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Title page

Full title:

How actionable are staff behaviours specified in policy documents? A document analysis of
protocols for managing deteriorating patients

Running title:

Document analysis of protocols

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Made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data;	DS, MS, JJF, LMA
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Given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content;	DS, MS, JJF, LMA
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Conflict of Interest:

None of the authors declare conflict of interest.

How actionable are staff behaviours specified in policy documents? A document analysis of protocols for managing deteriorating patients

ABSTRACT

Background

To optimise care of deteriorating patients, healthcare organisations have implemented Rapid Response Systems including an 'afferent' and 'efferent' limb. Afferent limb behaviours include monitoring vital signs and escalating care. To strengthen afferent limb behaviour, and reduce adverse patient outcomes, the National Early Warning Score (NEWS) was implemented in the UK. There are no published reports of how NEWS guidance has translated into Trust-level deteriorating patient policy and whether these documents provide clear, actionable statements guiding staff.

Aim

To identify how deteriorating patient policy documents provide 'actionable' behavioural instruction for staff, responsible for actioning the afferent limb of the rapid response system.

Design

A structured content analysis of a national guideline and local policies using a behaviour specification framework.

Methods

Local deteriorating patient policies were obtained. Statements of behaviour were extracted from policies; coded using a behaviour specification framework: TACTA (Target, Action, Context, Timing, and Actor) and scored for specificity (1 = present; non-specific, 2 = present; specific). Frequencies and proportions of statements containing elements of the TACTA framework were summarised descriptively. Reporting was guided by the COREQ checklist (see supplementary file 1).

Results

There were more statements related to monitoring than escalation behaviour (65% v 35%). Despite high levels of clear specification of the action (94%) and the target of the behaviour (74%); context, timing and actor were poorly specified (37%, 37%, 33%).

Conclusion

Delay in escalating deteriorating patients is associated with adverse outcomes. Some delay could be addressed by writing local protocols with greater behavioural specificity, to facilitate actionability.

Relevance to clinical practice

Numerous clinical staff are required for an effective response to patient deterioration. To mitigate role-confusion, local policy-writers should provide clear specification of the actor. As the behaviours are time sensitive, clear specification of the time-frame, may increase actionability of policy statements for clinical staff.

KEYWORDS

- – Oragnisational behaviour
- – Documentation
- – Nurse's responsibilities
- – Policy
- – Vital signs
- – Critical care outreach

IMPACT STATEMENT

- – An innovative use of a simple behaviour specification framework, to analyse a sample of local deteriorating patient policy documents, guiding staff behaviour when actioning behaviours of the rapid response system.
- – Evidence that local (organisation level) deteriorating patient policies typically contain more information guiding staff on how to monitor patients than how to call for help (escalate) in the event of deterioration
- – Evidence that Policy-statements, directing staff behaviour, frequently do not specify who should enact the behaviour, nor the timeframe within which these time-sensitive behaviours should be actioned.

MAIN DOCUMENT

1. INTRODUCTION

The recognition of and response to a deteriorating patient in a hospital ward has been a priority of clinicians, academics and policy-makers for almost two decades (McQuillan et al., 1998). Patients who deteriorate are at risk of adverse outcomes such as cardiac arrest, unplanned intensive care admission and death (Tirkkonen et al., 2013; Trinkle & Flabouris, 2011). These endpoints are frequently preceded by a period of physiological deterioration reflected by changes in vital signs, including heart rate, respiratory rate, blood pressure, temperature, oximetry and level of consciousness (Goldhill & McNarry, 2004; Hillman et al., 2001; Kause et al., 2004). A *post hoc* analysis of data from a multi-site (n=23) cluster-randomised controlled trial was conducted to examine the relationship between call times to emergency teams and serious adverse events (n=11,242) (Chen, Bellomo, Flabouris, Hillman, & Finfer, 2009). A statistically significant (p<0.001) relationship was reported between early calls made to

emergency teams and unexpected deaths, unexpected cardiac arrests, and overall cardiac arrests (Chen et al., 2009). These findings suggest that an early call for help in the event of patient deterioration reduces the incidence of adverse patient outcomes.

2. BACKGROUND

2.1 Rapid Response Systems

To facilitate a timely and clinically appropriate response to patient deterioration, healthcare organisations have implemented rapid response systems (RRS) in the United Kingdom (UK), North America and Australasia (DeVita et al., 2006; Johnstone, Rattray, & Myers, 2007). Despite differences in the how these services have been operationalised, the characteristics are often similar. RRS frequently have an *afferent* and an *efferent limb* (DeVita et al., 2006) (Figure 1). In this context, 'limb' refers to a sequence of actions performed by clinical staff within a specified timeframe. Expected afferent limb behaviours include monitoring a patient's vital signs at specified intervals, recognising abnormality (which signals deterioration), and informing a more senior or expert clinician (termed escalation) within a specified timeframe (DeVita et al., 2006; Smith, 2010). Modes of notification will depend on the context, but could include any combination of face-to-face communication, telephone communication and use of technology, e.g., a hospital pager system (DeVita et al., 2006; Johnston, Arora, King, Stroman, & Darzi, 2014). These monitoring and escalation behaviours are typically performed by nursing staff (Smith and Aitken, 2016). The *efferent limb* of the RRS includes all actions that follow escalation performed by the responder/s (DeVita et al., 2006). Efferent limb behaviours include performing additional patient assessment, initiating treatment or stabilising interventions, and facilitating a transfer of the patient to a higher-care setting, for example, a critical care unit (Bannard-Smith et al., 2016; DeVita et al., 2006).

2.2 Afferent Limb Failure

To enhance the afferent limb of the RRS, 'track and trigger' tools have been widely implemented to facilitate identification (and escalation if indicated) of patients with deranged physiology. From the tools available, aggregate scoring track-and-trigger charts (also known as early warning scoring tools) appear to most reliably predict patients at greatest risk (Smith, Prytherch, Schmidt, & Featherstone, 2008). Specifically, the National Early Warning Scoring (NEWS) tool is advocated as the 'gold standard' within the UK context (Royal College of Physicians, 2012; Smith, Prytherch, Meredith, Schmidt, & Featherstone, 2013). For NEWS, if the aggregate score generated from a complete set of vital signs is 5 or more, nurses are prompted to escalate (Royal College of Physicians, 2012). Despite escalation protocols being linked explicitly to the track-and-trigger tool, there is evidence that nursing staff are failing to change their behaviour by increasing the frequency of monitoring (Hands et al., 2013; Kolic et al., 2015; Smith and Aitken, 2016) or escalating care in response to relevant criteria being met (Kolic et al., 2015; Shearer et al., 2012; Tirkkonen et al., 2013). This is described as afferent limb failure (ALF) (Johnston et al., 2014; Trinkle & Flabouris, 2011).

In 2012, the NEWS implementation group (NEWSIG) published a working party report (Royal College of Physicians, 2012) to support the strategic roll-out of NEWS. Whilst this document has served as an overarching guideline, it was recommended that NEWS be operationalised in a way that is locally appropriate (Royal College of Physicians, 2012). Consequently, organisations have developed policies and procedures for implementing local NEWS for managing deteriorating patients. Here, local is defined as Trust or organisation level. To increase the likelihood that these local policies lead to appropriate actions, the recommended clinical behaviours should be defined using language that is specific, concrete and actionable (Grol, Dalhuijsen, Thomas, Rutten, & Mokkink, 1998; Michie, 2004). Lack of specificity within deteriorating patient policies is potentially a proximal antecedent to ALF. In order for policy statements directing staff behaviour to be actionable, they should specify *'who'; should do 'what'; to 'whom'; 'when'* and *'where'* (Gould et al., 2014; Michie, 2004). Within the literature (Gould et al., 2014; Presseau et al., 2017), these same 5 elements have been reported using a simple framework to specify behaviour according to the Target, Action, Context, Timing and Actor (TACTA).

At present, there is no published work that reports how NEWS implementation guidance has been translated into local deteriorating patient policies and what level of specificity in behavioural instruction is provided for clinicians. In order to fully explore this potential antecedent to ALF, a documentary analysis of local deteriorating patient policies was carried out using the TACTA framework.

3. METHODS

3.1 Aim
The aim of this study was to identify how local (NHS Trusts across the United Kingdom) deteriorating patient policy documents provide 'actionable' behavioural instruction for clinical staff, who are responsible for actioning the afferent limb of the rapid response system.

Objectives
The objectives of this study were to:
- Analyse local deteriorating patient policies to identify specification of 'who, what, whom, when and where' (Michie, 2004) in relation to each item of behavioural instruction.
- Compare the frequency of the five elements of the TACTA framework, between policies obtained from district general hospitals and specialist referral hospitals providing tertiary-level care.
- Identify inconsistencies in the translation of behavioural instruction from the NEWSIG report to local policy documents.
- Report instances of good practice where behavioural instruction is specific, and areas where clinical behaviour is less clearly specified.
- Offer recommendations to facilitate policy-makers to improve the specificity of behavioural instruction within local policy documents.

3.2 Design

A structured content analysis (Gould et al., 2014; McGraw & Drennan, 2015; Murray, 2013) of key components of local deteriorating patient policy documents, based on current theory (Grol et al., 1998; Michie, 2004; Michie & Lester, 2005) and frameworks related to the specification of behaviour (Gould et al., 2014; Presseau et al., 2017). Where relevant, reporting of this documentary analysis has been guided by the consolidated criteria for reporting qualitative research (COREQ) checklist (see supplementary file 1).

3.3 Access to documents and sample size

We obtained local deteriorating patient policies from acute NHS Trusts within the UK between January and March 2017. We purposively sampled (across the UK) a range of settings including hospitals located in cities, sub-urban and rural areas, as well as district general hospitals and tertiary-level hospitals providing highly specialised care. Some hospitals - with open access - allowed policy documents to be obtained directly via their Trust websites (obtained this way n=20). Where this was not the case, we contacted Trusts using email and requested policy documents under the Freedom of Information Act (2000) (obtained this way n=7). This approach for accessing policies and local guidelines has been used in previously published documentary analyses (Bowen, 2009; Hsieh & Shannon, 2005). We then scrutinised the policies to identify if the organisation was using the National Early Warning Score (NEWS) chart in paper or electronic form. Policies from organisations not using this tool, and from non-acute Trusts (including community mental health Trusts and intermediate/long-term care providers), were excluded from the sample. Policies that had passed their date for review at the point of access were considered 'out of date' and were also excluded from further analysis. We obtained 27 documents; we excluded 2 policy documents as they did not refer to the use of the NEWS tool; a further 4 as they were not operational within an acute Trust; and 1 because it was out of date at the point of access. Twenty local policy documents met the criteria for inclusion in the documentary analysis.

3.4 Development of the coding framework

To conduct the content analysis, we developed a codebook (Tracy, 2013) (see supplementary file 2) and coding framework to enable data extraction and to examine the behavioural specificity of the policy documents. A coding spreadsheet (see supplementary file 3) was developed in Microsoft Excel™ based on the TACTA framework (Gould et al., 2014). In an extension of the methods proposed in the existing TACTA literature, columns were added so that each of the 5 elements could be graded for specificity.

We anticipated that the National Early Warning Score Implementation Guideline (Royal College of Physicians, 2012) would be a rich source of data on the expected behaviours of the afferent limb. Using the coding spreadsheet, this document was coded by the primary investigator (DS) a critical care nurse with expertise in the recognition of and response to deteriorating patients. The coding of the NEWSIG document provided an opportunity to pilot the coding spreadsheet and to develop the first iteration of a

codebook (Tracy, 2013). This document also served as a national standard from which to compare the local documents.

3.5 Data extraction

The process of primary coding was informed using methods described in published literature (McEwen, 2004; Murray, 2013; Tracy, 2013) and was carried out as follows:

- Each document was read superficially and then more thoroughly, to ensure familiarisation with the subject matter;

- Content (textual and diagrammatic) related to the afferent limb was identified (using criteria from the codebook), copied directly from the document and entered into the coding spreadsheet as a first-level code;

- Each first-level code was then further analysed (using information from the codebook) for presence (or absence) of the behavioural elements of the TACTA framework (Gould et al., 2014; Michie, 2004);

- The specificity of the Target, Action, Timing and Actor elements of TACTA were evaluated and graded from 0-2. A score of 0 was assigned if the element was missing from the statement altogether. A score of 1 was assigned if the element was present but enactment would be difficult due to a lack of specificity in the instruction. A score of 2 was assigned if the element was present and specific enough that the behaviour could be enacted. The 'context' was defined as either the location in which the behaviour should (or should not) take place and/or the circumstances in which the behaviour should be enacted. Context was not assigned a score at this stage, as the 'where' element was frequently described in broad overarching information within the introductory pages of the policy document, rather than embedded within the individual codes.

3.6 Data analysis

After primary coding, one author (DS) reviewed first-level codes for all policy documents and categorised them as either 'monitoring behaviour' (actions related to measuring or documenting of vital signs and calculating the NEWS) or 'escalation behaviour' (actions related to calling for help or 'raising the alarm').

We grouped these data by hospital type (i. district general hospitals and ii. specialist referral hospitals providing tertiary-level care). This information was obtained by reviewing Trust websites and organisational reports available in the public domain. We counted frequencies and proportions of behavioural statements containing each of the TACTA elements for both hospital types. Statements categorised as monitoring behaviours and escalation behaviours were also counted. Proportions of TACTA elements, monitoring behaviour statements and escalation behaviour statements were displayed using histograms. We used parametric or nonparametric descriptive statistics, depending on the whether the data met the statistical assumptions for parametric tests.

We calculated proportions of statements graded as 2 (= specific) for level of behavioural specificity for the Target, Action, Timing and Actor elements. We then obtained exemplar statements from the primary coding spreadsheet from policies with a high proportion of statements graded as 2 during primary coding; from policies with a low proportion of statements graded as 2; and from policies where the Target, Action, Timing and Actor elements were present, but a high proportion were graded as 1, Indicating low specificity.

3.7 Rigor in primary coding

Primary coding of the policy documents was conducted in two stages and was performed by one author (DS) and a research assistant (MS), a non-clinician with academic expertise in health psychology and behaviour change research. Ten percent of documents (n=2) were initially selected randomly (using computer-generated random selection) and coded independently (Tracy, 2013). Both researchers then met to compare coding, to calculate percentage agreement, and to reconcile differences through consensus discussion. Once agreement was reached, the codebook was revised accordingly. This entire process was repeated until inter-coder agreement exceeded 90% (Tracy, 2013). The remaining policy documents were then coded by one researcher alone (MS), who had opportunity to discuss uncertainties throughout the process.

3.8 Ethical considerations

No human paricipants were involved in the conduct of this research, therefore the study did not meet crtieria for application to a research ethics committee. Many of the local policies analysed were available in the public domain and did not include confidential or sensitive content. Despite this, no identifiable about the organisation from which the policy document originated were recorded during data extraction. Likewise, no organisations have been identified in reporting of results. Coded data were stored on an encrypted external drive.

4. RESULTS

4.1 The NEWSIG document (national standard)

The NEWS Implementation Group document (Royal College of Physicians, 2012) has 47 pages, including 34 pages of codable text. Twenty-four behavioural statements related to clinicians' afferent limb behaviour were extracted during primary coding. Twelve of these statements were monitoring behaviours and 12 were escalation behaviours.

4.2 Local policy documents

Data were not normally distributed, therefore descriptive statistics were displayed using medians and interquartile ranges. Differences between policies from the two hospital groups (tertiary-level or district general hospital) were explored using Mann-Whitney U (Field, 2013). Data analysis was conducted in

SPSS version 20, IBM Corp. Released 2011 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp).

Eight policy documents were from district general hospitals; 12 were from specialist referral hospitals providing tertiary-level care. The number of pages per policy document ranged from 11 to 64 (median 21, IQR 18-32). Nine hundred and nineteen statements related to afferent limb behaviour were extracted (range 2 – 113 statements; median 41, IQR 35-60). Five hundred and ninety-nine (65%) statements were categorised as monitoring behaviour; 320 (35%) statements were categorised as escalation behaviour.

No statistically significant differences were found between policy documents from the two hospital groups for proportions of statements containing each TACTA element. No statistically significant difference was found between hospital groups for the proportions of statements related to monitoring behaviour and escalation behaviour. Therefore, no further analyses were carried out between these groups of data and all further reporting of findings is for the entire sample. Due to the broad range in frequencies of afferent limb statements between policy documents, percentages are reported for descriptive statistics.

The most frequently specified element of the behaviour was the 'action' with 94% of statements containing information about the activity to be undertaken (range 68-100%, median 96%, IQR 89-100%). Where the action was present in the statement, it was reported specifically (graded as 2) in 89% of statements. The least frequently specified element of the behaviour was the 'actor' which was included in only 33% of statements (range 0-71%, median 31%, IQR 24-43%). Where the actor was reported, it was done so specifically (graded as 2) in 86% of statements. These data are summarised in table 1.

Several policy documents provided broad contextual ('where') information within the introductory pages, stating where the policy should be used and where the behaviours described within it should be enacted. Additionally, in some documents further detail was offered regarding the context in which the reported behaviours should not be enacted. The contextual detail was also often linked to the target/s of the behaviour:

> *"The scope of this policy applies to adult inpatients. It excludes paediatric, critical care areas and maternity patients who, due to their specialist requirements, follow their own observation and escalation policies."*

> Policy 03

> *"This policy is therefore aimed at all doctors, registered nurses, healthcare assistants and allied healthcare professionals employed within the X, who are specifically involved in the delivery of*

care to adult patients cared for in an emergency and ward environment within X. Please note that this policy also applies to Mental Health Division patients cared for at X Hospital."

<div align="right">Policy 07</div>

In some behavioural statements the 'active voice' was used (here the actor – who is specified - performs the action):

"The Registered Nurse should review the patient and repeat a full set of observations prior to seeking senior advice and support."

<div align="right">Policy 11</div>

More frequently, the 'passive voice' was used (here the target receives the action and no actor is specified):

"The Registered Nurse responsible for the patient must be informed when the NEWS Score is greater than 0."

<div align="right">Policy 02</div>

In table 2, we present example statements related to afferent limb behaviour from local policy documents. We have highlighted the 5 elements of the TACTA framework and the scores assigned for level of specificity. Where the element of the TACTA framework was present but not specific (scored 1 for level of certainty), we have explained our coding decision and offered a recommended re-structure that may improve the specificity of the overall statement.

5. DISCUSSION

The aim of the present research was to identify how local deteriorating patient policy documents provide actionable behavioural instruction for clinical staff, when using the National Early Warning Score (NEWS) to enact behaviours of the afferent limb. Within the sample of local policies, there was noteworthy variation in relation to the number of pages and the frequency of behavioural statements related to the afferent limb. Within the NEWSIG (Royal College of Physicians, 2012) there were equal numbers of statements related to monitoring behaviours and escalation behaviours. Within the sample of local policy documents there were more statements related to monitoring than escalation behaviour. The target and action elements of the TACTA framework were present in a high proportion of behavioural statements. The context, timing and actor elements were present in a lower proportion of statements, with the lowest proportion of statements specifying the actor. Within the documents sampled, there were no significant differences in these proportions between policies obtained from tertiary-level and district general hospitals.

A recently published prospective study - involving 1,148 rapid response activations - reported a significantly (p<0.001) higher 30-day mortality in patients where escalation was delayed, compared to where it was timely (Boniatti et al., 2014). This result suggests that escalation behaviours are time-sensitive and should be promptly enacted in the event of an elevated NEWS. Despite this, there is evidence in the literature of delays and inconsistencies in the escalation of deteriorating patients (Churpek, Edelson, Lee, Carey, & Snyder, 2017; Fernando et al., 2018; Shearer et al., 2012). In this documentary analysis, we found a low proportion of statements included a specific timeframe for the clinician to enact the behaviour. Further, there were examples where statements included a timing element but with the use of terms such as 'immediately' or 'urgently''. This wording is consistent with language used to report the time scale for afferent limb behaviours within the NEWSIG (Royal College of Physicians, 2012). Whilst this language may be appropriate for a national document, and clearly emphasises that the behaviour is time-critical, these terms are open to varied interpretation and could contribute to an inconsistent response at the level of the individual clinician. Behavioural statements within local policy documents would be more actionable if they were documented in more specific terms i.e., within how many minutes or hours the behaviour should be enacted. As advised within NEWSIG (Royal College of Physicians, 2012), providing this level of specificity would also allow the Trust-level policy writers to customise the timing of the behaviour to make it realistic and achievable within the local context.

In addition to registered nurses, within the UK context it is common for some afferent limb behaviours to be performed by un-registered practitioners including health care assistants, pre-registration student nurses and, increasingly, associate practitioners (Mackintosh et al., 2014; Smith and Aitken, 2016). In addition, at the point of escalation, the local clinicians (typically those listed above) are required to contact one or more efferent responder/s (commonly a medical offier and/or a senior specialist nurse) (Bannard-Smith et al., 2016; DeVita et al., 2006). By the point where the afferent and efferent limbs interface, a range of different clinical actors may be performing a complex array of different and overlapping behaviours (Smith et al., 2006). Dixon-Woods and Pronovost (2016) suggest that, at system-level, the fallibility of healthcare systems increases when they are dependent on "distributed, heterogeneous but interdependent actors" (p487). Further, the potential for an effective system-level response decreases when individuals operating within the system, lack co-ordination and a clear understanding of their own role and the role of other actors (Dixon-Woods & Pronovost, 2016). Within this sample of policies, the actor element of the TACTA framework was infrequently specified in statements related to afferent limb behaviour, irrespective of the organisation (tertiary-level or district general hospital). Given the potential number of actors involved in operationalising the RRS, the lack of clear specification of 'who should do what' may be contributing to a less cohesive response to deteriorating patients. As such, the need for clearer specification of the actor/s within deteriorating patient policy statements, is a key recommendation from this work.

Over the past two decades, an expansive body of literature related to the rapid response system has emerged. In relation to the afferent limb of the RRS specifically, a sizable proportion of this work has focused on the use of track-and-trigger tools and their predictive value in identifying patients most at risk of adverse outcomes (Downey, Tahir, Randell, Brown, & Jayne, 2017; Hands et al., 2013; Jarvis et al., 2015). Similarly, the interventions (primarily educational) proposed to address the problem of afferent limb failure, have tended to focus on the behaviours related to patient monitoring and assessment (Liaw et al., 2016; Smith, Osgood, & Crane, 2002). In comparison, there are paucity of studies that have reported the actions of staff when they are escalating care and what influences their escalation behaviour (Massey et al., 2017, 2014; Smith and Aitken, 2016). The results of this documentary analysis reflect the wider body of evidence, with a higher proportion of statements related to monitoring behaviour compared to escalation behaviour. In other words, it is likely that healthcare staff monitor patients' vital signs effectively but are still uncertain or unconfident about what to do when they detect deterioration. More focused observational work may be beneficial to 'unpick' the nuances of escalation behaviour and to elucidate what actually happens in the clinical setting. Improving the understanding of the afferent limb through a 'behavioural lens', could also permit the development of more focused, theoretically-informed, behaviour change interventions (Cane, O'Connor, & Michie, 2012; Craig et al., 2008) targeting behavioural antecedents to afferent limb failure.

Within the policy documents, we found examples of instructions where the actor was directed to enact multiple behaviours in the same context (Sniehotta, Presseau, Allan, & Araújo-Soares, 2016). This was more common in escalation behaviour statements, where nursing staff were directed to contact a number of different 'efferent limb' responders, for example: *"notify a doctor, a critical care nurse, and/or a nurse practitioner".* In response to these instructions, we pose these questions:

- *Should these behaviours occur in sequence or concurrently?*
    - *If concurrently, with whom should the behaviours be enacted?*
    - *If in sequence (by one actor), in what order should these behaviours be enacted?*
- *Should all the listed behaviours always be enacted or, are some behaviours conditional*? (We define conditional as: only enacted under certain conditions (Michie, Atkins, & West, 2014) e.g., *the nurse practitioner should be contacted after the critical care nurse and <u>only</u> if the critical care nurse is unavailable).*

We acknowledge that these may be empirical questions and that they are currently unanswered by published literature. Pragmatically, to make statements more actionable, it may be useful for policy writers to consider these points when writing statements that direct staff to enact multiple behaviours.

5.1 Strengths and Limitations
We believe that this is the first published documentary analysis of local deteriorating patient policy documents, and the first study to report, using a behaviour specification framework, how actionable

policy-statements directing afferent limb behaviour are. We were able to sample of range of policy documents from organisations across the UK, enabling us to develop a broad understanding of how NEWS had been applied since its inception in 2012. However, we acknowledge that we were unable to code all policy documents and that our findings may not be representative of every operational policy document within the UK. Likewise, our sampling of policy documents was limited to oraganisations using the NEWS track and trigger tool (a typically UK-based system) and therefore excluded policy documents from other international organisations. However, given that rapid response systems have been implemented on an international scale, and the expected behaviours of the afferent limb are typically the same (regardless of the particular track and tigger tool in use), our recommendations are likely to be relevant to those who develop policy and protocols for deteriorating pattients in the wider interenational context.

Whilst it is intuitive that improving specificity in policy statements will increase the likelihood of the behaviour being enacted as specified, we do not have empirical evidence that greater specification in policy directly increases the desired behaviours. In order for the policy to influence behaviour, staff would need to read the document in the first instance. In addition, we acknowledge that behaviour change is determined by a range of different mediators (Francis, O'Connor, & Curran, 2012) and that disseminating a policy alone - even if it contains clear, actionable and specific behavioural statements - may not result in the desired behaviour change. Despite these limitations, clear, actionable, policy-specified behaviours are arguably the first essential element to inform/drive consistent, timely responses to the deteriorating patient.

6. CONCLUSION

Delay in escalating deteriorating patients is associated with adverse outcomes. Some of this delay could be addressed by writing local protocols with a greater level of behavioural specificity, to facilitate their actionability. We have used a simple framework for analysing current hospital documents and for proposing how they can be made more actionable. However, the effect of such changes on timely responses to deteriorating patients should be investigated empirically in further research.

7. RELEVANCE TO CLINICAL PRACTICE

In December 2017, a second iteration of the National Early Warning Score (NEWS2) was published by the Royal College of Physicians (Royal College of Physicians, 2017). Whilst amendments have been made to the layout, presentation and content, (Royal College of Physicians, 2017) the overarching principles that determine its use remain unchanged. It is quite plausible that acute healthcare Trusts within the UK will have/be working towards substituting the original tool with the updated version. We suggest that this period of change provides a timely opportunity for senior clinicians responsible for writing, reviewing and ratifying local policy, to consider how actionable the statements of behaviour are

and to identify opportunities to increase the specification of behavioural statements within these key documents. In particular, we recommend the inclusion of a specified clinical actor (who is responsible for enacting the behaviour/s) and a clear actionable time-frame (how quickly the behaviour needs to be enacted). In addition, enacting multiple behaviours, in the same clinical context, may place a higher cognitive load on cliincal staff (Subbe, Duller, & Bellomo, 2017). As such, we recommend that further attention be given to increasing the specificity of policy statements that direct clinical staff to enact multiple behaviours.

Conflict of Interest

None of the authors declare conflict of interest.

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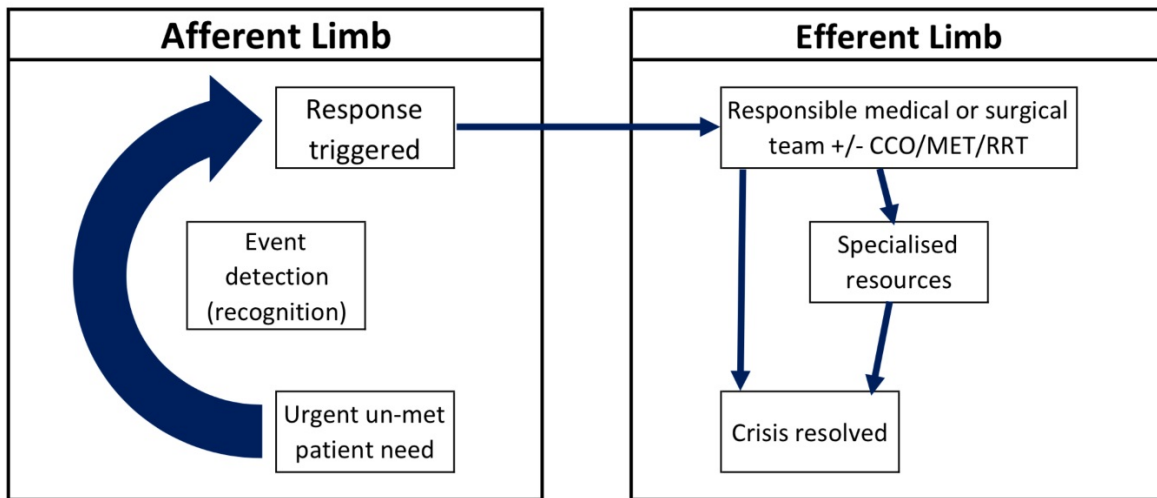
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Figure 1 – the conceptual model of the Rapid Response System (RRS)

Table 1 – Frequencies and proportions of TACTA elements for the entire sample of deteriorating patient policies (n=919 behavioural statements)

TACTA element	Frequency (%) behavioural statements containing the TACTA element	Median (IQR) behavioural statements containing the TACTA element	Range behavioural statements that contain each TACTA element	Proportion of behavioural statements where the TACTA element was reported specifically (scored 2 during coding)
Target	658 (72%)	72 (61-81) %	37-97 %	87%
Action	865 (94%)	96 (89-100) %	68-100 %	89%
Context	343 (37%)	31 (26-43) %	14-65 %	
Timing	342 (37%)	36 (29-47) %	0-69 %	79%
Actor	305 (33%)	31 (24-43) %	0-71 %	86%

IQR: Interquartile Range

Table 2 – Exemplar behavioural statements extracted from local policy documents with Target, Action, Context, Timing and Actor elements labelled and scored (1 or 2) according to level of specificity

Statement as extracted from local policy	Statement with TACTA and level of specificity scores (1 or 2) highlighted in bold font	Explanation for level of specificity scores of 1	Recommended re-wording (highlighted in bold font) to increase specificity from a score of 1 to 2
"If the FY2 doctor does not respond, the registered nurse responsible for the patient must contact senior medical staff in accordance with the escalation process." Policy 02	"If the FY2 doctor does not respond **(context – circumstances),** the registered nurse responsible for the patient **(actor-2)** must contact **(action – 2)** senior medical staff **(target – 1)** in accordance with the escalation process."	Whilst it is implied that the **target** should be more senior than an FY2 doctor, the actual grade of doctor to be contacted is not clearly specified. In addition, **the timing** of the behaviour has not been included.	"If the FY2 doctor does not **respond within 15 minutes**, the registered nurse responsible for the patient must then contact the **specialist registrar from the parent team** in accordance with the escalation process."
"Once a nurse has identified that a patient requires a medical review, the patient must be reviewed within 20 minutes. The minimum grade of doctor responding must be an FY2." Policy 02	"Once a nurse has identified that a patient requires a medical review **(context-circumstances)**, the patient **(target-2)** must be reviewed **(action-1)** within 20 minutes **(timing-2).** The minimum grade of doctor responding must be an FY2 **(actor-2)."**	The use of the verb 'reviewed' is potentially an unclear **action** in this context.	"Once a nurse has identified that a patient requires a medical review, **the patient must be examined** within 20 minutes. The minimum grade of doctor responding must be an FY2."

"Total 5-6 or any single score of 3 = medium risk
  – RN to urgently inform patient's medical or surgical team (night nurse practitioner at night), and critical care outreach team."
 	
Policy 04
	"Total 5-6 or any single score of 3 = medium risk **(context-circumstances)**
	  – RN **(actor-2)** to urgently **(timing-1)** inform **(action-2)** patient's medical or surgical team (night nurse practitioner at night), and critical care
		The specification of **timing** is reported as 'urgent'. Whilst this term suggests that the behaviour is time critical, it is potentially ambiguous and open to varied interpretation.	"Total 5-6 or any single score of 3 = medium risk (context-circumstances)
			  - RN to urgently inform patient's medical or surgical team (night nurse practitioner at night), and critical care outreach team **within 15 minutes of**

	outreach team **(target -2)**."		**recording the NEWS."**
"If a clinical professional (chiefly Doctors, Advanced Nurse Practitioners and Outreach Team Members) is requested to attend but unable to do so, they must immediately inform the referrer (usually the nurse in charge of the ward)". Policy 07	"If a clinical professional (chiefly Doctors, Advanced Nurse Practitioners and Outreach Team Members) **(actor-2)** is requested to attend but unable to do so **(context-circumstances)** they must immediately **(timing -1)** inform **(action -2)** the referrer (usually the nurse in charge of the ward) **(target -2)".**	The specification of **timing** is reported as 'immediate'. Whilst this term suggests that the behaviour is time critical, it is potentially ambiguous and open to varied interpretation.	"If a clinical professional (chiefly Doctors, Advanced Nurse Practitioners and Outreach Team Members) is requested to attend but unable to do so they must inform the referrer (usually the nurse in charge of the ward) **within 5 minutes of the initial referral**."
"Regardless of the National Early Warning Score or single parameter triggers clinical staff may increase the frequency of observations if they are concerned about a patient for any reason. This takes into account good clinical judgement in identifying deterioration." Policy 19	"Regardless of the National Early Warning Score or single parameter triggers clinical staff **(actor-1)** may increase the frequency of observations **(action-2)** if they are concerned **(context–circumstances)** about a patient **(target-2)** for any reason **(context–circumstance)**. This takes into account good clinical judgement in identifying deterioration."	The specification of the **actor** is broad and non-specific. The term 'clinical staff' could be interpreted as any member of the clinical work-force, including non-registered personnel, who may not have the requisite knowledge and skills to make this decision	"Regardless of the National Early Warning Score or single parameter triggers **registered nurses** may increase the frequency of observations if they are concerned (context – circumstances) about a patient for any reason. This takes into account good clinical judgement in identifying deterioration."