Further Research Needed ... September 2016.

A summary of areas for further research identified in recent systematic reviews. If you would like access the full text of these reviews or further searches on any topic please contact Matt.Holland@nwas.nhs.uk

**Falls**

CONCLUSIONS: No high-quality evidence demonstrates that prehospital services reduce falls in community-dwelling older adults. Screening by prehospital personnel using semi-structured risk assessments appears feasible, but it is unclear whether this is superior to referral based on fall-related chief complaints.

**Chest Pain**

CONCLUSIONS: Factors reflecting age, gender, myocardial ischemia and a compromised cardiovascular system predicted an increased risk of an acute life-threatening condition in the prehospital setting in cases of acute chest pain. These factors may form the basis for prehospital risk stratification in acute chest pain.

**Acute Asthma**

CONCLUSIONS: ED-directed educational interventions targeting either patients or providers increase the chance of having office follow-up visits with PCPs after asthma.
exacerbations. Their impact on health-related outcomes (e.g., relapse and admissions) remains unclear.

**Sepsis**


CONCLUSION: There is little robust evidence addressing the impact of prehospital interventions on outcomes in sepsis. That which is available is of low quality and indicates that prehospital interventions have limited impact on outcomes in sepsis beyond improving process outcomes and expediting the patient’s passage through the emergency care pathway. Evidence indicating that prehospital antibiotic therapy and fluid resuscitation improve patient outcomes is currently lacking.


CONCLUSIONS: The evidence suggests that identification of sepsis in the prehospital setting by EMS providers is carried out with varied success, depending on the strategy used; however, high-quality studies are lacking. Relying on provider impression alone had poor sensitivity, but some moderate-quality evidence supporting structured screening for sepsis with vital signs criteria demonstrated modest sensitivity and specificity. Additional research to improve diagnostic accuracy and explore improvements in EMS management is needed.

**Frequent Users**


CONCLUSION: High-quality, peer-reviewed evidence about ED visit reduction programs is limited. For most program types, we were unable to draw definitive conclusions about effectiveness. Future ED visit reduction programs should be regarded as demonstrations in need of rigorous evaluation.


CONCLUSIONS: Frequent ED users appear to experience higher mortality, hospital admissions and outpatient visits compared with non-frequent users, and may benefit from targeted interventions. Standardised definitions to facilitate comparable research are urgently needed.

**Drowning**

CONCLUSIONS: Increasing submersion duration was associated with worse outcomes. Submersion durations <5 min were associated with favourable outcomes, while those >25 min were invariably fatal. This information may be useful to rescuers and EMS systems deciding when to perform a rescue versus a body recovery.

Preventable Death

CONCLUSION: The heterogeneity in methodology, terminology and definitions of "preventable" between studies render data incomparable. To facilitate common understanding, comparability and analysis, a commonly agreed ontology by the prehospital research community is required.

Defibrillation

CONCLUSION: The evidences points to a Biphasic waveform superiority over Monophasic to perform AF cardioversion, supporting current guidelines to use less energy when using a Biphasic defibrillator. It is suggested that the Biphasic defibrillators from PhysioControl ADAPTIV, Philips SMART and ZOLL Rectilinear have similar efficacy and the use of any of them may result in similar chances, energy and number of shocks to achieve successful AF cardioversion.

Basic Life Support Training

CONCLUSION: Whilst there is no current evidence for improvement in patient outcomes from targeted BLS training for family members, this group are willing and capable to learn these skills. Future research may need to examine longer periods of follow-up using alternate methods (e.g. cardiac arrest registries), and examine the effectiveness of training in the modern era.


CONCLUSION: Although it remains inconclusive about which is superior between the two methods [Self Instruction and Traditional Instruction], considering the potential to train many more rescuers and to reduce resource utilization, well-designed self-instruction with hands-on practice may be an alternative to traditional BLS courses.
**Physician Assistance OHCA**


http://doi.org/10.1186/s13054-015-1156-6

CONCLUSIONS: This systematic review suggests that EMS-physician-guided CPR in out-of-hospital cardiac arrest is associated with improved survival outcomes.

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**Organ Donation after CPR**


http://doi.org/10.1016/j.resuscitation.2016.07.229

CONCLUSION: CPR does not appear to adversely affect graft function. Patients who have restored circulation after resuscitation and subsequently progress to death should be evaluated for organ donation. Those with ongoing CPR should be considered for hepatic and renal transplantation but there may be worse initial graft function.

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**Paramedic Ultrasound**


http://doi.org/10.1016/j.amj.2015.07.002

CONCLUSIONS: Paramedic ultrasound curricula in FAST and pleural ultrasound is feasible and time effective with successful application. Although fracture detection ultrasound is being used by the special operations forces, no comprehensive curriculum was described. Curricula designed to detect cardiac standstill have been too short, and successful application by paramedics has not been shown.

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**Therapeutic Hypothermia**


http://doi.org/10.1016/j.resuscitation.2016.07.238

CONCLUSION: The use of TH after OHCA is associated with a survival and neuroprotective benefit, even when including patients with non-shockable rhythms, more lenient downtimes, unwitnessed arrest and/or persistent shock. We found no evidence to support one specific temperature over another during hypothermia.

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**Lactate Measures for Trauma**


http://doi.org/10.1136/emermed-2016-206139.43

CONCLUSIONS: There is a paucity of evidence relating to pre-hospital lactate-guided management in trauma. From the limited literature, it seems that pre-hospital lactate may be a useful early tool in guiding the management of trauma patient resuscitation. Further prospective studies are required to
elucidate the sensitivity and specificity of abnormal pre-hospital lactate values.

**Implementation Research**


**CONCLUSIONS:** Although there was a significant increase in the number of implementation research papers, most studies focused on identifying evidence–practice gaps or used weak study designs to evaluate the effects of implementation interventions. Recommendations for improving implementation research in EM include identifying barriers and enablers to implementation, using theory in areas where proven important gaps exist, improving the reporting of the content of interventions and using rigorous study designs to evaluate their effectiveness.

**Emergency Dispatch**


**CONCLUSION:** Substantial peer-reviewed research does exist in dispatch studies. However, a lack of consistent metrics, the near-nonexistence of research in fire and police dispatching, and a relative lack of studies in many areas of interest indicate a need for increased participation in research by communication center administrators and others “on the ground” in emergency dispatch, as well as increased collaboration between research organizations and operations personnel.

**Stroke**


**CONCLUSIONS:** There is clear evidence of increased early mortality, increased rates of symptomatic intracranial haemorrhage and also of improved functional outcomes for patients with presumed acute ischaemic stroke treated with thrombolysis. The available data are unlikely to resolve the controversy regarding the use of intravenous thrombolysis in this population, and further randomised controlled trials are urgently required.

**Analgesia**


**CONCLUSIONS:** Current published research suggests that interventions to enhance the provision of analgesia for femoral fracture in emergency pre-hospital care reduce pain scores significantly more than standard care. However, as only five randomised studies are available with a range of diverse interventions, further research is warranted.
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