SUMMER STUDENTSHIP PROGRAMME
Introduction

This booklet is a compilation of the lay reports submitted by student participants in the School of Medicine and Health Sciences, University of Otago, Wellington 2011/2012 Summer Studentship Programme. This year 28 students and over 30 supervisors took on the task of a ten-week research project.

The main objective of the Summer Studentship programme is to give undergraduate medical and science students their first introduction to research and it is a very important opportunity to encourage and foster future NZ researchers. This year, students and staff of the School of Medicine and Health Sciences, University of Otago, Wellington and CCDHB Haematology Department participated in the programme. Eligibility for the studentship is open to any undergraduate student at a NZ tertiary academic institution.

We are grateful to the many students, supervisors and host departments who have worked together to achieve this cross institution alliance.

The programme relies heavily on the generosity of external organisations that contribute a $5,000 educational grant for each student. We are grateful for the generous donations from:

- Wellington Medical Research Foundation (Inc.)
- University of Otago Summer Scholarship Office
- Tairawhiti Complementary and Traditional Therapies Research Trust
- The Surgical Research Trust
- Cancer Society of New Zealand - Wellington Division (Inc.)
- University of Otago Research Committee
- The Medical Research Institute of New Zealand (MRINZ)
- Wellington Faculty RNZCGP
- The Royal New Zealand College of General Practitioners
- Arthritis New Zealand
- The Asthma & Respiratory Foundation of NZ (Inc.)
- Maurice & Phyllis Paykel Trust
- The National Heart Foundation of New Zealand
- Te Ropu Rangahau Hauora a Eru Pomare, Public Health
- Social Psychiatry & Population Mental Health Research Group (SoPop)
- Department of Public Health
Summer Studentship Finalists

We would like to acknowledge and thank the Wellington Medical Research Foundation Inc. and the School of Medicine & Health Sciences, University of Otago, Wellington for their contribution towards the Summer Studentship Prize.

The written reports were all evaluated to produce a list of the four best reports.

The four finalists were:
- Brodie McKinlay
- Ann-Marie Mekhail
- Will Tomkins
- Ollie Ball

Ann-Marie was judged first place winner. Brodie McKinlay, Ollie Ball and Will Tomkins were all judged as Equal Runner-Up.

We would like to thank Dr William Levack (Associate Dean Research & Post Graduate Studies) and Associate Professor Rob Siebers (Medicine, Wellington Asthma Allergy and Respiratory Group, UOW) for undertaking the difficult task of assessing the final reports as well as judging the oral presentations. Thank you also to Dr Rose Miller (Department of Pathology, UOW) for judging the oral presentations. These reports are a small reflection of the enormous amount of work and commitment put into the projects by students, staff, departments and sponsors.

We hope that you will enjoy reading them and we look forward to your support of the 2012/2013 Summer Studentship Programme.

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Central systolic blood pressure has been proven to be a more useful indicator of cardiovascular risk than peripheral blood pressure measured in the arm. However if the parameter of central systolic blood pressure is to be used in everyday clinical practice it is important that it be possible to measure it noninvasively, quickly and easily.

The SphygmoCor is one of the most widely used systems to noninvasively determine central pressures at present. Although it has been shown to give accurate estimates, the use of the machine is difficult, time consuming and requires a trained operator.

A newer device, the Centron cBP301, has recently been developed that allows central systolic blood pressure to be quickly and easily estimated using an apparatus very much like a standard blood pressure cuff.

The purpose of this research was to ascertain whether the Centron cBP301 could be relied upon to provide the same high level of accuracy as the SphygmoCor by comparing the two machines.

Results showed that the Centron cBP301 did indeed allow for fast and easy estimation of central systolic blood pressure without compromising on validity.

The combination of the practicality and precision of the Centron cBP301 may lead to an improvement in prevention of cardiovascular disease.
Brodie McKinlay

INDEXING INTEGRATION OF HEALTH AND SOCIAL SERVICES FOR YOUNG CHILDREN IN TAIRAWHITI: SURVEYING HEALTH PROFESSIONALS AND STAKEHOLDERS

Supervised by: Associate Professor Sue Pullon
Professor Tony Dowell
Dr Bruce Duncan
Dr Patrick McHugh

Sponsor: Tairawhiti Complementary and Traditional Therapies Research Trust

The Tairawhiti region is an isolated and comparatively deprived area of New Zealand which impacts on the health of its population, especially children.

This study sought to investigate local health and other interested professionals’ views of health and social services available for young children in Tairawhiti. The aim was to examine what participants considered to be indicators of effective integrated care.

Eleven one-to-one and two group interviews were conducted with a variety of child health and social service professionals. The recorded interviews were transcribed and analysed for common and unique viewpoints. Five main themes were identified: concepts of health (the definition of health and measuring health), inter-service-communication and cohesion of health and wellbeing services, child abuse, the importance of families in the health of a child and doing better for the children of Tairawhiti.

Most participants viewed health as a holistic concept that should be measured accordingly; considering physical, mental, spiritual and family health. There was a distinct lack of knowledge of and communication between some child-centred services. Furthermore, it was apparent that there is a need for further education among health professionals around detecting child abuse.

In conclusion, participants agreed there were areas that could be worked to improve child health and wellbeing services. The findings this study, together with the findings of the companion study that examines the perspectives of family and whānau, will inform the development of a locally relevant indexing tool for measuring child health and social service provision.
Blood vessels in the brain constrict and dilate under a number of circumstances in order to adequately regulate flow to the brain. Altered carbon dioxide (CO₂) in the blood is one such mechanism which alters brain blood flow. Increased CO₂ dilates blood vessels resulting in an increase in flow, and vice versa (termed CO₂ reactivity – defined as a change in flow per millimetre of mercury change in CO₂ levels). This change in blood flow can be measured in a blood vessel supplying the brain called the middle cerebral artery (MCA) using transcranial Doppler ultrasound.

It is not definitively known whether the sympathetic nervous system (SNS) has any role in CO₂ reactivity. However it has been shown that a reduced reactivity to CO₂ predicts poorer outcomes in stroke, sub-arachnoid haemorrhage and brain injury.

Ten young, healthy participants consented to breathing normal room air, followed by breathing a gas mixture of increased CO₂, oxygen and nitrogen balance for 90 seconds, followed by hyperventilation for 90 seconds. Participants were then given a drug (prazosin) which blocks the SNS’s ability to constrict blood vessels and the protocol repeated. We measured the MCA flow velocity before and after prazosin, to give us pre and post prazosin CO₂ reactivities.

We found that after blocking the SNS with prazosin, there was a reduced reactivity to CO₂, specifically this was found when CO₂ in the blood is decreased. These results may have future implications for manage of stroke, sub-arachnoid haemorrhage and traumatic brain injury risk.
Pre-Hospital cardiac arrests continue to challenge emergency services worldwide.

In 2010 a number of resuscitation councils and committees released guidelines that highlighted the importance of uninterrupted chest compressions when delivering Cardio-Pulmonary Resuscitation (CPR). To shorten the amount of hands off time during CPR they emphasised minimising the pause between stopping chest compressions and delivering the shock (pre-shock pause) and resuming chest compressions after delivering the shock (post-shock pause).

The aim of this study was to investigate any difference in the pre and post-shock pauses times between paramedics using manual defibrillators and paramedics using defibrillators in semi-automated mode (AED). We also measured any pauses in the 30secs prior to shock delivery because any hands off time can lead to decreased heart perfusion and a decreased chance the shock will achieve a Return Of Spontaneous Circulation (ROSC). Shock success, which is the termination of a shockable heart rhythm 5secs after the shock has been delivered and ROSC were the outcome measures.

It was found that when shocks were delivered in manual mode the pre-shock pauses were less than the pre-shock pauses in AED mode. There was no difference in post-shock pause times between the modes but the pauses in the 30secs prior to shock delivery in manual mode were less than half the duration of AED pauses. There was also a strong trend towards higher rates of ROSC in manual mode.

We recommend that manual mode should be the preferred option amongst appropriately trained paramedics.
Follicular Lymphoma (FL) is a slowly progressive malignancy (cancer) and the second most common Non Hodgkin’s Lymphoma in the western world. It is characterised by numerous chromosomal abnormalities (average=7). FL has a hallmark primary abnormality, a translocation t(14;18)(q21;32) which is found in 85% of patients. However the translocation has no value in assessing the severity of the illness (prognosis). On diagnosis, it is common to find a number of extra (secondary) chromosomal abnormalities.

Our objective was to determine if any common secondary chromosomal abnormalities found in FL would help to determine a FL patient’s prognosis. We then looked at the Follicular Lymphoma International Prognostic Index (FLIPI), the tool clinicians use to determine a patients prognosis, and examined whether its prognostic power could be improved with the addition of any secondary chromosomal abnormalities.

The most common secondary chromosomal alterations we found were +7, +X, del(6)q, +der(18)t(14;18), +12, +8, +2, del(1)p36, +5, -17, -13 and add(3)q. Our analysis demonstrated that of these only a del(1)p36 demonstrated inferior overall survival. When the del(1)p36 was added as an extra parameter to the FLIPI it conferred no added prognostic value. The FLIPI was confirmed to be an excellent model for determining a patient’s prognosis.

In conclusion our audit demonstrated that of the common secondary chromosomal abnormalities found in FL only a del(1)p36 was associated with inferior overall survival. However when we included the del(1)p36 as an extra parameter of the FLIPI it provided no additional prognostic value. This confirms the FLIPI as the best tool available to clinicians to determine a patient’s prognosis.
In New Zealand, Pacific peoples seem to have more mental illness than other groups. They often get to mental health services when they are feeling seriously unwell, and need to stay a lot longer in treatment. Pacific peoples appear to have lots of difficulty accessing mental health services.

We did this study to find out what factors helped and hindered Pacific peoples from using mental health services. We also looked at the problems mental health services were having, what this means for them and how they can improve their services so Pacific peoples can access them more. To do this, we looked through all research that has been published in the last 10 years on this topic.

We found that there were quite a few factors that stopped Pacific peoples from going to mental health services. These included: how much money it cost, how far they had to travel, not knowing much about mental health and the services, feeling ashamed of their illness and others treating them unfairly, and services not being able to understand their culture. There were some things that helped Pacific peoples to go to mental health services. These included: having services that were based in the community, mental health promotion campaigns that dispelled myths and gave support, having culturally-appropriate training, and having better links between mental health services and Pacific communities.

In combination, these factors suggest that improving Pacific peoples’ access to mental health services is a difficult issue and a number of things need to be done alongside each other to help. We believe that more research needs to be done soon to help find out ways services can be more responsive, increase access, ensure sustainability and work towards prevention.
Health risk for Volunteer Service Abroad (VSA) volunteers may be greater than other groups of overseas travellers due to having long assignments in developing countries with high levels of infectious diseases. This study aimed to compare VSA volunteer infectious disease data to similar studies on overseas travellers. Study results will help rationalise pre-assignment, in-country and returning anti-infection strategies for volunteers.

We collated levels and rates of infection for dengue fever (DF), tuberculosis (TB), hepatitis C and Human Immunodeficiency Virus (HIV) from pre and post-assignment volunteer medicals, as well as data from a questionnaire on infectious disease risk behaviour.

Pre-assignment evidence of DF and TB was found in approximately 1:9 and 1:8 VSA volunteers respectively. Of the returning volunteers, approximately 1:16 were infected with DF, and 1:33 with TB. DF was recorded in 1:7 volunteers returning from South-East Asia. No HIV or Hepatitis C infections were recorded. Unprotected sex, not with a regular partner, was reported by 1:15 volunteers. Approximately 1:9 volunteers reported potential exposure to blood.

Returning VSA volunteers have similar DF and TB infection levels as other groups of overseas travellers on trips over three months; however infection rates are lower given their 22 month average trip length. High pre-assignment and returning levels of DF indicate mosquito avoidance measures should continue to be reinforced. High pre-assignment levels of Latent TB Infection (LTBI) suggest the need for further research into New Zealand LTBI levels. Although we recorded no HIV or hepatitis C infections, lower risk behaviour in volunteers could be reinforced.
Each year, large numbers of people venture into New Zealand’s outdoors to participate in a number of recreational activities. Any land-based search and rescue (SAR) services needed in New Zealand are provided by the New Zealand Police with the help of Land Search and Rescue (LandSAR) if necessary. These services save lives. However, there is currently a lack of evidence behind important decisions regarding precious funding for training and equipping volunteers and preventative campaigns. We therefore aimed to examine the medical and traumatic factors contributing to search and rescue operations in New Zealand.

We accessed Police records for all land-based SAR operations in New Zealand from May 2010 until December 2011, then undertook a simple analysis of the data. We found that a large portion (30%) of operations were to locate people such as dementia patients who had wandered away from their care situation. Most of these people were located without incident. The remaining 70% were outdoor adventurers who had experienced a traumatic or medical complication and people with mental illnesses or suicidal tendencies who needed to be found. Of the adventurers, most had had a traumatic injury – usually of the lower limb (such as a sprained ankle). A smaller proportion became ill, had heart problems, or developed hypothermia.

These results should prove useful for SAR service planners, volunteers in the field and those promoting outdoor safety. The finding that 30% of operations were for ‘wanderers’ may mean that some prevention efforts can be targeted to this group.
Obstructive sleep apnea (OSA) is a condition where during sleep, breathing ceases for a period of up to 60 seconds. Patients with OSA may feel tired during the day, have poor concentration and may snore [1]. OSA has been shown to be a risk factor for high blood pressure, depression and type II diabetes[2, 3]. The standard treatment for moderate to severe OSA is a machine which provides continuous positive airways pressure (CPAP).

We set out to determine if patients who have OSA and have been on CPAP treatment for 12-18 months reduce the amount of medications they use for high blood pressure and depression. We also wanted to know what type of patient is at risk of OSA, how frequently people use their CPAP machines and if CPAP is effectively treating sleepiness.

We found that patients did not change medication use after longterm CPAP use. There are a number of possible reasons for this, but it may be that CPAP does not reduce blood pressure or depression enough to warrant stopping medication. We did find that the majority of patients still use CPAP for more than 4 hours/day after 12-18 months, that it effectively treated their sleepiness and still allowed them to achieve a good nights sleep.

Despite CPAP use, patients still score consistently lower on quality of life (QOL) measures than the general NZ population. This may be explained by the presence of co-morbidities which also reduce QOL measures along with OSA.

Genital human papillomavirus (HPV) is a common sexually transmitted infection, and is a prerequisite for the development of cervical cancer. Persistent infection with high risk types of HPV (HrHPV) increases the risk of developing cervical, anogenital and other cancers. The revised National Cervical Screening (NCS) programme guidelines in New Zealand were implemented in October 2009. Women 30 years old or above with a first cervical smear showing low grade abnormalities undergo testing for HrHPV. If this test confirms presence of HrHPV, women are referred for a colposcopic assessment which enables the cervix to be viewed and any abnormal area seen to be biopsied. The current guidelines do not mention what the follow-up should be of women with HrHPV detected and normal or low grade abnormalities on colposcopy. In previous studies that did not take into account the presence or absence of HrHPV, most women with these findings had a normal biopsy in the future. In this study we followed up these women after they had undergone colposcopic assessment to determine outcomes over a 2 year period. We found that the majority of women had normal biopsies after 2 years, and so we recommend that they can return to routine cervical screening after an initial normal or low grade colposcopic biopsy and do not need further colposcopy.
Newtown Union Health Service (NIUHS) provides primary healthcare aimed at high-need populations. A midwifery service works in collaboration with the practice and operates using a team-based approach, which is different from most other models of maternity care in New Zealand.

This study is a continuation of previous research that used feedback surveys to gauge women’s satisfaction with the service. Overall satisfaction with the service was high, but it was found that NZ European women were over-represented in response rates so this project aimed to target the diverse range of ethnicities accessing the service via focus groups.

Each ethnic group had a different focus point about the service, but most positive about the service were the women who received care from a midwife of a similar ethnicity to themselves. In order to provide the best possible care for all women in the service there needs to be an awareness of cultural competency by the midwives.

The collaboration of the midwives within NUHS provides extra support and security for the women by knowing their doctor is close-by, but very few women had experienced the collaboration. Further research needs to be done to find out why. The focus groups provided information that could not have been collected from feedback surveys. There would be benefit in running more focus groups for other ethnic groups in the future to allow a better understanding of their needs and preferences with the NUHS midwifery service.
OUTCOMES OF THE OPTIMED PROGRAM

Supervised by: Professor Mark Weatherall
Associate Professor Tim Mailing

Sponsor: The University of Otago Summer Scholarship Office

OPTIMED is a program, established in 2009, to manage medicine risk in patients with chronic disease and complex medication regimens, enrolled in primary care practices in the Wairarapa. Patients referred to the program are reviewed by a multi-disciplinary team, who make recommendations to optimise future prescribing.

The aim of this project was to perform a clinical audit for 62 patients enrolled in OPTIMED. The audit focused on three main outcomes: how well patients and GPs complied with recommendations; changes in medication risk factors; and clinical outcomes. The main data-sources used were:

- patient templates, filled in during the OPTIMED review;
- the electronic record system used by Wairarapa primary care practices (‘MedTech’); and
- the Wairarapa Hospital’s Patient Management System’ (WPMS).

For each patient, data was compared between the beginning and end of the audit period, which ran for around 25 months. Approximately half of all OPTIMED recommendations were implemented and sustained. However, only around 20% of all changes made to patients’ medications were based on OPTIMED recommendations. The average number of medications per patient remained consistent and there was only a small reduction in high-risk medications.

Regarding clinical outcomes, ten patients died during the course of the audit. Compared with the WPMS, the MedTech record of clinical events did not appear robust. The average number of emergency department admissions, hospital admissions and outpatient assessments all increased marginally following the OPTIMED review. Overall, the effectiveness of OPTIMED in optimising complex drug treatment and improving clinical outcomes remains unclear.
COPD – CAN WII FIX IT?
AN OBSERVATIONAL STUDY EXAMINING THE LEVEL OF EXERCISE ACHIEVED BY PEOPLE WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) USING THE NINTENDO WII

Supervised by: Dr William Levack
Sponsor: The Asthma & Respiratory Foundation of NZ (Inc.)

Chronic obstructive pulmonary disease (COPD) is a type of lung disease which affects more than 65 million people worldwide and results in approximately the same number of deaths as HIV/AIDS. One of the best ways to treat this disease is through pulmonary rehabilitation. This is a combination of an exercise, nutritional, and educational programmes, and has been shown to be very effective. However, only 1% of people with COPD in New Zealand are offered this. One way of addressing this is to design a home-based programme and one of the components of this could include the use of a kinetic video gaming console such as the Nintendo Wii.

In this study we examined 12 participants with COPD to establish how much exercise they could achieve using three different Nintendo Wii games (Wii Jogging, Wii Rhythm Parade, and Wii Boxing). We found that they achieved over 60% of their maximum exercise capacity in all three games. This level of exercise intensity has been shown in other studies to lead to beneficial changes in people with COPD.

The study found that the Nintendo Wii could be successfully used as part of a home-based pulmonary rehabilitation programme to treat COPD. However, more research needs to be done to establish whether these results can be sustained over longer periods of time and in larger, more diverse, groups of people with COPD.
It is well established that sleep disturbance is a major component of psychiatric illness. Effectively dealing with sleep complaints is therefore a challenge faced frequently by general psychiatrists. Existing guidelines on the use of sleep medication recommend they be used only for short periods (up to four weeks), due to concerns about patients becoming dependent (having withdrawal effects on stopping the medication) on the drugs. In cases of persisting sleep disturbance, the clinician has few other options to offer the patient. Past audits in psychiatric hospital units have found high levels (50-86% of patients) of hypnosedative prescribing, much of this not within the limits set out by the guidelines.

This project aimed to look at the ways general psychiatrists in the Wellington region prescribe medication for sleep complaints (hypnosedatives). The purpose of this audit was to examine patterns in psychiatric prescribing as well as allow the participants to compare their own prescribing with that of their peers. Paper audit forms were sent to all psychiatrists practicing at Capital and Coast or Wairarapa District Health Boards asking about the drug prescribed, dosage and duration of use for the last ten patients they had seen. The audit results were compared with recommended prescribing guidelines from New Zealand and international government and professional bodies.

This audit found a high level of prescribing, with over 60% of patients receiving medication for a sleep complaint. The most commonly prescribed drugs were the benzodiazepines, zopiclone and quetiapine. Around three-quarters of the patients prescribed benzodiazepines and zopiclone had been using them for more than four weeks. It is of interest that quetiapine (an antipsychotic drug, not licensed for treating sleep complaints) was commonly being used off-label to treat sleep complaints. The safety of quetiapine for this use is not well known. There are concerns over the potential to cause weight gain, diabetes and cholesterol disturbances with this drug.
The aim of this study was to find out about parental and Whanau experience of the health and social services provided for young children (0-2 yrs) in Tairawhiti. Thirteen parents or close family members of young children were interviewed. Four main points which came out of the study were; Access and Barriers to clinical health care services, Family/Whanau view of health, the demand for public health and lack of integration between services.

The most important finding in the study was how Parents and Whanau viewed child health. All participants had a holistic view of health and talked about a wide range of things they thought children needed to be healthy. These ranged from basic ‘needs’ like food, housing and safety to more abstract concepts like respect, connectedness and good values. Parents and Whanau felt a huge amount of responsibility for their children’s health and many thought that their child’s ill health was a direct result of their care. All participants wanted education about how to keep their children healthy and prevent illness. Although there were a number of barriers to accessing primary care, the main barrier was cost.

In conclusion, basic access to health care needs to be improved by making GP visits for all children, at all hours free. There needs to be a shift in focus from simply treating ill health to preventing it, and investing more into public health strategies like education for parents.
Rosemary Claridge

THE RELATIONSHIP BETWEEN INCOME, FOOD SECURITY, AND UNHEALTHY BEHAVIOURS

Supervised by: Dr Kristie Carter
Sponsor: The University of Otago Summer Scholarship Office

Food security is the ability of a household to access the foods necessary for a healthy lifestyle. There is a well known link between income and food security, as income decreases, food security decreases also. New Zealand is experiencing declining levels of food security. This is a concern due to the negative health effects of living with low food security.

The media has an important role in influencing public opinion. The primary aim of this research was to find out how the relationships between income, unhealthy behaviours and food security are presented to the public in the media. The current academic literature was investigated to find any evidence that would substantiate the relationships.

It was found that the media generally presents an equal weighting of positive and negative viewpoints in each article relevant to food security (including those addressing welfare, charity, food cost and the income gap). Some articles did show an overall influence and of these more were negative than positive, implying low income earners were more likely to purchase cigarettes or alcohol and gamble, than feed their families. Although most articles leave it up to the reader to develop their own opinion there is more support for the negative. This suggests propulsion of negative stereotypes and stigma against low income people.

The current academic literature only supported this assumption in terms of smoking. It was found that those with low food security are more likely to smoke than the rest of the population. However no evidence was found in the literature of increased alcohol consumption or gambling with decreased food security. This information is useful as it can be hoped that smoking interventions will have the flow on effect of increasing food security. More research on the relationship between food security, alcohol and gambling is necessary to find if interventions in these areas will benefit food security status.
Rebecca Prowse

A DELPHI EXERCISE TO IDENTIFY FEATURES SPECIFIC TO GOUT – A JOINT STUDY BETWEEN PATIENTS AND PHYSICIANS.

Supervised by: Associate Professor William Taylor

Sponsor: Arthritis New Zealand

Gout is a form of arthritis that is caused by uric acid crystals forming within the joints. This causes pain and swelling that leads to a loss in function of that joint. Gout is commonly wrongly identified because the symptoms are similar to those of other joint diseases. Some criteria for recognising gout exist but these are not very effective.

The objective of this study was to identify features that could set gout apart from other joint problems. These will then be used to design better gout classification criteria for use by doctors in primary health care. Separate web-based surveys were used to obtain the opinions of doctors with expertise in gout and with patients suffering from gout.

The results of this study showed both patients and physicians agreed that the following items were specific to gout; “the rapid onset of an attack”, “only one joint is affected at a time in an acute attack”, “joints are red and swollen”, “severe pain”, “affected joints are tender”, “blood uric acid levels are high”, “monosodium urate crystals are present in joint fluid”, “tophi (lumps) are present”, “the patient responds quickly to treatment”, “the big toe is affected”. In addition, a large number of other features were identified that might be useful pointers to a diagnosis of gout, which now need to be further evaluated.

In summary, this study has given us an understanding of what things patients and physicians believe should and should not be included in new criteria for identifying gout.
Chronic respiratory conditions are common among New Zealanders and throughout the world. Asthma affects around 24% of Maori and 16% of Non-Maori New Zealanders. Also common in New Zealand, is chronic obstructive pulmonary disease (COPD), which affects 210 million people world-wide.

Current treatments for asthma and COPD include inhalers containing drugs called salbutamol and ipratropium. Given that asthma and COPD share many similar features, it is often difficult to pinpoint which medication is the better choice. The primary goal of this study was to see if there is any association between an easily applied test for fraction of exhaled nitric oxide (FeNO), and the effectiveness of these two drugs.

A screening questionnaire was sent out to a selection of the Wellington population. Based on their answers, a sample was selected with specific respiratory symptoms (wheeze and breathlessness). This sample then had their FeNO taken and then undertook reversibility testing.

The results of our study did not show any relation between FeNO and the effectiveness of salbutamol and ipratropium. However, further studies into smaller, more unique groups may prove an interesting avenue for further research based off this larger study.
The burden of respiratory diseases, both in New Zealand and globally, is high. In New Zealand, one in four children have been diagnosed with asthma and over 200,000 New Zealand adults have been diagnosed with a respiratory condition called Chronic Obstructive Pulmonary Disease.

Two commonly prescribed bronchodilator drugs for patients presenting with wheeze and breathlessness are ipratropium and salbutamol. Currently, there are few predictive clinical markers to aid prescribers in their choice between the two.

The objective of our study was to determine the predictive value of smoking status and age for salbutamol and ipratropium responsiveness, in patients with respiratory symptoms suggestive of asthma and COPD. Atopic status, a measure of allergy, was another outcome investigated. Neither age nor smoking status were significant predictors to aid clinicians when prescribing treatment for respiratory conditions. If a person displayed atopy however, they were found to respond better to salbutamol than ipratropium. The clinical relevance of this finding however was uncertain, as the magnitude of the difference in response was small.

These findings suggest that age, smoking status and atopy do not predict clinically relevant differential response to salbutamol or ipratropium.
ESTABLISHMENT OF A TERTIARY LEVEL UPPER GI/HPB SURGICAL UNIT

Supervised by: Dr Susrutha Kusal Wickremesekera
Dr Simon Bann
UGI/HPB Surgeons - Wellington Hospital

Sponsor: The Surgical Research Trust

The Wellington Hospital Upper GI/HPB Surgical unit was set up in 2006. The large multidisciplinary team has performed various major UGI/HPB operations such as Oesophagogastrrectomy, Whipple’s Procedure, Liver Resection and Distal Pancreatectomy. UGI/HPB surgeries involve high risks which can be complicated by serious pathologies such as invasive carcinoma.

The process of Surgical Admissions requires much expertise and comprehensive recovery care. From diagnosis, to procedure to recovery, the process is dependent on clinical input, cohesiveness and interaction between different specialities.

With 184 elective major UGI/HPB operative cases from 2006-2011 the unit has had a high success rate. The unit aims to provide and maintain this quality care with the morbidity and mortality incidence rates postulated to be 35% and 5% respectively.

This retrospective clinical audit evaluates the outcomes of all the major UGI/HPB surgeries conducted by this team. An overall morbidity of 21.7% was found, with a higher rate of 36.4% morbidity in Pancreatic Procedures (33 cases) and 31.1% in Oesophagogastric Procedures (45 cases). A low morbidity rate of 19.1% was demonstrated in the Liver Procedures (47 cases).

An overall mortality of 1.1% was found. These two cases were both in the ≥71 age group. Both patients had gastric lesions, one having adenocarcinoma and the other having a neuroendocrine tumour of the lesser omentum.

As a Tertiary Level UGI/HPB unit in Wellington Hospital, an overall low morbidity and mortality rate exhibits the cohesiveness of Surgeons, Nurses, Anaesthetists, Radiologists, ICU Specialists and auxiliary disciplines in high quality UGI/HPB care.
Mental disorder is common in New Zealand with one in five people affected by mental illness each year. There is a lack of New Zealand data on the prevalence of children whose parents have mental illness. According to international research around one third of all inpatients have children under the age of 18 and 50% to 70% of those affected by mental illness are parents. Although the outcomes for these children vary, they are more vulnerable than their peers and may face potentially negative outcomes.

In this study we did a 12 week audit of the Wellington Crisis Assessment and Treatment Team’s electronic patient files and interviewed 18 professionals and four parents who used mental health services in the Wellington area.

Our research found that although many agencies have policies for addressing child abuse, addressing child well-being is less well defined. Only some children met the referral threshold to child protection agencies and a range of issues impacted on how clinicians addressed child well-being. We found some national policies on the well-being of children whose parents have mental illness but no specific guidelines requiring clinicians to assess child well-being. In our audit we found that the mental health assessment form did not include a section about children’s well-being and information about children was not systematically collected. Just under half (49/104) of cases involving children documented some enquiry about child well-being but only six cases included a plan. Although most participants interviewed said that child well-being is important, they felt there is no formal process for identifying parental status or child well-being and the primary focus for clinicians is the adult patient. To improve the response to children, participants suggested training for clinicians around child protection and the impact of parental mental illness and more collaborative working models between government and community agencies. A mandatory section on parental status and child well-being on the mental health assessment form was also suggested. Finally participants felt that clinical leadership is critical and child well-being should be everyone’s responsibility. Increased awareness about the issue was seen as important in achieving this.
Despite innovations in cancer treatment over the years, lung cancer still remains a disease with a poor prognosis and is a challenge internationally and at the Wellington Blood and Cancer Centre (WBCC). With many patients presenting with late stage disease and having a number of co-morbidities such as reduced lung function; surgery is often not a feasible option for treatment, leaving radiotherapy and chemotherapy as the only alternatives.

The overall aims of the study were to evaluate curative radiotherapy for non-small cell lung cancer patients at the Wellington Blood and Cancer Centre. Outcomes were overall survival time, local, regional and distant control rates and toxicity rates. 50 patients who were treated between January 2005 and September 2011 were involved in the study. Data was collected through reviewing patient records.

The results of the study revealed a local control rate of 76%, regional control rate of 90% and a distant control rate of 68% for 31 months, with 10% of patients in the study developing cerebral metastases. Treatment was well tolerated.

This study suggested the need for further research with regards to the potential use of prophylactic cranial irradiation as the commonest site of distant relapse was in the brain.
Coronary artery bypass graft (CABG) surgery reinstates blood flow to heart muscle by bypassing blocked vessels. Patients needing CABG are at greater risk of heart attacks, heart failure, strokes and death-events referred to as MACE (Major Adverse Cardiac Events).

During 2006/2007 there was a dramatic increase in the length of the waiting list for Coronary Artery Bypass Graft (CABG) surgery at Wellington Regional Hospital. As a result of longer waiting times across New Zealand, the Clinical Prioritisation Score for CABG was developed. The patient’s score is used to group them into one of four urgency categories, with a recommended maximum time for surgery. The intention is to aid clinicians in organising the waiting list so that higher risk patients have surgery sooner. CPS is used in all major cardiac surgical centres in New Zealand already, and is due to be formally implemented.

This study was undertaken to see if CPS is achieving its purpose. To do this we looked at patient’s medical records and applied the scoring system retrospectively. We found that surgery within the CPS time frame did not decrease frequency of MACE. Additionally we found that the estimated probability of survival at the CPS recommended maximum time differed between urgency groups, suggesting that patients allocated to different groups would be being allocated different levels of risk of having an adverse event. The results of this study suggest that CPS is not an entirely effective system and may not be a fair way to list patients. The sample size was small, so a larger study which looks at other outcomes as well would be useful.
In New Zealand, and the rest of the world, pregnant women are generally ignored in the field of research. In New Zealand there are no regulations or guidelines regarding the inclusion of pregnant women in research. The consequences of this are that doctors prescribing necessary drugs often do not know the effects of these drugs, and when there are multiple treatment options, do not know which are best. By reviewing the literature and speaking to key stakeholders, I identified the three key problems at the root of this issue.

First, there is no specialised ethical guidance for researchers working with pregnant women in New Zealand or many other countries.

Second, there is the fear of financial and legal repercussions if any trial should go wrong.

Third, doctors view pregnant women as vulnerable and are reluctant to suggest they enrol in trials.

The most promising ways to address this issue are: (1) to create more comprehensive regulation, that specifically change the default to inclusion rather than exclusion; (2) form specific ethical guidelines which emphasise possible benefit to the mother and foetus, as long as neither is harmed; and (3) to create a monitoring centre for pregnant women that aggregates data from pregnancies to assist doctors in prescribing treatment.
Autophagy is a process used by our cells to degrade cellular material and invading microbes. Autophagy has been implicated in many diseases however its regulation is still poorly understood. Although the role of calcium in regulating autophagy was first reported 20 years ago, the exact mechanism by which it does so is still contentious. In 2009 two unique optoreceptors were created. These are modified adrenergic receptors that sit in the cell membrane. They are activated by a specific wavelength of light resulting in a downstream cascade of events - one being an increase in IP3 and calcium.

This project focused on subcloning the optoreceptors in order to make them functionally viable. This could be used to further study the role of calcium in autophagy. In the process of subcloning the optoreceptor gene is amplified and then cut from its original vector and inserted into a destination vector. During this project primers were successfully created to amplify the optoreceptor gene prior to cutting, and restriction enzymes BamHI and EcoR1 were effectively used to create a destination vector. The final results from sequencing were unavailable however this study resulted in the creation of baseline protocol for subcloning the optoreceptors. This baseline protocol will be used by the Floto lab as part of its investigation into the regulation of autophagy.
Tyler Rudolph

ASPECTS OF THE DOCTOR-PATIENT RELATIONSHIP BENEFICIAL TO MĀORI HEALTH AND HOW THESE ARE INCORPORATED IN MEDICAL EDUCATION

Supervised by: Donna Cormack
Bridget Robson

Sponsor: Te Ropu Rangahau Hauora a Eru Pomare, Public Health

With inequalities existing between Māori and non-Māori health it is important to identify areas of improvement. Currently there is limited published information on the aspects beneficial to the doctor-patient relationship that positively impact on Māori and how they are incorporated into medical education.

The question this study is addressing is what aspects of the Māori doctor-patient relationship facilitates rapport and improves the health outcomes of Māori patients. Through interviews and literature review this study aims to identify the views of key informant students to determine how these aspects are being addressed in medical education.

While there is evidence supporting the value of tikanga and te reo in clinical practice, there is little focus on the views of the patients. Further research is needed to support these ideas and to establish the importance it could have in medical education.

Cultural competency has been highlighted as an area of importance in establishing rapport and improving health outcomes of Māori. The understanding of cultural competency, however, is an area of where a lot of confusion is present. In order to access its significance in clinical practice, a clearer understanding is needed.
It has been noted that physical examination skills of doctors have been declining internationally over the past few decades. Our study hoped to determine whether this is applicable to doctors admitting patients to Wellington Hospital and if so where some of the potential problems might lie.

We recorded information about physical examination findings from the hospital admission notes of 266 patients as documented in the medical record. For each admission we recorded the total number of positive or negative physical examination findings documented, whether or not the most relevant body system had been examined and the total number of body systems that had been examined according to the medical record.

Our results showed that the total number of examinations per admission has been falling on average by 2.01% of the previous year for the past 36 years. We found that surgical admission notes had fewer examination findings documented than medical admission notes overall. Our study also showed that house surgeons documented more examination findings than registrars overall but that registrars documented examining the main relevant system more often than house surgeons. We also found that doctors completing medical admissions recorded examining more body systems than doctors completing surgical admissions.

The quality of the admission note examination record at Wellington hospital has declined between 1975 and 2011, with the surgical admission note worse than medical admission note. More bedside undergraduate teaching and greater supervision of new doctors may counter this trend.
Daniel Wellington

NEW ZEALAND PHARMACEUTICAL CLAIMS DATA: ITS USES, LIMITATIONS AND POTENTIAL APPLICATIONS

Supervised by: Dr Michael Baker

Sponsor: The University of Otago Research Committee
Social Psychiatry & Population Mental Health Research Group (SoPop)

Pharmaceutical claims data (PCD) is an underutilised resource for community health research and surveillance. There are few national constantly collected metrics for community health available. Thus it is necessary to explore the applications, current and potential, of data such as PCD.

New Zealand collects all data submitted by pharmacies to the Ministry of Health Sector Services (MOHSS). The data are stored in an electronic warehouse called Pharms. Only those pharmaceuticals requiring reimbursement are submitted to MOHSS however.

A literature review revealed a wide range of research applications for PCD globally. However the uses of PCD are much more limited in NZ. There are three areas it can be used for population health: healthcare system management, population health surveillance and public health research. In NZ the primary examples of healthcare system management and population health surveillance using PCD are PHARMAC and the Ministry of Health’s HealthTracker project respectively.

Currently PCD are not used for individual patient care, however the National Immunisation Register (NIR) and Medical Warning System (MWS) are examples of related collected data used in clinical practice. I argue that the NIR and MWS demonstrate what is possible with improved PCD recording, collection and administration.

Pharms could be turned into a database amenable to clinical care if all dispensing data were submitted rather than just reimbursement claims, NHI were compulsory on prescriptions, and MOHSS electronic infrastructure was upgraded. Furthermore, the improvements could increase the number and quality of applications using PCD to benefit community health research and surveillance.