The Charles Campbell Toxinology Centre at the University of Papua New Guinea (PNG) is part of a collaboration led by a team of international researchers to improve, and better understand the problem of snakebite envenoming in PNG.

More than 3,500 people are bitten by venomous snakes each year across the country, and many receive no effective treatment. In some parts of PNG, snakebite kills 3 times more people than malaria, and even in Port Moresby General Hospital’s ICU, the fatality rate among children has been as high as 26% within the last 15 years.

The problem has been made worse by the high costs of antivenoms, and subsequent shortages which have left up to 90% of health centres without access to these life-saving medicines. Our team have developed a new antivenom to solve this problem.

The Australian Venom Research Unit-UPNG Snakebite Research Project (AVRU-UPNG) is led by Dr David Williams, the Head of the Australian Venom Research Unit at the University of Melbourne in collaboration with scientists and doctors from the University of PNG’s School of Medicine & Health Sciences and several international research centres.

The project has a strong focus on improving the clinical management of snakebite in a resource relevant manner, and combines clinical research with applied field and laboratory studies, health worker training courses and community education.

A major undertaking has been the successful development of a new antivenom for treating people bitten by Papuan taipan snakes. This new treatment has undergone clinical trials at Port Moresby General Hospital over the last 3 years, and holds the promise of reducing the cost of antivenom treatment by up to 75%.

Understanding the clinical effects of snakebite envenoming by different species of snakes is crucial to improving the care of bitten patients. Long-term research at PNGHealth has sought to identify the major causes of mortality after snakebite, and to develop improved protocols and procedures to address key deficiencies.

New adult and paediatric treatment protocols have been devised, and in conjunction with health worker training initiatives, the use of these protocols has seen a reduction in mortality rates and a shortening of hospital admission times, freeing up valuable resources, as well as seeing more patients survive.

In the laboratory, basic research into the composition of PNG snake venoms has lead to a much better understanding of why snakebite victims present with certain medical problems, and has suggested new treatment approaches.
The most effective tool for improving the treatment of snakebite is the provision of situationally-relevant training and education to PNG Health Professionals. A number of partners and sponsors have been assisting the AVRU-UPNG Snakebite Project to conduct comprehensive snakebite management training courses in Port Moresby, Madang and other parts of PNG, as well as supporting site visits to rural health facilities in a number of other provinces. Australian government support will see our staff their visits to rural communities in 2016-17.

Papua New Guinea is one of only a few countries in the world where ground-level health workers have an opportunity to receive specific training in the management of snakebite through intensive course curriculums, designed specifically for local conditions. Two courses are offered. A comprehensive 5-day course to teach the fundamentals, and a specialised Emergency & Intensive Care course for hospital personnel. Both curriculums recognise that many hospitals and health centres have only basic resources and teaching is specifically focussed on interventions using resources that are available.

The first PNG Snakebite Management Course was taught at the University of PNG in September 2004, and since then more than 1,500 Health Professionals have attended courses taught by an international faculty of volunteer experts who give their time to help improve outcomes for all Papua New Guineans.

A fundamental aspect of the snakebite training course curriculum is providing a solid grounding in many of the basic requirements of emergency health care, including CPR and airway management training, history taking & physical examination skills training, fluid resuscitation, phlebotomy techniques, and medical note-taking and reporting. These are all basic skills that have broader applications beyond just the treatment of snakebite patients, and this approach is part of what makes these courses so successful. In addition the courses teach a variety of airway and breathing intervention and support techniques that can be life-saving in cases of neurotoxic snakebite where airway obstruction is a major killer.