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Ward Round Skills of medical students

Improving the non-technical ward round skills of medical students

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Abstract

Background: Research indicates that non-technical skills (NTS) contribute to patient outcome, but no NTS framework currently exists to evaluate the ward round behaviours of medical students. We aimed to explore whether a valid and reliable NTS framework could be developed and used to evaluate an educational intervention (ward round simulation and structured debrief) to improve the ward round NTS of this group.

Methods: A NTS framework was developed based on 70 patient interactions from 19 simulated ward rounds. Medical students role-played both the patients and junior doctors and Faculty acted as consultant and nursing staff. Four patient scenarios, derived from clinical adverse event discussions, were used to highlight patient safety issues within the simulations. After a structured debrief the student roles were reversed and the ward round was repeated with the same scenarios. The simulations were used to develop the initial framework and the simulated patient interactions were then scored using the framework by two non-medical researchers. The final NTS framework comprised seven categories, five which corresponded with existing categories (Communication, Decision Making, Situational Awareness, Teamwork and Task Management) along with two new categories (Student Initiative and Responsiveness to Patient).

Results: All but Teamwork had at least fair inter-rater reliability. Significant improvement was found in all of the original NTS categories, with the exception of Situational Awareness, following the structured debrief.

Discussion: Future research is needed to refine the framework, and to assess its utility as applied to other health professionals and in a non-simulated ward round setting.

Keywords: Patient Simulation; Ward round; Non Technical Skills; Medical students

Introduction

Newly qualified doctors (or ‘junior doctors’) take part in ward rounds on an almost daily basis and have to complete this challenging, complex and frequently time pressured role from their first day as a newly qualified doctor. It is a task that graduating medical students appear to be unprepared for (Nikendei et al, 2008) and where errors can lead to significant patient harm, with lower quality ward rounds being associated with avoidable complications, delayed diagnoses and more negative patient outcomes (Pucher et al, 2013). The need to improve ward rounds has been highlighted recently by the Royal College of Physicians in the United Kingdom (2012) and attempts have been made to address this issue, for example through the introduction of checklists during ward rounds. There has been an increasing recognition that non-technical aspects of performance make an important contribution to avoidable patient harm and medical error. Such non-technical skills (NTS) have been defined as:

“the cognitive [such as decision making and situation awareness], social [such as communication, team working and leadership] and personal resource skills [such as coping with stress and fatigue] that complement technical skills, and contribute to safe and efficient performance.” (Flin et al, 2008: 1)

Despite the recognition of the importance of NTS in patient care, and a growing literature illustrating both that NTS can be taught (eg Savoldelli et al, 2006) and that training is associated with improved patient outcomes (eg Armour Forse et al, 2011), as yet there has been no systematic attempt to teach the NTS utilised in ward rounds within the standard educational curriculum for medical students in the UK.

This pilot study therefore aimed to do the following:

- Develop a framework to help identify and measure the NTS required by medical students during ward rounds;

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- Evaluate whether an educational intervention could significantly improve these NTS in medical students.

Method

Ethical approval was sought from the university where all of the participants were studying. A full ethics submission was not required, as the ward simulation formed an existing part of the curriculum. All participants were, however, fully briefed about the research and all provided written consent. Participants (n = 217) were in their final year of undergraduate medical training at a Scottish University. All final year students undertake the ward simulation as part of their training and all those who were present for the sessions (n = 217) were invited to participate in the research component and all consented to take part. To guide the development of the NTS framework the generic NTS taxonomy as described by Flin et al. (2008) was used, along with recent relevant UK policy documents and guidelines (eg Francis, 2013) to identify any additional key NTS skills that may be important for health professionals.

Analysis of ward round simulation footage was used in order to identify ward round specific NTS. This footage was obtained from a ward simulation exercise which was led by Faculty staff and was undertaken by the participants as part of their training (for details see Harvey et al, 2005). This involved the students role-playing Foundation Year (FY) Doctors (either FY1s or FY2s), one of four patients or observing. Each patient presented with a particular learning challenge which were derived from clinical adverse event discussions and were chosen to reflect a range of issues that would require both technical and non-technical skills (see Table 1)

Table 1: Brief overview of the four simulated patient scenarios and some of the learning challenges being highlighted by each

Each simulated ward round was followed by a structured reflective debrief, with the aim of prompting discussion and highlighting learning points. The simulated ward round was then undertaken for a second time with the student participants being assigned to different roles.

Each session lasted 90 minutes and 19 digitally recorded sessions (70 simulated patient interactions) were reviewed and coded by two non-medical researchers, using the coding framework developed by Mellanby et al. (2013), in order to develop and evaluate the NTS framework. Exemplars of each generic NTS category were noted and where the data did not fit into the existing framework, new categories were proposed and discussed until consensus was reached.

In order to determine inter-rater reliability of the coding, 34 out of the total of 70 patient observations (49%) were scored by two researchers as poor to marginal = 1 or acceptable to good = 2. These ratings were based on exemplars in respect of each NTS skill, which in turn were drawn from the existing literature (eg Flin et al, 2008, Francis, 2013, Mellanby et al, 2013) and discussion with the medical practitioners and educationalists in the wider research team (see Table 2 for some examples). If the skill was not present, this was coded as 1.

Table 2: Examples of skills in each NTS category

In order to establish whether the ward simulation educational intervention impacted on NTS, each NTS category within the final framework was coded 1 – 4 where 1= poor, 2 =

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marginal, 3 = acceptable and 4 = good. The performance of the total student group was rated before and after the de-brief session in relation to the four learning scenarios depicted.

Results

Developing a ward round NTS framework

The following categories from the original NTS framework were retained as they reflected NTS that were observable in the ward round: Communication, Decision Making, Situational Awareness, Teamwork and Task Management. Two new categories were also developed: Student Initiative and Responsiveness to Patient.

Student Initiative allowed some of the behavioural characteristics which are normally coded under the 'Leadership' category to be scored in relation to the students, while taking account of their more limited role and remit in a ward round. Examples included volunteering for tasks or trying to organise the group to achieve a goal. This category was scored if the student acted without being prompted based on their perception of what was required within the particular situation at that particular time. 'Responsiveness to Patients' was introduced in light of recommendations made from recent United Kingdom policy documents (eg Francis, 2013), which highlighted the importance of the patient voice and reflected student attempts to include the patient in discussions, respond to the patients' communication and elicit patient opinion.

Inter-rater reliability

Table 3 illustrates the kappa values and level of agreement for each behavioural category.

Table 3: The kappa values and level of agreement for each behavioural category

Agreement was found to be “fair” or better for all categories with the exception of Situational Awareness where it was less than chance.

The impact of the ward simulation learning intervention on student skills

Table 4 illustrates the mean scores pre and post intervention for each NTS category and for all categories combined (significant results are marked with an asterisk).

Table 4: Mean scores pre and post intervention for the behavioural categories coded

Discussion

The identified NTS categories reflected the specific context of the ward round as well as the wider NHS context. For example the adaptation of the category ‘Leadership’ to ‘Student Initiative’ reflected the fact that, in practice, the leadership role in a ward round would be held by the consultant rather than by a more junior member of the team. Likewise, the introduction of the category ‘Responsiveness to Patients’ reflected the NHS priorities of patient centred care and patient involvement (eg Francis, 2013). As ward rounds have been shown to induce anxiety and feelings of intimidation in approximately one-third of patients (Montague and Hussain, 2006), this suggests that ‘Responsiveness to Patients’ represents an important area requiring further investigation.

In general the inter-rater reliability for the ward round NTS categories was ‘fair’ or better, although the poor agreement within the category of Situational Awareness may reflect the fact that the raters were non-clinicians who may not have the same awareness of what constitutes important situational factors that needed to be acted upon in a ward round context.

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This suggests the need for further clarification of this category if non-medical staff are to use the framework in the future.

Importantly, the framework was found to have educational utility, with the educational intervention resulting in a significant improvement in scores in all of the categories which were based on the original framework outlined by Flin and colleagues (2008), with the exception of Teamwork, and in total scores for all categories. While no significant changes were found in relation to 'Student Initiative' or 'Responsiveness to Patients,' these were new categories that were introduced after the educational intervention had been completed. As such, they were not explicitly targeted by the intervention and, therefore, significant changes in these two areas would not have been expected.

It was unclear why the educational intervention did not impact on Teamwork. One explanation may be that the students all changed roles following the debrief session and therefore the original ward round team was disrupted. This reflects the reality of clinical practice where medical students and junior doctors may regularly join unfamiliar teams. This highlights the challenge to teach teamwork skills that can easily be implemented as the doctor moves from team to team.

Finally, while the ward round simulation was developed by experienced medical researchers and clinicians in order to reflect the situations faced by junior doctors on ward rounds, and allowed teaching to take place under controlled conditions, the simulation was just that- it could only approximate the real experiences of a ward round. As the pilot study has demonstrated that the development and application of an NTS framework to a simulated ward round is possible, future research can now evaluate its use in a real ward round setting.

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Table1: Brief overview of the four simulated patient scenarios and some of the learning challenges being highlighted by each

| Simulated patient Scenario | Overall Learning Objectives | Example Learning Challenges |
|---|--|---|
| <p>Patient 1 is suffering from a community acquired pneumonia on a background of alcohol misuse. He/she is exhibiting symptoms of delirium tremens</p> | <p>Students will obtain a practical understanding and some experience of the skills to be employed in relation to:</p> <p>Accurate note taking and job list development during the ward round.</p> | <ul style="list-style-type: none"> • Dealing with aggression • Dealing with individuals with poor communication • Recognising alcohol withdrawal and dehydration • Gathering information from alternative sources |
| <p>Patient 2 is a medical student who has been admitted with glandular fever but is fit for discharge. He/she is a medical student and is demanding attention. Nursing staff are keen for the patient to be discharged as beds are needed</p> | <p>Understanding of the hierarchies that might exist on a ward round and how</p> | <ul style="list-style-type: none"> • The need to prioritise ward tasks • Dealing with potentially conflicting demands of patients and nursing staff |

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| | | |
|--|---|---|
| <p>Patient 3 has been admitted following a fall at home. He/she is frail and on warfarin (aortic valve replacement 4 years previously). Her/his INR is raised and this has been reversed but overnight the patient has developed a new right sided hemianopia which only becomes apparent on the ward round</p> | <p>these could impact on the process of clinical care.</p> <p>Experience in managing interruptions during a ward round.</p> | <ul style="list-style-type: none"> • The need to prioritise • Integrating new information in order to come up with an appropriate course of action • Referral for urgent CT |
| <p>Patient 4 has a urinary tract infection, (background history of ischaemic heart disease, hypertension, congestive cardiac failure and acute on chronic renal failure) with resultant confusion. He/she has an allergy to penicillin. He/she is also distressed because they have lost an important item. They have difficult relatives who phone demanding information and wanting to make a complaint.</p> | <p>Understanding of some key issues to be addressed during a ward round for every patient, including CPR status documentation, escalation plans, and DVT prophylaxis.</p> | <ul style="list-style-type: none"> • The need to review existing information and share this with the wider team (allergy is noted in the case notes) • The need to address practical issues that cause distress and/or provide appropriate reassurance • The need to prioritise • Dealing with phone calls and data protection issues |

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Table 2: Examples of skills in each NTS category (adapted from Mellanby et al, 2013)

| NTS Category | Examples |
|------------------------------|---|
| Communication | <p data-bbox="619 376 1161 555">Operates to exchange of information, feedback, ideas or feelings in a structured, coherent way e.g.</p> <ul data-bbox="667 622 1161 1099" style="list-style-type: none"> <li data-bbox="667 622 1161 656">• Sending and receiving information <li data-bbox="667 696 1161 801">• Identifying/addressing barriers to effective communication <li data-bbox="667 842 1161 1099">• Using frameworks to structure communication effectively e.g. assessment framework/protocol/checklist |
| Decision-making | <p data-bbox="619 1160 1150 1346">Demonstrates the process of reaching a judgement/choosing a course of action to meet the needs of a given situation e.g.</p> <ul data-bbox="667 1406 1150 1659" style="list-style-type: none"> <li data-bbox="667 1406 1150 1440">• generation of different options <li data-bbox="667 1480 1150 1514">• selection of an options <li data-bbox="667 1554 1150 1659">• reviewing decisions that have been made |
| Situational Awareness | <p data-bbox="619 1720 1209 1977">Operates to gather relevant information in the current situation, illustrates the comprehension of the meaning of this information in that context for the patient and</p> |

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| | |
|---------------------------|--|
| | <p>the ability to consider how this will impact on the patient's status in the near future.</p> <p>In this context the 'information' may be gathered from the patient, charts, communication and behaviour of staff etc</p> |
| Teamwork | <p>Demonstrates the skill of working with others in a team context, for example by:</p> <ul style="list-style-type: none">• Supporting others• Resolving conflicts• Helping others to co-ordinate/complete activities |
| Task Management | <p>Demonstrates the skill of managing resources and organisation of tasks to achieve goals, for example by:</p> <ul style="list-style-type: none">• using skills relating to planning and preparation• prioritising• providing and maintaining standards• identifying and using resources |
| Student Initiative | <p>Demonstrates initiative appropriate to the situation, for example by:</p> |

| | |
|----------------------------------|---|
| | <ul style="list-style-type: none">• Showing readiness to accept and follow through with tasks that have not been previously allocated• Responding to the needs of the situation within the limits of the role• Seeking clarification and asserting opinions that are relevant to the situation |
| Responsiveness to Patient | <p>Demonstrating awareness of and respect to the patient by, for example:</p> <ul style="list-style-type: none">• Acknowledging the patient• Responding to the patient's communication• Eliciting patient's opinion• Checking patient understanding of patient plan• Awareness of patient privacy and preferences |

Table 3: The kappa values and level of agreement for each behavioural category

| | Pre-intervention | |
|---------------------------|------------------|--------------------|
| | Kappa | Level of agreement |
| Communication | .355 | Fair |
| Decision-making | .895 | Almost perfect |
| Student Initiative | .479 | Moderate |
| Situational Awareness | -.095 | Less than chance |
| Teamwork | .374 | Fair |
| Task Management | .642 | Substantial |
| Responsiveness to patient | 1.00 | Perfect |

Table 4: Mean scores pre and post intervention for the behavioural categories coded

| | Pre-intervention | | | Post-intervention | | Comparison | | |
|---|------------------|-------|------|-------------------|------|------------|----|--------|
| | N | Mean | SD | Mean | SD | t | df | Sig |
| Communication | 69 | 2.89 | .36 | 2.98 | .27 | -1.838 | 68 | .035* |
| Decision-making | 70 | 2.8 | .47 | 3.06 | .34 | -4.060 | 69 | .000* |
| <i>Student Initiative</i> ¹ | 52 | 2.44 | .67 | 2.38 | .69 | .477 | 51 | .318 |
| Situational Awareness | 70 | 2.87 | .48 | 3.03 | .34 | -2.488 | 69 | .007* |
| Teamwork | 68 | 2.91 | .33 | 2.97 | .17 | -1.425 | 67 | .079 |
| Task Management | 68 | 2.91 | .45 | 3.01 | .21 | -1.722 | 67 | .045* |
| <i>Responsiveness to patient</i> ² | 51 | 1.63 | .72 | 1.57 | .81 | .490 | 50 | .313 |
| Total Mean score | 49 | 18.49 | 2.06 | 19.12 | 1.79 | -1.951 | 48 | .0285* |

1. This category was developed from the 'Leadership' category described by Flin et al (2008) and was used to reflect the reality that students would not be in a leadership position at their stage of training.

2. This category was a new category added by the researchers.