era of Dietetics. New Zealand Dietetic Association Conference. Hamilton (September 2008).

Mann J. Glycaemic Indices and Healthy Nutrition. 6<sup>th</sup> Congress of the Asian Pacific Society of Atherosclerosis and Vascular Diseases & 10<sup>th</sup> Hong Kong Diabetes and Cardiovascular Risk Factors – “East Meets West Symposium”. Hong Kong, (September 2008).

Mann J. Lifestyle Determinants of Cancer: Beyond Fruit and Vegetables. The Nutrition Society of New Zealand Inc Conference. Christchurch (December 2008).

### **ORAL PRESENTATIONS**

Coppell K. Type 1 diabetes. Increased intestinal permeability as a common pathomechanism in chronic disorders Workshop. Dunedin (February, 2008).

Tipene-Leach D, Pahau H, Coppell K, Williams S, Mann J, Abel S, Iles M, Harré Hindmarsh J. Do community led diabetes prevention interventions make a difference after 2 years. 7<sup>th</sup> International Diabetes Federation Western Pacific Region Congress. Wellington (April, 2008). *Diabetes Research and Clinical Practice* 72: S51 (2008).

Tipene-Leach D, Pahau H, Coppell K, Williams S, Mann J, Abel S, Iles M, Harré Hindmarsh J. Ngati and Healthy: a community-led diabetes prevention intervention for Maori. 5<sup>th</sup> World Congress on Prevention of Diabetes and its Complications (WCPD 2008). Helsinki, Finland (June, 2008).

Cameron CM, Barker RJ, Coppell K, Sharples K. Open Population Capture-Recapture Models and Diabetes in Otago, New Zealand. XXIV<sup>th</sup> International Biometric Conference. Dublin, Ireland (July, 2008).

Coppell KJ. Reflections on undertaking translational research with a Maori health Provider: the Ngati and Healthy project. Capturing the Excitement of Research, Division of Health Sciences Research Forum. Dunedin (August, 2008).

Tipene-Leach D, Coppell K, Pahau H, Williams S, Mann J, Abel S, Iles M, Harré Hindmarsh J. Ngati and Healthy: 2-year results from a community diabetes prevention intervention. New Zealand Public Health Medicine Annual Scientific Meeting (September, 2008).

Coppell KJ. Ngati and Healthy Prevent Diabetes Project. Obesity and Diabetes: are we doing enough? Symposium, Dunedin (October, 2008).

Taylor RW. The APPLE project: two-year follow-up results of a community-based obesity prevention initiative in children. Obesity and Diabetes: are we doing enough? Symposium, Dunedin (October, 2008).

Coppell KJ. Ngati and Healthy: 2-year results from a community diabetes prevention intervention. Otago International Health Research Network Conference. Dunedin (November, 2008).

Coppell KJ and Tipene-Leach D. Diabetes and Prevention in Action: the Ngati Porou Hauora East Coast Response. Tairāwhiti District Health Board (November, 2008).

McLean R, Hoek J, Cumming J, Schofield G, Mann J. Evaluating the HEHA Strategy. What's Happening in our Backyard? HEHA Research, Evaluation and Monitoring Conference. Wellington (3-4 November, 2008).

Booker C, Kokay I, Grattan D. Expression of interleukin-18 signalling components in areas of the rodent brain involved in energy metabolism. Oral presentation at the MedSci conference. Queenstown (November, 2008).

Taylor RW. The APPLE project: two-year follow-up results of a community-based obesity prevention initiative in children. Australasian Child and Adolescent Obesity Research Network Annual Meeting. Brisbane, Australia (November, 2008).

Taylor RW. POI.nz: Prevention of overweight in infancy. Australian and New Zealand Obesity Society Annual Conference. Brisbane, Australia (November, 2008).

## **POSTER PRESENTATIONS**

Coppell K, Mann J, Chisholm A, Williams S, Vorgers S, Kataoka M. Medication adherence amongst people with less than ideal glycaemic control – the Lifestyle Over and Above Drugs in Diabetes (LOADD) study. 7<sup>th</sup> International Diabetes Federation Western Pacific Region Congress. Wellington (April, 2008). *Diabetes Research and Clinical Practice* 79: S72 (2008).

Coppell K, Anderson K, Lamb C, Williams S, Farmer V, Mann JI. The quality of diabetes care a comparison between patients enrolled and not enrolled on a regional diabetes register. 7<sup>th</sup> International Diabetes Federation Western Pacific Region Congress. Wellington (April, 2008). *Diabetes Research and Clinical Practice* 79: S113 (2008).

Pahau H, Tipene-Leach, Ngatai M, Arani Wilson T, Dawn reedy G, Sykes S, Forrester K, Maw N. The successful development and implementation of a 2-year community led diabetes prevention initiative. 7<sup>th</sup> International Diabetes Federation Western Pacific Region Congress. Wellington (April, 2008). *Diabetes Research and Clinical Practice* 79: S122 (2008).

## **OTHER PROFESSIONAL ACTIVITIES**

Jim Mann Chaired the Advisory Committee of the Centre for Physical Activity and Nutrition Research (Deakin University, Australia), the Scientific Committee of the National Heart Foundation of New Zealand, the Expert Advisory Group on Cardiovascular Disease and Diabetes to the New Zealand Ministry of Health, the Health Sponsorship Council Public Health Reference Group for Improving Nutrition, and the Guidelines Technical Advisory Group for the new Zealand Guidelines for Management of Overweight and Obesity in Adults and Children. He is also a member of the Advisory Group of the Otago University International Health Research Network – Centre for International Health and the Steering Committee of the District Health Board Research Fund (DHBRF) Translational Research Initiative

Rachael Taylor is a Member of the Food and Beverage Classification for Education Settings Technical Advisory Group, and the Public Health Reference Group for Improving Nutrition

## **COMMUNITY INVOLVEMENT**

Jim Mann is medical advisor to Diabetes New Zealand with particular reference to their publication 'Diabetes', Patron of Diabetes Otago and Trustee of several diabetes related charitable trusts. He has talked as guest speaker on several occasions to community groups as diverse as the Otago-Southland Branch of the National Heart Foundation on the occasion of their 40<sup>th</sup> Anniversary and the Otago 60s Plus Club.

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## 8. PLANS FOR THE COMING YEAR

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It is clear from the earlier sections of this report that much of our research and activities are ongoing and there will be limited opportunities for new initiatives in 2009. However we are committed to planning another national symposium relating to translational research in the fields of diabetes and childhood obesity.

The outcome of several grant applications is awaited and clearly this will influence the extent to which we can expand our research activities.

Staff of the ENCDR are actively involved in the organisation of two major international conferences (the International Diabetes Federation in Canada and the International Congress of Nutrition in Bangkok) and will be presenting keynote lectures at both conferences.

The previous Sections have illustrated the close links between the ENCDR and the NZSSD, with members of the Centre holding positions on the NZSSD Executive and also providing the Secretariat. The Executive and Secretariat have been heavily involved in the planning of the NZSSD Annual Conference which will be held in Dunedin, June 30 – July 3, 2009.

### *Appendix 1: Short profiles on staff and graduate students*

#### **STAFF**

**Professor Jim Mann** (Director) *CNZM, PhD, DM, FRACP, FFPHM, FRSNZ*

Jim Mann has been Professor in Human Nutrition and Medicine at the University of Otago and Consultant Physician (Endocrinology) in Dunedin Hospital for the past 20 years. He is Director of the ENCDR and the World Health Organization Collaborating Centre for Human Nutrition. For the preceding 15 years he lectured at the University of Oxford and worked as a Physician in the Radcliffe Infirmary. His research and clinical work have principally been in the fields of lipids and carbohydrates as they relate to diabetes and coronary heart disease. He is the author of over 300 publications, 70 text book chapters and 6 books on related topics.

He has been involved with a number of national and international organisations concerned with nutrition and health, several of which he has chaired or is continuing to chair, including the Diabetes and Nutrition Study Group of the European Association for the Study of Diabetes, the Scientific Advisory Committee of the National Heart Foundation of New Zealand, the Expert Advisory Group on Diabetes and Cardiovascular Disease of the New Zealand Ministry of Health and several Expert and Advisory Groups of the World Health Organization, World Cancer Research Fund and the International Union of Nutritional Sciences.

**Dr Kirsten Coppel** (Senior Research Fellow/Public Health Physician) *MBChB, Dip Obs, MPH, FAFPHM*

Kirsten Coppel is a specialist in public health medicine and has also trained and practised as a general practitioner. Kirsten has been involved with diabetes quality improvement initiatives and diabetes research since 1996. She has also had involvement with monitoring the National Cervical Screening Programme and worked as a medical officer at the Family Planning Association. Dr Coppel has a particular interest in monitoring and evaluation of registers as a tool to improve quality of care and community interventions.

**Dr Rachael Taylor** (Karitane Senior Research Fellow in Early Childhood Obesity) *BSc(Hons), PhD*

Rachael Taylor was employed in this position in May 2007. Dr Taylor has had over 13 years experience investigating various aspects of body composition, obesity and health in children and adolescents. She was also the principal investigator for the APPLE (A Pilot Programme for Lifestyle and Exercise) Study, the first successful New Zealand obesity prevention initiative in children which demonstrated that a relatively simple intervention can significantly reduce the rate at which primary school aged children gain weight.

**Dr Kirsten McAuley** (Senior Research Fellow) *MBChB, PhD*

Kirsten McAuley is a medical practitioner with extensive experience in clinical and community-based studies regarding weight loss, obesity, diabetes and insulin sensitivity in adults. Dr McAuley's previous research includes studies assessing the estimation of insulin

sensitivity using simple surrogates and she has implemented a number of clinical studies involving lifestyle intervention in insulin resistant individuals.

**Dr Rachael McLean** (Research Fellow/Public Health Physician Trainee) *MBChB, MPH*  
Rachael McLean joined the ENCDR in 2008 as a public health medicine advanced trainee. She has also trained and practised as a general practitioner. She is particularly involved with the evaluation of the Healthy Eating, Healthy Action (HEHA) Strategy currently being undertaken by the ENCDR, CTRCD and collaborators.

**Associate Professor Sheila Williams** (Research Associate Professor) *BSc(Hons), DSc*  
Sheila Williams provides statistical consultation to the ENCDR. Over the last 20 years she has been involved with studies such as the New Zealand National Cot Death Study, the Dunedin Multidisciplinary Health and Development Study (a birth cohort of about 1000 people which has been followed since their birth in 1972) and a large number of other studies including those conducted at the ENCDR.

**Dr David Tipene-Leach** (Senior Research Fellow) *BHB, MBChB, Dip of Community Health, FRNZCGP, MCCMNZ*  
David Tipene-Leach has a background in public health and general practice. He held lecturer and senior lecturer positions in Māori Health at the University of Auckland for 10 years and has been involved in Māori health research projects. He was the Founding Chair of Te Ohu Rata o Aotearoa (the Māori Medical Practitioners Association), is fluent in Māori custom and language and active in Māori health development.

**Dr Martha Bell** (Research Fellow/Sociologist) *BA(Hons), BEd, MEd, PhD*  
Martha Bell has extensive experience in qualitative research methods. Her current research interests include sociology of the body; social relations of body weight; and weight loss and physical activity. She is currently involved with other research undertaken by the ENCDR e.g. Impact of removing televisions from households: feasibility study and Motivation for Participating in Family-based Lifestyle Intervention.

**Dr Juliet Berkeley** (Research Fellow) *MBChB, FRACP*  
Juliet Berkeley is a Physician (Endocrinology), having completed specialist training in Dunedin and Christchurch. Her research interest is the measurement of insulin sensitivity in adults. Dr Berkeley is currently involved in clinical research to evaluate a new dynamic insulin sensitivity test (DIST).

**Victoria Farmer** (Senior Research Technician) *MSc*  
Victoria Farmer's Masters research involved isolating bacteriocins produced by *Staphylococcus aureus* and *Staphylococcus warneri*. A move from a communicable disease research environment to the ENCDR has led her to assist with running the Centre and involvement in numerous research projects carried out by the ENCDR. Victoria completed a Public Health University paper in 2008 and, alongside Chris Booker, is the NZSSD Secretariat.

**Margaret Johnston** (Senior Research Technician) *BSc, PGDipSci, DipTeach*

Margaret Johnston has a background in Chemistry and has many years teaching experience at the secondary school level. She joined the ENCDR at the beginning of 2007 and is particularly involved with the evaluation of the Healthy Eating, Healthy Action (HEHA) programme currently being undertaken by the ENCDR, CTRCD and collaborators.

**Minako Kataoka** (Research Dietitian) *BA, BSc, PGDipDiet*

Minako Kataoka is currently working as research dietitian of the LOADD study. She is originally from Japan, and studied Law there. After she migrated to New Zealand in 1997, Minako studied Human Nutrition at Otago and trained as a dietitian. She is passionate about making each dietary session with participants fun and easy to understand.

**Chris Booker** (PhD Student) *BSc(Hons)*

Chris Booker, formerly a Senior Research Technician at the ENCDR, started a PhD in 2007 with funding provided by a Postgraduate Scholarship from the National Heart Foundation. His research will focus on the role of inflammatory markers and adipokines in type 2 diabetes and be based at both the ENCDR and the Department of Anatomy and Structural Biology.

**Michelle McGrath** (Research Nurse) *RN, BSc Psych*

Michelle McGrath joined the LOADD study December 2008 as a research nurse. Prior to this she worked in Dr Patrick Manning's group on a variety of studies mainly looking at the effect of diet on inflammatory markers in people with type 2 diabetes.

## **GRADUATE STUDENTS**

### *PhD*

- Anna Dawson. Using motivational interviewing to increase parental awareness and acceptance of overweight in children aged 4-8 years. 2008 -
- Amber Parry-Strong. Dietary intervention for the Diabetes Excess Weight Loss (DEWL) Study. 2007 -
- Lisa Te Morenga. Nutritional determinants of insulin sensitivity. 2006 -
- Chris Booker. Inflammatory markers and adipokines in type 2 diabetes. 2006 -
- Philippa Carter. The FLAME study; longitudinal study of weight, food and activity in 3 to 7 year old children. 2005 -
- Claire Cameron. Open population mark-recapture models for epidemiology. 2003 -
- Lorraine Brooking. Lifestyle interventions to improve Māori health. 2001 -

### *MSc*

- Megan Levers. Nutritional approaches for the metabolic syndrome. 2008 -

### *M MedSci*

- Nathan Joseph. Barriers to improving glycaemic control in Māori patients with type 2 diabetes. 2005 -