Surgical trainee research, audit, and trials Aotearoa – an introduction into surgical collaborative research for medical students

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Abstract
Multicentre studies pose a significant challenge given the time and resources required to collect data across multiple hospitals. Student and trainee-led collaborative networks provide a vehicle with which to perform multicentre studies quickly and efficiently while empowering early career researchers. This article will outline i) what student- and trainee-led collaborative research is, ii) how this model of research has been implemented in Aotearoa New Zealand through the Surgical Trainee Research, Audit, and Trials Aotearoa (STRATA) Collaborative, and iii) how and why medical students interested in surgery should get involved.

Introduction
Medical students and trainees are incredibly motivated, intelligent, capable, and have a lot to offer to both clinical care and research. Student- and trainee-led collaborative research is a model for conducting surgical research where junior and early career researchers (including medical students, house officers, registrars, and fellows) take the lead to deliver high-quality research. This model of research is exemplified by an ethos of collaboration and teamwork, in order to produce research that is impactful and helps to inform clinical practice. Collaborative research also provides a platform to improve research literacy and disseminate research skills.

This article will outline i) what student- and trainee-led collaborative research is, ii) how this model of research has been implemented in Aotearoa New Zealand through the Surgical Trainee Research, Audit, and Trials Aotearoa (STRATA) Collaborative, and iii) how and why medical students interested in surgery should get involved.

What is collaborative research?

Structure
Student- and trainee-led research collaboratives are structurally organised through a steering committee, external advisory group, and regional networks to deliver multicentre research studies. The steering committee helps facilitate the running of the organisation. Alongside the committee is a network of students and trainees that are interested in research and bring enthusiasm and motivation to facilitate multicentre studies. Each study usually includes a steering committee that is responsible for finalising the study protocol, developing data collection pro formas (and usually a data collection portal through websites such as Research Electronic Data Capture (REDCap)), and coordinating and mobilising the network of trainees who will ultimately deliver the study. Each hospital will have a student or trainee hospital lead and supervising consultant. The consultant should direct the hospital lead towards appropriate departmental contacts who need to be aware of the study, as well as research, audit, and cultural review staff who will all need to approve the study for it to run at their site. This provides a useful opportunity to upskill hospital leads into the administrative aspects of surgical research. Finally, and most importantly, each hospital will have a group of between two to five data collectors who are the backbone of the collaborative research model. These collaborators are responsible for the collection of patient data as per strict ethical principles, in accordance with the overall study protocol. Facilitating data collection often requires coordination with nursing teams, clinical records staff, and operating theatre staff. Depending on the study, other roles include national leads, who often liaise with national governing bodies for obtaining nation-wide ethical approvals, independent data validators, who will review a portion of collected data for the second time, together with statistical analyses groups and writing groups, who are both involved in progressing the study towards publication.

Brief History
The first trainee-led surgical research collaborative was the West Midlands Research Collaborative in the United Kingdom (UK), which was formed in 2007. Since this time, the UK has seen a proliferation of trainee-led networks, which have continued to carry out high-quality research. In the UK, 99% of hospitals providing a General Surgical service have participated in one or more trainee-led collaborative studies over the past decade.
BENEFIT OF COLLABORATIVE STUDIES
Multicentre studies pose a significant challenge, particularly given the time and resources required to collect data across multiple hospitals. Collaborative trainee-led networks provide a vehicle with which to perform multicentre studies quickly and efficiently. These research networks allow surgical trainees to design, deliver, and disseminate high-quality, multicentre studies.1

The student- and trainee-led collaborative research model provides a useful approach to overcoming the hurdles associated with traditional multicentre studies. A networked approach, and the use of mini-teams, facilitates the inclusion of a larger number of patients in less time, which permits greater generalisability compared with single centre studies, which are often repeated multiple times.2 Such shared approaches decrease research waste and improve the impact of studies.3 The research benefits gained by trainees, ranging from medical students to senior registrars, is broad, including equipping them with practical academic skills and promoting future engagement in research. It gives trainees the opportunity to learn skills that include data collection, leadership, research ethics, data analysis, manuscript writing, and publishing. Collaborative projects, in part due to their ambitious scale, also offer collaborators the opportunity to be involved in impactful, meaningful, and practice-changing research.4–6

Collaborative research is published using a single corporate authorship model. The model flattens the hierarchies which are traditionally present in publications, and helps incentivize participation in collaborative studies. The success of the network is underpinned by this model, as it encourages contribution by equally recognising all collaborators (including data collectors) as citable authors on PubMed.7 This approach recognises that modern research is a team-based endeavour.8

What is STRATA?
The first New Zealand (NZ) trainee-led collaborative research network, Surgical Trainee Research Audit and Trials Aotearoa (STRATA), was created in 2018, following the success of medical students and trainees in Aotearoa in contributing to international collaborative studies such as Ileus Management International (IMAGINE), GlobalSurg-3, CHOLECOVID, and COVIDSurg Week.9–12

STRATA is supported by Clinical Trials Australia and New Zealand (CTANZ), which is an organisation coordinated by the Royal Australasian College of Surgeons (RACS). We are developing relationships with trans-Tasman surgical research collaboratives such as Trials and Audits in Surgery by Medical Students in Australia and New Zealand (TASMAN), and other Australasian collaborative networks, and international student surgical collaborative groups such as EuroSurg, a pan-European collaborative, and STudent Audit and Research in Surgery (STARSurg) in the UK.13

STRATA successfully coordinated its first study, Rural vs Urban Risks of Appendicitis Complications (RURAL), between 2019 and 2020, which was a prospective, multicentre cohort study investigating the differences in outcomes of rural vs urban paediatric patients with appendicitis. The second study conducted by STRATA, Rib Fractures in Blunt Thoracic Trauma: New Zealand Management and Outcomes (RiBZ) was a similarly designed study which was completed in mid-2021. STRATA is focused on delivering high-quality, nationally relevant studies, and provides an avenue for students and trainees to deliver surgical research pertinent to Aotearoa.

CHOLENZ
The third STRATA study is currently running in August to October 2021, and is a prospective observational cohort study investigating variation in the rates of acute, delayed, and elective cholecystectomy for benign gallbladder disease in NZ. CHOLENZ has been adapted from the CholeS study, which represents another such collaborative research project which ran in the UK.14 The study goals have been adapted to identify whether inequities in health outcomes exist for Māori. CHOLENZ represents a significant opportunity for medical students, junior doctors, and trainees to participate in research which is specific to Aotearoa New Zealand. Like STRATA’s previous studies, it provides opportunities to develop your research and leadership skills.

Future
As STRATA grows, and the idea of collaborative research gains momentum in Aotearoa, we aspire to grow in our ambition and scope. Our short-term goal is to get representation from all district health boards in Aotearoa for the studies we conduct, and through this, we hope to help develop research infrastructure in peripheral centres and introduce a regular cycle of research opportunities for students and trainees across Aotearoa. Similarly, along with this geographic breadth, we hope to get depth by having a diverse array of experiences among the STRATA networks. Students, junior doctors, registrars, and fellows all offer unique perspectives, skills, and capacities in which to conduct collaborative research, and we hope to engage individuals at all levels. As STRATA matures, we hope to expand from the prospective audits we have been conducting to-date, to deliver randomised controlled trials, to contribute definitive and gold-standard evidence to the surgical literature. In a similar vein, we hope to expand our research networks across specialties, tackle more complex research questions related to surgery, and expand our international collaborations. In particular, STRATA aims to engage and spread this modality of collaborative research with the Pacific Islands, Australia, and other international sites.

Why get involved?
STRATA offers an accessible opportunity to learn more about research, gather practical research skills, and ultimately be recognised for your efforts and contributions. As STRATA diversifies, we hope to provide interesting and unique projects that will feed directly back to inform surgical practice. Being involved in such high-quality research and audits will be a useful asset to collaborators’ curricula vitae, especially as RACS begins to acknowledge collaborative research contributions for their Surgical Education and Training (SET) specialty training programmes. However, one of the greatest benefits of collaborative research is the network of like-minded people you inevitably meet, the friends you make, and the proliferation of ideas that can be developed to alter the landscape of the profession we all aspire towards.

How to get involved?
We are constantly on the lookout for enthusiastic medical students, junior doctors, registrars, and fellows to grow surgical collaborative research in Aotearoa New Zealand. There are many roles and opportunities available within STRATA, and we hope you will contribute to the development and advancement of collaborative research in Aotearoa New Zealand. More information about STRATA, and our mailing list to keep up to date with upcoming surgical collaborative research opportunities can be found at: https://www.stratacollaboration.com. We are also active on Twitter, a platform through which regular study updates and information is disseminated: https://twitter.com/STRATA_Collab. If you have any questions, or are interested to learn more, please email us at: info@stratacollaboration.com.

In summary, STRATA is NZ’s emerging surgical collaborative for medical students and trainees. We hope to be a vessel for high-quality surgical research in Aotearoa New Zealand, and aim to deliver relevant and practice-changing research. STRATA also aims to empower medical students and trainees, and to advance surgical practice through collaboration and camaraderie.

References
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* Surgical Trainee Research, Audit, and Trials Aotearoa (STRATA) is an emerging student- and trainee-led collaborative in New Zealand.

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Conflicts of Interest

Matthew McGuinness, Cameron Wells, Ashok Gunawardene, and Chris Varghese are members of the STRATA Collaborative Steering Committee. There are no other conflicts of interest to disclose.

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