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Protocol and statistical analysis plan for the mega randomised registry trial comparing conservative vs. liberal oxygenation targets in adults with nonhypoxic ischaemic acute brain injuries and conditions in the intensive care unit (Mega-ROX Brains)

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[a] Intensive Care Unit, Wellington Hospital, Wellington, New Zealand
[b] Medical Research Institute of New Zealand, Wellington, New Zealand
[c] Australian and New Zealand Intensive Care Research Centre, Monash University, Melbourne, VIC, Australia
[d] Department of Critical Care, University of Melbourne, Melbourne, VIC, Australia
[e] Department of Anesthesia, Critical Care Medicine, and Pain Medicine, Al-Amiri Hospital, Ministry of Health, Kuwait
[f] Kuwait Extracorporeal Life Support Program, Al-Amiri Center for Respiratory and Cardiac Failure, Ministry of Health, Kuwait
[g] Nepal Intensive Care Research Foundation, Kathmandu, Nepal
[h] College of Medicine, King Saud Bin Abdulaziz University for Health Sciences, King Abdullah International Medical Research Center, And Intensive Care Department, King Abdulaziz Medical City, Ministry of National-Guard Health Affairs, Riyadh, Saudi Arabia
[i] Department of Anesthesia and Critical Care Unit, Lady Reading Hospital, Peshawar, Pakistan
[j] Department of Critical Care Medicine, University of Alberta, And the Critical Care Strategic Clinical Network, Alberta Health Services, Edmonton, AB, Canada
[k] Department of Anaesthesiology and Intensive Care, School of Medicine, International Islamic University of Malaysia, Pahang, Kuantan, Malaysia
[l] Centre for Inflammation Research, University of Edinburgh, Edinburgh, United Kingdom
[m] National Intensive Care Surveillance - MORU (NICS-MORU), Colombo, Sri Lanka
[n] Department of Anesthesia and Intensive Care, IRCCS San Raffaele Scientific Institute, Milan, Italy
[o] Department of Critical Care Medicine, Sultan Qaboos Comprehensive Cancer Care and Research Center, Muscat, Oman
[p] Intensive Care Unit, Jikei University Hospital, Tokyo, Japan
[q] Department of Health Promotion and Human Behavior, Kyoto University School of Public Health, Kyoto, Japan
[r] Nuffield Department of Medicine, University of Oxford, Oxford, United Kingdom
[s] University College Hospital, London, United Kingdom
[t] The Intensive Care Unit, Alfred Health, Melbourne, VIC, Australia
[u] The George Institute for Global Health, Sydney, NSW, Australia
[v] Department of Critical Care Medicine, Fortis Escorts Hospital, Jaipur, India
[w] School of Medicine and Medical Sciences, University College Dublin, Ireland
[x] Department of Anaesthesia and Intensive Care, St Vincent's Hospital, Dublin, Ireland
[y] University College London, Institute of Health Informatics, London, United Kingdom
[z] Division of Surgery and Interventional Science, University College London, London, United Kingdom
[aa] HCor Research Institute, São Paulo, Brazil
[ab] Brazilian Research in Intensive Care Network – BricNet, Brazil
[ac] School of Public Health and Preventive Medicine, Monash University, Melbourne, VIC, Australia

Abstract
Background: The effect of conservative vs. liberal oxygen therapy on 90-day in-hospital mortality in adults who have nonhypoxic ischaemic encephalopathy acute brain injuries and conditions and are receiving invasive mechanical ventilation in the intensive care unit (ICU) is uncertain. Objective: The objective of this study was to summarise the protocol and statistical analysis plan for the Mega-ROX Brains trial. Design, setting, and participants: Mega-ROX Brains is an international randomised clinical trial, which will be conducted within an overarching 40,000-participant, registry-embedded clinical trial comparing conservative and liberal ICU oxygen therapy regimens. We expect to enrol between 7500 and 9500 participants with nonhypoxic ischaemic encephalopathy acute brain injuries and conditions who are receiving unplanned

invasive mechanical ventilation in the ICU. Main outcome measures: The primary outcome is in-hospital all-cause mortality up to 90 d from the date of randomisation. Secondary outcomes include duration of survival, duration of mechanical ventilation, ICU length of stay, hospital length of stay, and the proportion of participants discharged home. Results and conclusions: Mega-ROX Brains will compare the effect of conservative vs. liberal oxygen therapy regimens on 90-day in-hospital mortality in adults in the ICU with acute brain injuries and conditions. The protocol and planned analyses are reported here to mitigate analysis bias. Trial Registration: Australian and New Zealand Clinical Trials Registry (ACTRN 12620000391976). © 2023 The Author(s)

Author Keywords
Critical care; Hyperoxaemia; Hypoxaemia; Intensive care; Oxygen; Oxygen therapy; Stroke; Subarachnoid haemorrhage; Traumatic brain injury

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Correspondence Address
Young P.J.; Intensive Care Unit, email: paul.young@ccdhb.org.nz

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