Pre-hospital Outcomes for Evidence-Based Evaluation (PhOEBE) – A Systematic Review

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Policy background

- Limited evidence about effectiveness of pre-hospital care provided to 6m patients per year in England.
- Ambulance service performance traditionally measured by response times.
- Need to find better ways of measuring the impact and quality of care.
The PhOEBE programme

- Five-year study funded by the National Institute of Health Research (NIHR).
- Collaboration between Universities of Lincoln (CaHRU), Sheffield (ScHARR), & Swansea, East Midlands Ambulance Service (EMAS), Yorkshire Ambulance Service (YAS) & NHS Information Centre.

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Aims & objectives

• To develop new ways of measuring ambulance care to support quality improvement through monitoring, audit and evaluation.
• Review & synthesise literature on pre-hospital care outcome measures.
• Use consensus methods and qualitative data to identify measures relevant to the NHS and patients that have potential for further development.
• Link routine pre-hospital, hospital and mortality data.
• Build risk-adjustment models that predict mortality and non-mortality outcomes using the linked routine data.
• Explore the practical use of the risk adjustment models to measure effectiveness and quality of ambulance service care.
The systematic review

- One strand of the overall PhOEBE programme.
- Followed on from analysis of documents from the practitioners’ perspective.
- Focus on pre-hospital care outcome measures.
- Search terms from Medline, Embase & Web of Science
- Data extraction tool
  - Enabled capture of broad range of outcomes.
  - Inclusion & exclusion criteria.
Data extraction process

Initial search identified 6,067 records

5,088 abstracts analysed for eligibility

257 full articles analysed for eligibility

161 studies included

166 studies included overall

979 duplicates removed

4,831 records screened out

96 articles screened out

Hand-searches found 5 extra studies
Results (1)

• Full data extractions on 141 of the 173 full-text articles so far; 410 outcomes.

• Seven categories of outcomes:
  – Time-related;
  – Survival-related;
  – Length of stay;
  – Outcome;
  – Errors & complications;
  – Service; and
  – Procedures / interventions.
Results (2)

- 143 survival-related outcomes.
  - 27% survival to discharge.
  - 25% survival to other.
  - 13% survival until up to 30 days.

- 128 time-related outcomes
  - 66 generic; 62 condition-specific.

- Only 38 (9%) reported patient outcomes, e.g. satisfaction, quality of life, pain, etc.
Discussion

- Data extraction tool enabled us to capture a wide range of outcome measures and tools.
- Not condition-specific like other studies.
- Only 15-20% of pre-hospital population (first hour quintet) where fast response can significantly improve survival outcomes (Heightman and McCallion, 2011).
- For the 80-85% of pre-hospital patients with non-critical conditions, patient perspective and quality of life are more relevant than survival-related outcomes.
Future implications

• Different outcome measures needed for pre-hospital patients with critical and non-critical conditions.
• Nature of demand for pre-hospital care raises issues for future role of the ambulance service.
• While the identified outcome measures & tools are useful in research, they cannot readily be transferable to routine procedures.
Conclusion

• By identifying a wide range of outcome measures, the review will inform further research into the feasibility of using a wider range of outcome measures and developing new outcome measures in pre-hospital research and quality improvement.
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Thank you