Development of an Adhesive Surgical Ward Round Checklist; a Technique to Improve Patient Safety

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Abstract
Checklists have been shown to improve patient outcomes. Checklist use is seen in the pre-operative to post-operative phases of the patient pathway. An adhesive checklist was developed for ward rounds due to the positive impact it could have on improving patient safety. Over an eight day period data were collected from five consultant-led teams that were randomly selected from the surgical department and divided into sticker groups and control groups. Across the board percentage adherence to the Good Surgical Practice Guidelines (GSPG) was markedly higher in the sticker study group, 1186(91%) in comparison with the control group 718 (55%). There was significant improvement of documentation across all areas measured. An adhesive checklist for ward round note taking is a simple and cost-effective way to improve documentation, communication, hand-over, and patient safety. Successfully implemented in a tertiary level centre in Dublin, Ireland it is easily transferable to other surgical departments globally.

Introduction
Use of checklists is proving to be an effective strategy for improving patient safety in many surgical processes [1-4]. Checklist use enhances consciousness and a positive attitude toward working safely and in turn makes team communication more transparent, structured, and standardized [5-7]. A recurring theme highlighted in the 2002, 2003, 2007 and 2009 National Confidential Enquiry into Patient Outcome and Death (NCEPOD) reported a lack of communication between different grades of doctors within clinical teams. The 2007 report concluded that "âƒ the quality of medical note-keeping needs to improve. All entries in notes should be legible, contemporaneous and prompt. In addition, they should be legibly signed, dated and timed with a clear designation attached. Good legible records, and coordinated handovers are essential if good communication between team members is to be established.â The report highlighted that the modernisation of working patterns due to the European Working Time Directive (EWTD) contributed to less efficient communication between those health care professionals involved in the care of a single patient. With this in mind we developed an adhesive ward round checklist designed to improve patient safety through better communication, improved handovers, and improved record keeping.

Methods
The study was carried out in a large academic teaching hospital providing emergency and acute care services across 54 medical specialties to a local community of 290,000 people. It involved four surgical disciplines: general surgery, vascular surgery, plastic surgery and neurosurgery. Surgical teams were surveyed with written questionnaires consisting of 22 opinion directed questions on current ward round communication and documentation. Subjective data from the questionnaire included the following questions: who is responsible for ward rounds and handovers, when are ward round handover notes written, do you think ward round documentation could be improved, and do you think an adhesive ward round checklist and note could aid in handovers and improve patient care? Based on the results of the questionnaire, and deficits highlighted during a ward round documentation audit, a standardized adhesive ward round checklist was developed.

The checklist accommodated thirteen specific variables based on the recommendations of Royal College of Surgeons in England GSPG [8] and the NHS Code of Practice Records Management Standards [9] for ward round documentation along with local hospital guidelines. Two groups, a sticker study group and a control group, each consisting of 5 consultant-led teams were randomly selected from the surgical department. Members of both the study group and the control group were educated on the importance of ward round handovers and the necessary components required to be documented. Handovers were carried out twice daily during bedside joint medicine-nursing ward rounds. Surgical teams and allied health professionals within the sticker group were educated on its use and it was implemented into practice. The control group meanwhile continued to enter clinical information into the medical charts by hand with no standardized structure. A trained medical observer followed both the sticker group and the control group recording their ward round communication and subsequent documentation for eight consecutive days. Results were compiled and analysed utilising Microsoft Excel.

Figure 1: Image of Adhesive Ward Round Checklist.

Results
Thirty eight doctors across all grades were surveyed, 31 (81%) of doctors believed ward round handover and their documentation could be improved. The majority, 29(76%), of respondents documented their clinical findings and plan after the ward round was complete. Figure 2 illustrates the most senior doctor responsible for documentation of the treatment plan, in the majority of cases it was the Intern. A modest 18 (47%) believed that the ward round handovers would be improved through the use of the checklist; however 12 (32%) remained undecided. The initial audit of ward round documentation before implementation of the checklist revealed some severe deficiencies from the accepted current guidelines. For example, treatment plans were only documented in 57 (77%) of charts. In addition there was poor documentation of the most senior clinician in attendance when patient management decisions were being made, aspects that are clearly explained in local guidelines.

Figure 2: Who is most senior doctor responsible for documenting the patient treatment plan?

Figure 3: Improvement brought about by the ward round adhesive checklist in documenting the most senior clinician and consultant team.

Figure 4: Improvement in plan documentation and whether abnormal blood tests and variables had been documented.

Prospective data of 198 surgical ward round handover notes was recorded over an eight day span. This included 34 study patients and 53 control patients. Marked differences were apparent between the sticker study and the control group. The timing of decisions with regard to the treatment plan alongside who made the decision was better documented and easier to identify in the sticker group. Documentation of the most senior clinician other than an Intern responsible for the treatment plan was increased in the sticker group along with the team responsible for the decision as seen in Figure 3. In Figure 4 it is apparent that there was a clear increase in the documentation of the management plan, abnormal bloods, and vital signs. The percentage adherence to the Good Surgical Practice Guidelines was markedly higher in the sticker study group, 1186 (91%) in comparison with the control group 718 (55%).

Discussion

The European Working Time Directive (EWTD) is posing major challenges to the way care is provided with its limit on doctors of an average of 48 hours work per week. The Royal College of Surgeons of England commented on the EWTD, and concluded that the hourâ s reduction has been universally damaging due to significant fragmentation of the surgical team and a loss of continuity of care. The NCEPOD, a 116-page investigation of more than 4,500 fatalities showed a lack of communication both between different grades of doctors within clinical teams and between different clinical teams and other health care professionals. In a number of cases there was evidence of poor communication at all levels. The report concluded given the fragmentation of clinical teams, and loss of the traditional "Firm" structure and the continuity of care that they provide, the documentation of a clear management plan within the medical records is an increasingly important priority.

Our initial questionnaire and audit revealed a lack of consistent processes and limited use of best practice guidelines during ward round communication and documentation. This is concerning as the ward round is a critical period during which important patient care decisions are made. Interns, the least experienced on the team, were found to be responsible for documenting the ward round communication and decisions made. It was Interns, inexperienced and lacking formal education in ward note documentation that were also most the enthusiastic about the potential of the checklist to provide structure to the process. Senior Registrars were initially more sceptical, some believed the adhesive checklist would lead to shortened documentation or that it would be too time consuming to use. These concerns were alleviated following the introduction of the checklist as the significant time savings became apparent and data showing an improved documentation rate came to light. A marked improvement in adherence to the GSPG of ward round documentation was apparent in the sticker study group in comparison with the control group. This study did not however examine whether more laboratory results were actually checked by the teams nor if there was a decrease in the number

of inappropriate blood tests. The exact mechanisms of improvement are less clear and are most likely multi-factorial. They could possibly include the standardisation of communication, creating forcing functions such as the documentation of a plan and its ease of integration into the patientâ s medical chart. Critically the checklist is short, easy to read and avoids using ambiguous terminology, all aiding and improving task performance.

This study has several limitations. While we have shown an improved documentation rate and adherence to guidelines we do not have any definitive evidence whether this has reduced morbidity or mortality. The improvement could possibly be due to the Hawthorne effect and the contribution of the Hawthorne effect is difficult to quantify in this study. The checklist is performed by the surgical team and is intentionally designed to create a collective awareness amongst the team about whether important patient variables are being assessed and documented. However, our analysis does show that the control group who were aware of their observation did not improve. We are enthusiastic about the feasibility of checklist use on other surgical teams in different hospitals. By showing attention to patient safety through the use of a checklist, a senior colleague provides a role-model in professionalism. Key skills on ward round communication and documentation are fostered from an early stage by defining and actioning a role for medical students and Interns in ward round handover. We have found the checklist can be utilized by students to ease the transition from observing ward rounds to conducting them on one's own. Handover skills with the help of the checklist are defined, taught and assessed, with clear standards and expectations presented to each new cohort of trainees at the beginning of their career.

With the goal of introduction of the checklist to other hospitals we have developed an online education website www.wardroundchecklist.com. Examples of the checklist and variations specifically tailored to the subspecialties are available. In summary, the sticker-based checklist can be used for any surgical discipline. Because of its low technical requirements it is easy to use and could be implemented throughout the Irish health service. When the checklist is an integral part of the ward round it improves communication and subsequent documentation, thus improving patient care.

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