



MEDICAL ADVISORY PANEL HUMAN RESEARCH ETHICS COMMITTEE

‘KNOWLEDGE GAPS’ — RESEARCH PRIORITIES

In November 2015, the International Liaison Committee on Resuscitation (ILCOR) identified ‘knowledge gaps’ — areas where more research is required. From that list, St John’s Medical Advisory Panel has identified the following areas where it would encourage research applications, being relevant to St John and first aid.

Glossary

AED	Automated external defibrillator
BLS	Basic life support
CPR	Cardiopulmonary resuscitation
EMS	Emergency Medical Services
ETCO ₂	End-tidal CO ₂
OHCA	Out-of-hospital cardiac arrest
ROSC	Return of spontaneous circulation
RCT	Randomised controlled trial

ADULT BASIC LIFE SUPPORT

Dispatcher recognition of cardiac arrest

- What are the identifying key words used by callers that are associated with cardiac arrest?
- What is the most appropriate refresher training interval for dispatchers?

Resuscitation care for suspected opioid-associated emergencies

- Further research is needed to determine the optimal components of overdose response education for BLS and first aid providers; the role of naloxone, and how these educational programs should be implemented and evaluated.

CPR before defibrillation

- What effect does the quality of bystander CPR have?

Minimising pauses in chest compressions

- Analysis of causes, and consequences of pauses, for other reasons or without obvious reason.

Timing of CPR cycles

- What is the relationship between rescuer fatigue, chest compression quality, and the optimal interval to check rhythm?

Check for circulation during BLS

- Human data around value or accuracy of circulation.

Harm from CPR to victims not in cardiac arrest

- More studies are needed with robust methodology to identify harm and provide follow-up after hospital discharge. Many of the conditions prompting initiation of CPR for those not in cardiac arrest are associated with reduced responsiveness, and have poor prognosis. Whether chest compressions and rescue breaths could accentuate these conditions independent of physical injury, though unlikely, is not known at the present time.

Public access defibrillation

- Effectiveness of public AED programs with optimal post-arrest care.
- Effectiveness of public AED programs with volunteer-enhanced EMS response models, and digital or social media tools and applications for public AED deployment.

Rhythm check timing [and training]

- Utility of other monitoring methods (eg arterial waveform, ETCO₂).
- The timing of rhythm checks during advanced life support interventions, including drug administration.

EDUCATION, IMPLEMENTATION AND TEAMS

CPR instruction methods (self-instruction versus traditional)

- The delivery of teaching material (via online videos, elearning packages) and different types of self-instruction teaching courses might affect the learning effect.

AED training methods

- The optimal duration of AED training is still unclear.
- The most suitable methods to train children/adolescents need to be determined.

Timing for BLS retraining

- There is limited evidence evaluating the effect of shorter intervals between BLS courses.

Basic life support [and first aid] training for [all] high-risk populations

- Adequately powered studies reporting critical clinical outcomes.
- Studies examining the cost-effectiveness of CPR training for family members of high-risk patients.
- Studies with standardised/objective methods of assessment for CPR performance (real-time data recording).

Team and leadership training

- Studies relating team and leadership training to patient outcome are lacking.

Social media technologies

- What is the impact of notified versus unnotified bystander responses on clinically meaningful patient outcomes, such as survival to hospital discharge with good neurologic outcome, survival to hospital discharge, survival to hospital admission, and ROSC?
- What is the impact of notified versus unnotified bystander responses on bystander CPR rates and time to first compressions?

Debriefing of resuscitation performance

- The benefit of data-driven, performance-focused debriefing for OHCA is unknown.

FIRST AID

Recovery position

- Given the poor and outdated evidence available, further research is needed as to the best recovery position.
- When should a first aid provider not move a person into the recovery position?

Stroke recognition

- More research is required to determine how much training is needed and what type of training should be used to enable first aid providers to correctly apply stroke assessment systems and to compare the accuracy of use of stroke assessment systems by first aid providers to the accuracy of use of stroke assessment systems by healthcare providers.

Concussion

- There is a need for RCTs to assess the efficacy of scoring systems as used by non-healthcare professionals in prehospital environments.

First aid training

- Individual domains of first aid (e.g. recognising an emergency, calling for additional help, specific skills such as direct pressure) have not been studied as to what contributes to a victim's health outcomes. Future reviews comparing first aid education modalities and context of first aid settings may contribute to developing training guidelines. Additionally, the period of time between a first aid provider's initial training and refreshing those first aid skills to maintain competency needs to be identified. Along with patient outcomes, public health outcomes and cost-analysis of training versus no training, may help prioritise resources.

These questions and opportunities for research can also be valuable as new modalities emerge for learning (e.g. social media or just-in-time).