# INVITED SPEAKERS

**Associate Prof. Dr. Rex Pui Kin Lam** is an Assistant Dean of HKU Health System and Clinical Associate Professor of Practice in Emergency Medicine at the University of Hong Kong. They are also an Honorary Consultant of Queen Mary Hospital and Pamela Youde Nethersole Eastern Hospital. They served as the inaugural Chair of Specialty of the 24-hour Outpatient and Emergency Department of Gleneagles Hospital Hong Kong under the HKU Health System from 2017 to 2022. Before joining HKU, they were the Deputy Service Director of the Hong Kong East Cluster Quality and Safety Office of the Hospital Authority. The individual has a strong interest in clinical toxicology related to recreational drugs and has completed two territory-wide poison centre-based research projects funded by the Beat Drugs Fund Association in Hong Kong. These projects have improved our understanding of local trends, misuse patterns, clinical presentations, and healthcare burdens of different recreational drugs.

## Development of clinical diagnostic or prediction tools from poison centre data in Hong Kong - Aconite poisoning as an example

Poison centres are an important data source for the development of clinical diagnostic or prediction tools to improve recognition and treatment of poisoning. Drawing on the example of aconite poisoning, this talk aims to walk the audience through the process of derivation and validation of clinical diagnostic or prediction tools for acute poisoning.

Aconitum alkaloids found in traditional Chinese medicine (TCM) such as ‘Chuanwu’, ‘Caowu’ and ‘Fuzi’ are potent cardiotoxins and neurotoxins. Timely diagnosis of aconite poisoning remains challenging due to the long laboratory turnaround time for confirmation of exposure.

Based on the Hong Kong Poison Control Centre’s data collected over the past 13 years, we conducted a retrospective study to derive and internally validate a clinical diagnostic score for rapid recognition of aconite poisoning using clinical parameters before laboratory confirmation. The gold standard was the detection of aconitine or related alkaloids with LC-MS in a biological specimen of the included patient. Univariate analyses, followed by multivariable logistic regression were performed to identify independent predictors for laboratory-confirmed aconite poisoning. A scoring system was developed based on the regression coefficients of the significant predictors. The overall risk score for each patient was calculated by adding the scores for each component together. Internal validation was then performed using bootstrapping with 1,000 random sampling with replacement.

Within the study period, we identified 542 cases of laboratory-confirmed TCM poisoning, of which 179 cases involved Aconitum spp. and 363 cases involved other herbs. A clinical diagnostic score was developed based on the six independent predictors: Hypotension <90 mmHg (3 points), TCM formulation (2 points), facial/oral numbness (2 points), ventricular tachycardia (1 point), limb numbness (1 point), and atrial or ventricular ectopics (1 point). The total score is 10 and a higher score indicates a higher likelihood of aconite poisoning. At the cut-off point of 3, the sensitivity, specificity, positive and negative likelihood ratios of the clinical diagnostic score were 0.98, 0.77, 4.28 and 0.03, respectively. The area under the receiver operating characteristic curve was 0.97 (95% confidence interval [CI] 0.95–0.98) in the derivation cohort, and 0.96 (95% CI 0.95–0.98) during internal validation.

This study demonstrates how poison centre data can be utilised to aid clinical diagnosis of aconite poisoning. We will also discuss the limitations and further research steps that are necessary for external validation and evaluation of the effectiveness of the clinical diagnostic score before its wider clinical application.