

## **Lay Abstract**

The intensive care unit (ICU) treats the most seriously ill patients in the contemporary health care system. Because of pre-existing illnesses and a high prevalence of infection - both as an admitting diagnosis and as a complication of ICU care – up to 75% of ICU patients are exposed to antibiotics during their ICU stay, and colonization or infection with resistant organisms is common. Patterns of resistance vary strikingly around the world, however, suggesting that there are potentially modifiable factors that can be targeted to minimize the emergence of resistance. We will leverage the collective resources of the International Forum for Acute Care Trialists (InFACT), a global network of close to 30 organizations that conduct investigator-led research into the optimal care of critically ill patients, to design a geographically representative surveillance program to track antimicrobial resistance in ICUs around the world, and to identify environmental and practice-dependent risk factors that are amenable to change. During this initial phase of the program we will conduct a scoping review to identify key data elements to include in this surveillance program, and to determine the simplest and most cost-effective manner of capturing key data. In collaboration with InFACT programs to map global capacity for critical care, to define the denominator in international prevalence studies, and to define the incidence of severe acute respiratory infection treated within the ICU, we will develop a pilot network of ICUs to launch the Antimicrobial Resistance in Intensive Care (AMRIC) network. Finally we will use the data from these initial activities to develop a business plan and to seek long term sustainable funding. The global challenge of antimicrobial resistance requires global solutions. By addressing the impact of a venue within the health care system that is a major user of antibiotics and a key reservoir of resistant organisms, and ultimately doing so on a comprehensive international level, we seek to support efforts to address a major health challenge of the 21<sup>st</sup> century.

## **Partners**

**John Marshall, CANADA.** Professor of Surgery and Critical Care Medicine, University of Toronto; Senior Scientist Keenan Research Centre for Biomedical Science; Chair International Forum for Acute Care Trialists; Vice-chair ISARIC; Secretary-General WFSICCM.

**Rob Fowler, CANADA.** Associate Professor of Medicine, University of Toronto; Senior scientist, Evaluative Clinical Sciences, Sunnybrook Research Institute; Associate director, Institute of Health Policy, Management and Evaluation, U of T; Consultant, World Health Organization, Department of Pandemic and Epidemic Diseases, Geneva, Switzerland.

**Nick Daneman, CANADA.** Assistant Professor of Medicine, University of Toronto; Scientist, Evaluative Clinical Sciences, Sunnybrook Research Institute.

**Srinivas Murthy, CANADA.** Clinical Assistant Professor, Department of Pediatrics, University of British Columbia; Clinical Investigator, Child and Family Research Institute, University of British Columbia; lead investigator for the SPRINT-SARI study, a short period incidence study of severe acute respiratory infection.

**Anthony Gordon, UNITED KINGDOM** Chair of Anaesthesia and Critical Care, Imperial College London; NIHR clinical trials fellow.

**Michael Bauer, GERMANY** Professor & Chair, Dept. of Anaesthesiology and Intensive Care Therapy Friedrich-Schiller-University, Jena; Chief-Executive Director Center for Sepsis Control and Care, Jena University.

**Miguel Sánchez García, SPAIN** Associate Professor of Medicine, Universidad Complutense Madrid; Director Critical Care Department, Hospital Clínico San Carlos, Madrid, Spain, for the Spanish InFACT Network.

The AMRIC collaboration will report to an Advisory Reference Group chaired by **Dr. Tom Marrie**, Past-Dean Dalhousie University, Halifax and University of Alberta, and whose members include **Professor Peter Horby**, Professor of Emerging Infectious Diseases and Global Health Oxford University, **Professor Steve Webb**, Clinical Professor of Medicine, Epidemiology and Preventive Medicine, University of Western Australia and Monash University, **Professor Tom van der Poll**, Professor of Infectious Diseases, Academic Medical Center, Amsterdam, **Professor Jean Carlet** Professor Emeritus of Intensive Care, Paris University, FRANCE, **Professor Muhammad Mamdani**, Professor of Pharmacology and Medicine, and the Institute of Health Policy, Management and Evaluation of the Dalla Lana Faculty of Public Health, University of Toronto CANADA.

### Timelines for the AMRIC Program

