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Development of a behaviour rating system for rural/remote pre-hospital settings

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ABSTRACT

Background: Remote and Rural pre-hospital care practitioners manage serious illness and injury on an unplanned basis, necessitating technical and non-technical skills (NTS). However, no behaviour rating systems currently address NTS within these settings. Informed by health psychology theory, a NTS-specific behaviour rating system was developed for use within pre-hospital care training for remote and rural practitioners.

Method: The Immediate Medical Care Behaviour Rating System (IMCBRS), was informed by literature, expert advice and review and observation of an Immediate Medical Care (IMC) course. Once developed, the usability and appropriateness of the rating system was tested through observation of candidates' behaviour at IMC courses during simulated scenarios and rating their use of NTS using the IMCBRS.

Results and conclusion: Observation of training confirmed rating system items were demonstrated in 28–62% of scenarios, depending on context. The IMCBRS may thus be a useful addition to training for rural and practitioners.

1. Background

Rural/remote practitioners manage serious illness and injury on an infrequent, unplanned basis. Within rural/remote settings the first person at the scene of a medical emergency is often a general practitioner (GP) or practice nurse. Compared to urban or hospital-based settings, those attending an emergency in these settings may be doing so single-handedly or with limited assistance, for considerable time within potentially harsh conditions, prior to an ambulance providing transport to definitive care. Quite often, working in such settings requires decisions to be made based on the distance to hospital and the patient's likelihood of survival. Effective pre-hospital care thus necessitates a high level of non-technical skills (NTS), such as communication and decision-making (The Scottish Government, 2015). The importance of NTS within these settings is evident within research which suggests the factors involved in the likelihood of surviving out of hospital cardiac arrest include a witnessed cardiac arrest, provision of bystander CPR, shockable cardiac rhythm and return of spontaneous circulation (ROSC) within the field (Sasson et al., 2010). The tasks involved in this example necessitate communication skills involved in the provision of CPR (e.g. communicating planned actions to others) and decision-making skills (e.g. who should do what) about how to respond to the situation. In order for optimal care to be provided both technical (e.g. providing CPR) and non-technical (e.g. co-ordinating people at the scene of an emergency) skills need to be employed. Consequently, approaches to improving patient safety and clinical outcomes from emergency care should focus not only on clinical skills and operational and service factors, such as ensuring equipment is maintained, but also NTS (Carne et al., 2012; Künzle et al., 2010).

A Scottish Ambulance Service publication reported that in 2013/14 4591 responses related to cardiac/respiratory arrest, and 17.3% of eligible cardiac arrest patients had a ROSC upon arrival at hospital (The Scottish Ambulance Service, 2014). This was associated with a 35-fold increased chance of survival, compared to those without ROSC (Sasson et al., 2010). Due to the remoteness of areas within Scotland and the changeable nature of pre-hospital care, responding promptly to an emergency within these locations is challenging. Additionally, the infrequency with which responders are called out

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emphasizes the importance of consolidating NTS within this area, as highlighted within a Scottish Government document (The Scottish Government, 2015).

Behaviour rating systems have been developed within acute care to assess factors affecting patient safety behaviours for anaesthetists (Anaesthetists Non-Technical Skills (ANTS)) (Fletcher et al., 2003; Flin and Maran, 2004; Flin and Patey, 2011) surgeons (Non-Technical Skills for Surgeons (NOTSS)) (Crossley et al., 2011; Yule et al., 2006) and scrub nurses (Scrub Practitioners List of Intra-Operative Non-Technical Skills (SPLINTS)) (Mitchell and Flin, 2008; Mitchell et al., 2013). These systems were developed to identify NTS underpinning good practice and their use has been fundamental to reducing unintended and avoidable harm.

Outside the surgical context, an observational skill-based assessment tool for resuscitation (OSCAR) was developed for use within cardiac arrest teams, outlining behaviours specific to anaesthetists, physicians and nurses, incorporating communication, co-operation, co-ordination, monitoring/situation awareness, leadership and decision-making (Walker et al., 2011). A similar system, the Team Emergency Assessment Measure (TEAM), was developed for emergency resuscitation, featuring teamwork, leadership and task management (Cooper et al., 2010). However, the TEAM may have omitted some NTS vital for successful resuscitation, including communication and decision-making, which are traditionally featured within patient safety rating systems, such as ANTS.

It is important to note that due to the acute care focus within OSCAR and TEAM they may not be applicable to contexts with less predictable characteristics, such as pre-hospital care. To date, no such behaviour rating systems have been developed and implemented within rural/remote pre-hospital care. The use of such systems enables reliable and effective observational assessment of staff engagement in patient safety issues and measurement and benchmarking of behaviours related to the implementation of NTS. This can then inform interventions to improve understanding, knowledge and practice of relevant NTS measured via changes in behaviour.

It should be reiterated that many pre-hospital responders are called out on an unplanned, infrequent basis and their life-saving skills are in addition to skills required as part of their everyday work, this combined with the fact that emergency medical care consists of challenging physical (e.g. working in unknown settings with limited space/resources) and emotional (e.g. presence of a casualty's family/friends) environments (Bigham B.L Maher et al., 2010; Cottrell et al., 2014). Since these technical skills are prone to rapid decay (Yang et al., 2012) there may be pre-hospital care-specific patient safety issues, relating to the uncertainty associated with these rapidly changeable circumstances and consequently, existing rating systems may be unsuitable.

The purpose of this project was to develop a patient safety behaviour rating system for use within training courses and resources for rural/remote practitioners. Compared to many of the existing rating systems, the use of a rating system within this fast-paced, dynamic context should address the NTS involved in providing care outside a normal clinical role, potentially within an ad hoc team with a mixed skill level. Routine use of such a rating system both as a focus of training and a means of providing feedback could potentially improve patient safety within this context. The specific aims and objectives were to:

Aims

1. Identify NTS for use within a behaviour rating system relevant to the provision of pre-hospital emergency care within rural/remote settings,
2. Develop and pilot a behaviour rating system within immediate medical care and pre-hospital emergency care courses.

Objectives

- Identify key behaviours underpinning the use of NTS within pre-hospital care in rural/remote settings,
- Develop a behaviour rating system featuring specific NTS categories to enable identification and scoring of NTS tailored to rural/remote pre-hospital emergency settings.

2. Method

This was a mixed-methods project developed by health psychologists and pre-hospital care responders from NHS Education for Scotland (NES), a special health authority responsible for the training and career-long development of the workforce and BASICS Scotland, a charitable organisation which provides training in the management of trauma, medical emergencies and major incidents as well as co-ordinating groups of pre-hospital responders throughout Scotland.

2.1. Development

2.1.1. Rapid literature review

A rapid literature review to identify relevant NTS was conducted addressing:

1. Patient safety behaviour rating systems,
2. Pre-hospital care, especially relevant NTS,
3. Emotional barriers to the adoption of NTS.

Using key terms, PubMed, CINAHL, EMBASE, PsycINFO and Web of Science were searched during March to June 2013. References of key papers were also used to identify further relevant research. In addition to searches explicitly addressing ANTS, NOTSS, SPLINTS and OSCAR and using these as single search terms, further searches were employed, combining:

1. Pre-hospital OR emergency OR rural/remote,

   AND.

2. Paramedic OR GP OR nurse,

   AND.

3. Non-technical (skills) OR crew/crisis resource management,

   OR.

4. Situation awareness OR decision-making OR leadership OR teamwork OR communication OR stress/distress OR anxiety

After inspecting titles and abstracts and removing duplicates, this search identified 53 research papers which subsequently informed the development of the rating system.

Once identified, papers were reviewed and information pertaining to the following was extracted:

1. Specific NTS and their relevance for pre-hospital care,
2. Social, organisational and environmental factors influencing NTS use within healthcare settings,
3. The development, application and evaluation of patient safety behaviour rating systems.