2027 Summer Research Project Template

Help us present your project in a way that connects with the right students. Thoughtful, engaging descriptions tend to attract stronger and more suitable applications. Thank you for putting a project forward - these programs rely on your contribution, and we couldn't do it without you.

Section	Description
Project title	From clinical trial data to patient outcomes: understanding and measuring outcomes in the PuMPS trial
Hours & delivery	**25-30 hours per week for 6 weeks** **Delivery:** Hybrid, with in-person and remote activities as appropriate. **Location:** The University of Queensland / The Prince Charles Hospital
About the project (150–250 words)	The PuMPS trial is an international, multicentre randomised controlled trial involving cardiac surgery centres across Australia, New Zealand, the United Kingdom, Europe and the United States. The trial is investigating whether pulsatile flow during cardiopulmonary bypass can improve recovery and clinical outcomes after high-risk cardiac surgery. To answer this question, the research team needs to turn information collected from patients into reliable, clearly defined outcomes. In this project, you will explore how this process works using real, de-identified data from the PuMPS trial. You will examine how different clinical outcomes are defined and what information is needed to measure them consistently. Examples include acute kidney injury using KDIGO criteria, major adverse kidney events at 90 days (MAKE-90), days alive and out of hospital, postoperative delirium and recovery measures. You will investigate whether the data collected are sufficient to derive these outcomes, identify missing or inconsistent information and apply the relevant definitions to the available data. You will then explore what these outcomes tell us about patients' recovery following major cardiac surgery. The project will provide a behind-the-scenes look at an important part of clinical research: how researchers turn data collected from individual patients into robust outcomes that can ultimately be used to answer clinical questions and improve patient care.
What you'll do (100-150 words)	You will work with the PuMPS research team to investigate how clinical trial data are translated into patient outcomes. Activities will include reviewing selected endpoint definitions, identifying the data required to derive them, applying definitions to de-identified trial data, assessing data completeness and consistency, and investigating any gaps or unexpected results. You will work with examples from across the trial, including renal outcomes such as KDIGO-defined acute kidney injury and MAKE-90, days alive and out of hospital, delirium and postoperative recovery measures. You will also have the opportunity to explore how different types of clinical data contribute to an endpoint and how apparently straightforward clinical outcomes can become complex when applied to real patient data. You will discuss your findings with the research team and contribute recommendations for improving the quality and analysis-readiness of the trial data.
What you'll learn (100–150 words)	You will gain an understanding of how clinical trial data are transformed into meaningful clinical outcomes and why careful endpoint definition is important to high-quality research.

	You will develop practical skills in working with clinical datasets, interpreting clinical outcome definitions, assessing data quality and applying standardised criteria to patient data. Through examples such as KDIGO-defined acute kidney injury, you will gain experience applying clinical definitions to individual patient data and considering how different measurements contribute to an outcome. You will also learn about the challenges involved in preparing real-world clinical trial data for analysis and how researchers identify and investigate missing, inconsistent or unexpected information. Working with the PuMPS research team will provide insight into how clinicians, researchers and statisticians work together to ensure that clinical trial data can answer the questions the study was designed to address.
Project outcomes (75–125 words)	By the end of the six-week project, you will have contributed to the development and testing of approaches for deriving selected clinical outcomes from PuMPS trial data. Expected outputs include a documented mapping of selected endpoints to the data required to measure them, an assessment of relevant data completeness and quality, and preliminary application of endpoint definitions to the available data. You will also prepare a short written report and/or presentation outlining your methods, findings and recommendations. The work will help identify any data or endpoint issues that should be addressed before the main PuMPS analysis.
Who should apply? (75–125 words)	This project would suit undergraduate students with an interest in medicine, clinical research, surgery, intensive care, nephrology, epidemiology, statistics or health data. It may be particularly suitable for students considering a future career in academic medicine, clinical research or postgraduate research. We are looking for students who are curious, analytical and interested in how clinical information is used to answer research questions. Good attention to detail and an ability to work systematically are important. Previous experience with statistics, data analysis or clinical research is helpful but not essential. The project offers the opportunity to work with data from a large international clinical trial and see how research is coordinated across different clinical and research settings.
Team & supervision (75–125 words)	You will join the PuMPS research team at UQ and Qld Health sites and work within a multidisciplinary clinical research environment. The project will be supervised by A/Prof Jonathon Fanning, Chief Investigator of the PuMPS trial, with day-to-day support from members of the trial research team. You will work alongside researchers involved in clinical trial coordination, data management and clinical outcome assessment. Regular meetings will provide opportunities to discuss your approach, review findings and understand how the work contributes to the wider PuMPS trial. You will be supported in developing your analytical approach and will have opportunities to learn from researchers working across the clinical and methodological aspects of the trial.
Additional opportunities (optional)	Students will be introduced to the broader PuMPS research program and have opportunities to attend research meetings and interact with clinicians and researchers involved in the trial. They may have opportunities to present their findings within the research group or at the UQ Research Showcase. Their work may also contribute to future presentations or publications arising from the PuMPS trial.
Additional requirements (if applicable)	Students will complete relevant UQ research, privacy and health and safety training before commencing the project. The project will use de-identified research data, and students will not be provided with access to hospital clinical records systems or identifiable patient information.

Contact	(Yes/~~No~~), students (may/~~may not~~) contact the supervisor before applying. Direct enquiries to: PUMPS.trial@hmbs@uq.edu.au