

研發建置搭配穿戴式感測器的AIoTCPR互動網， 以突破目前傳統CPR上課的困境

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摘要

心臟衰竭是指心臟突然停止，以至於血液無法流動造成休克現象。在醫院內發生的心臟衰竭個案，每一年在美國約主二十九萬的成人，其中約小於二十五人會活著離開醫院。關於在醫院發生心臟衰竭後的存活率，主要跟進行心肺復甦術(CPR)急救過程有關餘，全世界急救指引來進行心肺復甦術(CPR)，包括以指引為急救的CPR是指包括節奏、速度快慢等，會影響到被施救者的存活。目前已經有很多研究顯示，我們的CPR急救品質，急救者不管是護理、醫師、目擊的一般民眾的常備訓練，會影響到病人的存活。所謂的品質是包括是否正確壓胸的深淺、回彈的速度、節奏與頻率等。所以我們必須讓全國民眾，熟悉基本CPR原則，在美國心臟學會建議與呼籲用多元資訊化的方法做教育訓練，讓使用者有反覆練習的機會，能改善病人因心臟衰竭死亡的狀況。當中可用創新方法，包括資訊工具搭配可攜帶式與穿戴式的感測器，來測量心臟壓胸速度以及深度。最近研究指出，CPR存活率主要是說CPR是否有被明確地去監測、分析、反饋，提供學習者與施救者對自我狀況的了解。所以本研究是希望發展出對使用者友善的APP結合感測器為基礎訓練系統，提供給全國民眾自我常備訓練，不管是否有醫事背景，皆可以提高民眾存活率。

關鍵詞:心臟衰竭、心肺復甦術、可攜帶式與穿戴式的感測器、使用者友善的APP。

Abstract

Cardiac arrest occurs when the heart suddenly ceases its normal activity of circulating blood throughout the body. In-hospital cardiac arrest (IHCA) affects over 290,000 adults annually in the United States, with <25% surviving to hospital discharge. Survival from IHCA has been shown to be associated with resuscitation processes such as guideline-based cardiopulmonary resuscitation (CPR). While guideline-based CPR has been shown to be a significant contributor to survival, numerous studies have found that CPR quality performed by healthcare providers, for example, nurses and physicians, and witness is often outside of guideline recommendations, with shallow chest compression (CC) depths and variable CC rates. So, it is important to help nationwide population to familiar with the basic principle of CPR. The American Heart Association (AHA) released a scientific statement on educational strategies to improve outcomes from cardiac arrest; highlighted within that statement was the need to consider more innovative solutions for CPR training and education, including the use of digital strategies such as portable and wearable sensor for measuring average chest compression (CC) rate and depth during post-simulation testing. Studies have found that the quality of CPR and survival are significantly improved when providers guide their CPR in conjunction with App and sensor. So, in this study, we aimed to develop the user-friendly App and sensor-based CPR training system for nation-wide population either with and without medical training.

Keywords: Cardiac arrest、cardiopulmonary resuscitation、portable and wearable sensor、user-friendly App