Method We performed a cluster randomised trial of community CPR training classes at Nowra District Health Community Centre in Seoul. CPR training classes were randomised into either intervention (instructor’s objective real-time feedback based on the QCPR Classroom device or control (conventional, instructor’s judgement-based feedback) group. Laerdal QCPR Classroom software is a real-time feedback device, which monitors quality of real-time CPR performances of multiple trainees simultaneously. During each training session, trainees practiced CPR five times. The primary outcome was the total CPR score, which is an overall measure of chest compression quality. Secondary outcomes were individual CPR performance parameters, including average number of compressions, average compression depth, percent adequate depth and percent acceptable release. Generalised linear mixed models were used to analyse the outcome data, accounting for both cluster- (random effect) and individual- (fixed effect) level factors. A total of 149 training sessions (2613 trainees) were randomised into 70 intervention (1262 trainees) and 79 control (1351 trainees) groups. During the training, trainees in the QCPR feedback group significantly increased overall CPR score compared with those in the conventional feedback group (model-based mean Δ increment from baseline to session 5: 11.2 (95% CI: 9.2 to 13.2) and 8.0 (6.0–9.9), respectively) with statistically significant between group difference (p=0.02). Individual parameters of compression depth and release also showed higher improvement among trainees in QCPR group with marginal significance (p<0.08 for both).

Results In this randomised trial, QCPR-Classroom based feedback during the CPR training session resulted in improved overall CPR quality. In this randomised trial, QCPR-Classroom based feedback during the CPR training session resulted in improved overall CPR quality. This suggests beneficial effect of instructor’s real-time objective feedback on the quality of layperson’s CPR performance.

Conclusion The training equipment used in this study (QCPR Classroom) was supported by the Laerdal Medical, but had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data.

Conflict of interest None

Funding None

![Abstracts]

**LAY RESPONDER POST ARREST SUPPORT MODEL: METHODOLOGY & CONCEPTUAL DESIGN**

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Aim As early as 1993, consideration of the psychological effect of providing CPR on bystanders emerged as an under-appreciated concern. One consideration is the ethics of asking people to respond to such emergencies without proper support.

Method The Lay Responder Support Model (LRSM) emerged from the analysis of the data collected after debriefings with 64 lay-responders that participated in an out-of-hospital cardiac arrest. During the first conversations, participants identified the effects of mental trauma, which led to formalise the debriefing process and data collection tools. The program now involves 3 stages: Identifying and Engaging, Debriefing and Follow-up, and Referral for Professional Support.

Results Almost all the cases, lay-responders communicated their appreciation concern. One consideration is the ethics of asking people to respond to such emergencies without proper support.
like disasters. The LRSM design now supports engagement with lay responders very early in post-event period, and informed by continual findings.

**Conclusion** The LRSM provides a structured framework to capture information about witnessing a SCA from the lay-responders involved the role they played, actual clinical records, and to identify areas of support for lay-responder’s residual mental health. It potentially goes beyond cardiac arrest situations and may prove helpful to psychological first aid providers and other public health organisations identifying and referring people to appropriate resources.

**Conflict of interest** None

**Funding** Employer – Peel Regional Paramedic Services.

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**HEALTH ECONOMIC ANALYSIS OF LOW-DOSE METHOXYPFLURANE (LDM) FOR THE TREATMENT OF MODERATE-TO-SEVERE TRAUMA PAIN IN SWEDEN**

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**Aim** Inadequately treated trauma pain can lead to prolonged and unnecessary patient suffering, as well as lengthen hospital stay.1,2 LDM (Penthrox®) is an inhaled analgesic indicated for emergency relief of moderate-to-severe pain in conscious adult patients with trauma and associated pain.3 The aim of this study was to assess the impact of introducing LDM in the pre-hospital setting for a European healthcare system.

**Method** A health economic model was developed from the Swedish healthcare system perspective to evaluate outcomes and resource use associated with LDM vs standard of care (morphine injection, fentanyl nasal spray and ketamine injection) over a 5 year time horizon. Model inputs included time to first pain medication treatment, drug acquisition, administration and equipment costs, practitioner rates and adverse event costs. Inputs were derived from published data supplemented by the results of a retrospective chart review and physician survey.

**Results** Based on a national Swedish population of ~10 M individuals, the model estimated that ~6 000 patients would be eligible for LDM treatment in Year 1. Introducing LDM at a 1% uptake rate in Year 1, increasing 1% annually, was estimated to result in the avoidance of ~15,600 hours of moderate-to-severe pain over 5 years, allowing for the treatment of an additional ~43 000 patients for moderate-to-severe pain. A modest cumulative 5 year budget impact increase is estimated at SEK~1 M.

**Conclusion** Introducing LDM as a treatment for moderate-to-severe trauma pain in the pre-hospital setting may result in fewer hours of patient pain and more patients treated at a modest budget increase.

**REFERENCES**


**Conflict of interest** None

**Funding** Mundipharma International Ltd

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**OUT-OF-HOSPITAL CARDIAC ARREST IN PATIENTS WITH PREVIOUS PSYCHIATRIC DISORDER — CHARACTERISTICS AND OUTCOMES**

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**Aim** Survival after out-of-hospital cardiac arrest (OHCA) has increased in several countries following improvements in pre-hospital OHCA-management. We investigated overall and temporal changes in characteristics and outcomes in OHCA-patients with previous psychiatric disorder.

**Method** We identified adult patients with OHCA of presumed cardiac cause from the Danish Cardiac Arrest Registry from 2001 through 2014. Using multivariable logistic regression we calculated odds ratio (OR) for cardiopulmonary resuscitation (CPR), survival upon hospital arrival, 30 day and 1 year survival after OHCA in patients with and without a history of psychiatric disorder identified by discharge diagnosis up to 10 years before OHCA.

**Results** Of 28,955 OHCA, 4037 (13.9%) had a known psychiatric disorder. Psychiatric patients were younger, less likely to have bystander-witnessed OHCA (44.1% vs 51%) and shockable heart rhythm (14.8% vs 27.1%), but same degree of arrest in private home (64.5% vs 64.8%) and estimated time interval to first-arrival-rhythm by EMS-crew (12 min) compared to non-psychiatric OHCA-patients. In fully-adjusted models, psychiatric patients had the same probability of receiving bystander CPR (OR 0.93 [95% confidence interval, 0.83–1.02]), but lower probability of survival upon hospital arrival, 30 day and 1 year survival: OR 0.79 [0.71–0.89], 0.54 [CI: 0.46 to 0.64] and 0.49 [0.41–0.59], respectively. Temporal trends showed that the gap in 30 day and 1 year survival between psychiatric and non-psychiatric OHCA-patients became evident after 2007.

**Conclusion** Survival following OHCA among psychiatric patients is considerably lower compared with non-psychiatric OHCA-patients and the gap seems to widen over time despite the recent efforts to improve OHCA-management.

**Conflict of interest** None

**Funding** None

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**WHEN EVALUATING THE LEVEL OF LACTATE: COULD VENOUS BLOOD GAS BE EQUIVALENT TO ARTERIAL BLOOD GAS?**

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**Aim** Measurement of lactate level is an essential tool in the clinical assessment of patients. Lactate levels greater than 2 mmol/L represent hyperlactataemia whereas lactic acidosis is generally defined as a serum lactate concentration above