What outcome measures should be developed for pre-hospital care? – Results of a consensus event

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PhOEBE - aims

• 5 year NIHR programme grant – 2011-16
• To develop new ways of measuring the impact of pre-hospital care provided by ambulance services.
• Provide better information about the effectiveness and quality of the different types of care delivered to a large group of patients
• Support quality improvement, audit and evaluation of future service changes.
Work streams

- Identification of potential measures – Evidence reviews, consensus methods, qualitative study with recent users
- Creation of linked data set – ambulance, routine hospital, GP, register of deaths
- Development of measures - predictive risk adjusted measurement
- Testing in the real world
Consensus event

• 1 day event - July 2012
• Modified nominal group approach
• 52 candidate measures identified from 2 systematic reviews – policy & research
• 3 categories;
  ➢ Service/operational (14)
  ➢ Patient management/processes (20)
  ➢ Patient outcomes (9)
Process

• 3 Small group discussions – identified measures and opportunity to add own

• Electronic voting by individuals using turning point rating each measure as:
  - Essential
  - Desirable
  - Irrelevant

• Time measures considered separately
### ACCURACY AND APPROPRIATENESS OF DECISIONS

- Calls sent for telephone nurse advice that are returned for an ambulance response
- Re-admission within 30 days for complications (e.g. pneumonia, wound infections)
- Hospital attendance or admission (e.g. within 24 hours, 7 days, 28 days)
- Re-contact with ambulance service within 24 hours (e.g. for calls closed with advice or patients not transported)

#### Measuring patient safety
- Adverse incidents e.g. not recognising heart attack symptoms or leaving someone at home who needed hospital treatment
- Errors in diagnosis

#### Accuracy of call taker identification of different conditions (e.g. cardiac arrest, heart attack, stroke, serious illness, low urgency calls suitable for nurse advice) or needs.

**Includes:**
- Measures of call assessment accuracy such as sensitivity
- Appropriateness of triage decision
- Risk of under-triage
- Risk of over-triage

#### Accuracy of dispatch decisions – includes:
- Choice of response type dispatched (rapid response car, ambulance, helicopter)
- Appropriateness of referral to other agencies (e.g. GP services)
- Use of alternatives to ambulance dispatch (e.g. nurse advice or make own way)
- Relationship between priority category and response (right resource to right call)

#### Accuracy of paramedic diagnosis
- Agreement of on-scene and final hospital diagnosis
- Other measures of paramedic diagnosis accuracy, e.g. for specific conditions such as stroke, trauma

#### Compliance with protocols and guidelines
- With triage protocols
- Transport protocols (e.g. leave at home, alternative to ED
- With care and treatment guidelines (fits and convulsions, heart attack, stroke

### AMBULANCE SERVICE CARE

**Proportion of people with respiratory distress (breathing difficulties) receiving mechanically assisted breathing**

**Proportion of people with diabetes treated at home**

**Proportion of elderly people attended within scope of advanced paramedic practice (e.g. treat and leave at home)**

**Proportion of people receiving spinal immobilisation (splints and collars) for back/neck injuries**

**Proportion of cases treated within time guidelines including:**
- STEMI (heart attack) guidelines (90 minutes)
- Thrombolysis (clot busting) (60 minutes)
- Proportion FAST positive (suspected stroke) arriving at a stroke centre within 60 minutes

### HOSPITAL CARE/DISCHARGE

**Duration of life support (intubation or ventilation) in hospital**

**Length of stay in hospital**

**Discharge destinations**
- Home
- Continuing care
- Discharged needing continuing therapy e.g. nursing care, supplemental oxygen, tube feeding, assisted breathing
- Proportion of patients living at home at 3 months

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**Glossary**

**OVER TRIAGE** - too high a level of urgency and/or response than is required.

**UNDER TRIAGE** - too low a level of urgency and/or response than is required.

**NURSE ADVICE** - for some people whose 999 calls identified as low risk their call may be transferred to a nurse or paramedic for further assessment and advice.

**SENSITIVITY** - the ability of a test (statistical or diagnostic) to detect a condition when it is present.

**PRIORIT E CATEGORY** - 999 calls are assessed and assigned to a category depending on the urgency or seriousness of the problem, e.g. category A are calls where there appears to be a life threatening condition.

**PROTOCOL** - a structured guidance for the assessment and treatment of specific conditions.

**FAST** - **Face, Arm, Speech, Time**; used as an assessment tool for recognising a stroke.

**TRIAGE** – decision regarding the level of urgency and the level of response or care required, based on patient symptoms and circumstances of the incident.
Participants

- Identified using professional groups, colleges, academic groups, patient groups
- 43 participants
## Results

<table>
<thead>
<tr>
<th>Rank</th>
<th>Service/operational</th>
<th>Essential n(%)</th>
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<tbody>
<tr>
<td>1</td>
<td>Completeness and accuracy of patient records</td>
<td>35 (85)</td>
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<tr>
<td>2</td>
<td>Over – triage rates and under – triage rates</td>
<td>31 (76)</td>
</tr>
<tr>
<td>3</td>
<td>Proportion of calls treated by most appropriate service</td>
<td>30 (75)</td>
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<td></td>
<td><strong>Patient management</strong></td>
<td></td>
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<tr>
<td>1</td>
<td>Accuracy of dispatch decisions</td>
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<tr>
<td>3</td>
<td>Compliance with end of life care plans</td>
<td>34 (76)</td>
</tr>
<tr>
<td></td>
<td><strong>Patient Outcomes</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Pain measurement and symptom relief</td>
<td>32 (78)</td>
</tr>
<tr>
<td>2</td>
<td>Patient experience</td>
<td>21 (54)</td>
</tr>
<tr>
<td>3</td>
<td>Return of Spontaneous Circulation (ROSC)</td>
<td>18 (43)</td>
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## Top ten measures

<table>
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<td>8</td>
<td>Compliance with end of life care plans</td>
<td>31 (76)</td>
</tr>
<tr>
<td>9</td>
<td>Proportion of calls treated by most appropriate service (whole 999 population)</td>
<td>30 (75)</td>
</tr>
<tr>
<td>10</td>
<td>Compliance with protocols and guidelines</td>
<td>29 (69)</td>
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Results

- 5/10 concerned with accuracy of processes
- 3 patient outcomes – pain management, experience and safety
- 2 treatment compliance
- Highlights predominance of process measures and difficulties in identifying relevant patient outcomes
Next steps

- Further refinement in to explicit measures
- Delphi study to prioritise final candidate measures for predictive models
- Development of models using linked data
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