Plenary lecture I

The Role of AI in the Management of Critical Patients in the ED

時間：2026 年 6 月 26 日(五) 11:20~11:55
會議室：101 會議廳
座長：李建璋處長(衛生福利部資訊處)、黃建華局長(臺北市政府衛生局)
主講人：Adam J Singer (Renaissance School of Medicine at Stony Brook University)
課程簡介

Artificial intelligence (AI) is rapidly transforming healthcare, particularly in high-acuity environments such as emergency departments (EDs) and critical care units.

Emergency physicians routinely manage time-sensitive conditions including airway compromise, cardiac arrest, severe trauma, and sepsis, where rapid diagnosis and intervention are critical for survival. AI technologies—including machine learning, deep neural networks, natural language processing, and real-time physiologic monitoring—offer new opportunities to enhance clinical decision-making, improve patient outcomes, and optimize resuscitation strategies. Emerging applications include prediction of difficult airway management, optimization of mechanical ventilation weaning, AI-guided cardiopulmonary resuscitation (CPR), early detection of hemorrhage and traumatic coagulopathy, improved triage of trauma patients, and early identification of sepsis. These tools can analyze complex physiologic data streams and electronic health record (EHR) data more rapidly than traditional clinical scoring systems. However, significant challenges remain, including algorithm transparency, generalizability, integration into clinical workflows, and ethical considerations regarding decision support in life-critical scenarios. This review summarizes current and emerging applications of AI in the emergency management of critically ill patients and discusses the opportunities and challenges associated with implementing AI-driven technologies in emergency medicine and critical care.

Adam J Singer
Organization：Renaissance School of Medicine at Stony Brook University, Stony Brook, NY, USA
Title：Distinguished Professor of Emergency Medicine and Surgery
Current positions：Director, Center of Excellence for Research and Clinical Trials

Dr. Singer is recognized as an international leader in emergency medicine, with over 500 publications and millions of dollars in research funding. His research focuses on cutaneous wound healing, burns, tissue adhesives, point-of-care testing, pain management, and cardiovascular disease.

Dr. Singer has held multiple leadership positions, including serving as the past Secretary-Treasurer of the Society for Academic Emergency Medicine. He is also a member of various committees within the American College of Emergency Physicians (ACEP) and the American Heart Association (AHA). His contributions to the field have been recognized with several national awards, including the American College of Emergency Physicians Outstanding Contribution in Research Award and the Society for Academic Emergency Medicine's Junior Investigator Award.

In addition to his research and leadership roles, Dr. Singer serves as the Editor-in-Chief of Clinical and Experimental Emergency Medicine and is on multiple editorial boards, reviewing for various journals within emergency medicine and other specialties. He has authored several textbooks, including Emergency Medicine Pearls, Lacerations and Acute Wounds: An Evidence-Based Guide, and Skin and Soft Tissue Injuries and Infections: A Practical Evidence-Based Guide.

Dr. Singer's extensive contributions to emergency medicine and his commitment to advancing medical research have solidified his reputation as a leading expert in the field.