2016/2017 Summer Studentship Project Application Form

Send to: Research Office, University of Otago Christchurch, PO Box 4345, Christchurch, by 5pm on **4 July 2016**

Supervisor Information (First named supervisor will be the contact):	
First Supervisor's Name and Title: Assoc Prof Dr R.R. Kennedy	
Department - UOC &/or CDHB (if applicable): Anaesthesia	
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First Supervisors Mailing Address: Dept of Anaesthesia, Christchurch Hospital, Private Bag 4710, Christchurch	
Co-Supervisors Name and Title(s): Mrs Margie McKellow, Research Co-ordinator, Dept of Anaesthesia	

Research Category (Choose one category only – to be used for judging the students' presentations):		
Clinical ✓	**Laboratory**	**Community**

Project Title (20 words MAXIMUM):

Can post-operative pain be predicted by the response to preoperative intervention?

Project Description:

Introduction:

We have been exploring the relationship between opioid administration during an operation and post-operative analgesic requirements, using calculated effect-site fentanyl levels. Our results confirm differences between different types of operation and an association between the intra-operative and post-operative needs of an individual. We have also confirmed considerable variability between subjects which makes it very difficult to predict individual needs pre-operatively.

A recent study by Persson et al suggests that the degree of pain felt after IV cannulation and/or the administration of a small dose of propofol, both common events prior to induction of anaesthesia, may predict post-operative requirements. This study used pain perception and total morphine dose as indicators of post-operative pain in a highly structured study.

We have previously studied fentanyl requirements in patients undergoing a range of procedures including laparoscopic surgery (Persson studied laparoscopic cholecystectomy) and so-called "minor" body surgery, which has been identified as a group in whom post-operative pain is often poorly managed.

We are interested in repeating this study in our setting and with a range of procedures. Our hypothesis is that calculated opioid levels in PACU, and the use of additional analgesics such as clonidine, may be a better marker of analgesic requirement than just the number of mg of morphine administered.

Aim:

The aim of this study is to explore the relationship between pain on IV cannulation and injection of a small dose of propofol, and post-operative analgesic requirement as characterised by fentanyl levels. In particular we wish to study patients undergoing minor bony procedures, a group recognized as having significant pain and for whom we have data from earlier studies.

The secondary purpose of this study is to pilot the procedures and techniques and provide baseline data for a possible larger study.

Possible impact (in lay terms):

Pain post-operatively is a major problem. It causes suffering and, if inadequately treated, leads to chronic pain. However, pain and analgesic requirements vary considerably between patients. The ability to prospectively define patients with high analgesic requirements would allow better pre-emptive pain management. Approaches to better individual pain management could include additional intra-operative analgesia, making PACU staff aware of increased requirements and discussion with the patient about possible analgesic modalities.

Method:

Subjects: 40-60 patients 18 years or over undergoing open surgery for limb fractures (excluding neck of femur fractures and use of major regional block) where the anaesthetist plans to use fentanyl, alfentanil or remifentanil as opioids but not morphine. Other aspects of anaesthesia and use of analgesic adjuncts such as NSAIDs, paracetamol, and dexamethasone at the discretion of the primary anaesthetist. Written informed consent will be obtained from the patients.

Study procedure: Subjects will be asked to use a 10cm visual analogue scale (VAS) to rate the pain of both *iv* cannulation and injection of 30mg (3 ml) of propofol. Various aspects of anaesthesia, including all drugs administered in theatre and PACU will be recorded. The effect-site levels of opioids will be calculated by entering dose and time information into a spreadsheet.

Analysis: The primary analysis will compare the PACU opioid levels and need for supplemental analgesics in those with a VAS “response” of >20mm to the propofol bolus or IV cannulation with those where the VAS is <20. The primary hypothesis is that those with VAS >20 will have higher opioid levels than the < 20mm group.