

Summer Studentships 2026/2027

PROJECT TITLE:

Cannabis Hyperemesis Syndrome in the Wellington Emergency Department: A Ten-Year Retrospective Cohort Study of Clinical Presentation, Acute Management, and Re-attendance Patterns

AIM:

To characterise the frequency, clinical presentation, acute emergency department (ED) management, and re-attendance patterns of Cannabis Hyperemesis Syndrome (CHS) presenting to Wellington Regional Hospital Emergency Department over a ten-year period (2005–2025).

METHODS:

Retrospective observational cohort study at Wellington Regional Hospital Emergency Department. All patients attending Wellington ED during the study period (1 January 2015 to 31 December 2025) with an ED discharge diagnosis of Cannabis Hyperemesis Syndrome (CHS) or a clinically equivalent coding (e.g. cyclical vomiting in the context of cannabis use) are eligible for inclusion. Patients will be identified through ICD-10 discharge coding, supplemented by cross-referencing with the Wellington Hospital Hazardous Substance Register — a prospective, clinician-completed surveillance database maintained continuously for over twenty years. Ethical approval and REDCap database configuration will be completed by the supervisory team before data collection commences. All data will be de-identified and stored on the University of Otago REDCap server in accordance with data confidentiality policies. No patient contact is involved.

The primary objectives are to characterise: (i) the annual frequency of CHS presentations across the study period and longitudinal trends over time; (ii) the demographic profile of affected patients, including age, sex, and prioritised ethnicity; (iii) presenting clinical features, including triage vital signs, symptom pattern (cyclical vomiting, abdominal pain, compulsive hot-water bathing behaviour), and associated biochemical disturbances; (iv) rates of serious complications, including spontaneous pneumomediastinum, Mallory–Weiss mucosal tears, aspiration pneumonitis, and clinically significant electrolyte disturbances; (v) acute ED management, including antiemetic agent selection, intravenous fluid administration, and use of topical capsaicin; and (vi) discharge practices, including documentation of cannabis cessation advice and referral to drug and alcohol services. A secondary objective is to characterise re-attendance patterns, including the proportion of patients with two or more ED presentations meeting CHS diagnostic criteria.

The following variables will be extracted from electronic health records and the Hazardous Substance Register for each eligible presentation: patient age, biological sex, and prioritised ethnicity (Statistics NZ classification); date and time of ED attendance; presenting symptoms; triage vital signs; serum electrolytes, renal function, and acid–base status; identification and classification of serious complications as listed above; antiemetic agents administered and route; intravenous fluid volume and type; use of topical capsaicin; ED disposition (discharge, inpatient admission,

ICU); ED and inpatient length of stay; documentation of cannabis cessation advice; referral to drug and alcohol services; and National Health Index (NHI) number for re-attendance linkage.

Patient characteristics and primary outcome variables will be reported as frequencies and proportions with 95% confidence intervals. Annual presentation volumes and re-attendance rates will be reported over the study period. ED and inpatient length of stay will be described as medians with interquartile ranges. Complication rates and the completeness of discharge management (cessation advice, follow-up referral) will be reported and compared across calendar periods.

RESEARCH SIGNIFICANCE:

Cannabis Hyperemesis Syndrome is an increasingly recognised but frequently delayed or missed diagnosis in emergency medicine. It presents as cyclical, often intractable nausea, vomiting, and abdominal pain — characteristically relieved by compulsive hot-water bathing, a feature that can be diagnostically useful when it is elicited but is often absent from routine clinical documentation. Growing evidence implicates high-THC, low-cannabidiol cannabis as the principal driver of susceptibility, likely through prolonged CB1 receptor overstimulation disrupting hypothalamic thermoregulatory and emetic pathways. Whether it is specifically the THC:CBD ratio that matters, or simply cumulative THC exposure, remains an open question with direct relevance for harm reduction messaging — particularly as higher-potency extracts, vapes, and edibles become more widely available in Aotearoa New Zealand.

CHS presentations tend to recur and carry real clinical risk. Serious complications include spontaneous pneumomediastinum from forceful vomiting, Mallory–Weiss mucosal tears, aspiration pneumonitis, and electrolyte disturbances from prolonged vomiting and dehydration. These are not trivial outcomes. Patients may attend multiple times before a diagnosis is established or cannabis cessation achieved, generating a cycle of re-presentations that places real burden on ED resources. The true frequency of these complications, and the extent of re-attendance, in a real-world New Zealand ED population over time are currently unknown.

New Zealand-specific epidemiological data on CHS are essentially absent. Wellington Regional Hospital ED, with an annual attendance volume of approximately 65,000 and a Hazardous Substance Register maintained for over twenty years, provides a uniquely detailed longitudinal window into how CHS presentations have evolved alongside changing cannabis use patterns, legislative reform, and growing clinical familiarity with the condition. This study will, for the first time, characterise the CHS clinical burden at a New Zealand ED over a sustained time horizon. The findings will directly inform practice by identifying gaps in recognition and management — including antiemetic choice, and the frequency with which cannabis cessation counselling and community follow-up are offered. These are modifiable elements of care. The study will also provide the pre-intervention baseline required to evaluate any future clinical pathway changes, and will position Wellington ED to contribute to prospective CHS research as higher-potency cannabis products become more prevalent.

STUDENT'S ROLE AND EXPOSURE TO SCIENTIFIC METHOD:

The student will undertake systematic retrospective data extraction from electronic health records and the Wellington Hospital Hazardous Substance Register, working within the standardised extraction protocol and pre-specified data dictionary developed by the supervisory team. The role encompasses identification of all eligible CHS presentations across the ten-year study period, application of inclusion and exclusion criteria, and extraction of the full variable set — including clinical presentation features, acute management decisions, complication

documentation, discharge practices, and re-attendance data — into the pre-configured REDCap database. A specific component of the work involves applying the clinical case definition for CHS to identify confirmed cases from within the broader set of coded presentations. Full training and ongoing guidance will be provided; no prior clinical or research experience is required. No patient contact is involved. With supervision from Dr Rogan, Dr Quigley and Professor Glass, and with access to biostatistical support, the student will participate in all stages of analysis: data cleaning, descriptive reporting, characterisation of complication rates and management practices, temporal trend analysis, and assessment of re-attendance patterns. They will be supported in interpreting findings within the international CHS literature and in developing conclusions relevant to New Zealand emergency medicine practice and harm reduction. The studentship concludes with preparation and presentation of a poster. There is a realistic prospect of contributing to a peer-reviewed publication arising from this work.

RELEVANT PREVIOUS EXPERIENCE FOR STUDENTS (Education or Research):

Best suited to medical students, given the need to interpret clinical notes and health records. No prior research experience is required. The work is desk-based, the student will be based in an office alongside other summer students, and suits someone methodical and precise, as consistent data extraction is central to the role. An interest in emergency medicine, addiction medicine, toxicology, or public health would be an advantage. Some familiarity with cannabis pharmacology and the clinical presentation of nausea and vomiting syndromes is helpful but not a prerequisite; the relevant clinical background, the CHS case definition, and the data extraction framework will be fully explained by the supervisory team. Training in REDCap and data management will be provided.

Main supervisor:	Dr Alice Rogan	
Email address:	alice.rogan@otago.ac.nz	
Other Supervisor/s:	Professor Michelle Glass, University of Otago, Wellington; Dr Paul Quigley, Wellington Regional Hospital ED	
Host Department:	Department of Surgery and Critical Care University of Otago, Wellington	
Location:	Wellington Regional Hospital Emergency Department	
	Can students work remotely?	Negotiable but need access to clinical systems which may better suit an in person role or Wellington base.