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ORIGINAL ARTICLE

The surgical admission proforma: the impact on quality and completeness of surgical admission documentation

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Abstract

Background Inadequate medical documentation has been associated with a higher rate of adverse events and may have medicolegal consequences. An accurate admission note is critical as it is frequently referred to during inpatient stay, particularly when the patient is acutely unwell and during handover of care.

Aim We set out to implement a surgical admission proforma and evaluate its impact on the quality of acute surgical admission notes.

Methods A standardised, structured admission proforma for use with all emergency general surgery patients in a busy model 3 hospital was designed and implemented. Previously, all admission notes were performed freehand. The quality and completeness of admission notes was evaluated both before and after implementation of the proforma over two separate 4-week periods by assessing documentation across 19 criteria.

Results Two hundred and fifty-one admission notes before proforma implementation and 273 admission notes after implementation were assessed. Proforma uptake was 97%. Documentation improved in all 19 criteria, with statistical significance achieved in 17 of these. These include past medical history, medication lists, allergy status, physical examination findings, blood results, vital signs and management plan. The proforma showed evidence of improved communication with both nursing staff and senior colleagues.

Conclusions The surgical admission proforma has significantly improved the quality and completeness of admission documentation, ensuring improved patient safety and efficiency of care. Structured admission proformas have a positive impact on patient outcomes, doctors' performance, hospital efficiency, communication and audit quality control, thus providing multiple clear benefits in comparison to freehand admission notes.

Keywords Acute care surgery · Admission proforma · Patient safety · Risk management · Surgical admissions

Introduction

Accurate and complete documentation in medical records has been shown to benefit both patient care and clinician performance [1, 2]. Of particular importance is the initial admission note, which is frequently used as a reference point for the patient's history during their hospital stay. An adequate admission note is particularly critical for communicating key information when the patient is most unwell [2]. The Health Service Executive (HSE) states that "care of the service user may be affected if complete admission information is not available to aid decisions around treatment" [3]. This is of particular importance in a surgical context where there is a narrow margin for error [2]. Inadequate admission documentation has been linked with poorer patient care, with a higher rate of adverse events reported in patients where documentation was deemed lacking [4]. Poor-quality documentation may also have medicolegal consequences and act as a barrier for hospital coders, impacting an institution's ability to accurately capture the volume and complexity of care provided [2, 3].

The HSE Standards and Recommended Practices for Healthcare Records Management details what a hospital admission note should contain [3]. This includes the presenting complaint, past medical history, medication list, physical examination findings, results of investigations and treatment

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plan. Despite such clear recommendations, it has been shown that the standard of admission documentation is unacceptable in up to 10% of hospital admissions, with one or more of these criteria not recorded [5, 6]. Current standard practice for general surgical admissions in most Irish hospitals is by handwriting notes on lined paper. With such critical information omitted on such a frequent basis, the need to standardise the admission documentation process is evident. Furthermore, it has been demonstrated that healthcare professionals prefer to use structured admission proformas compared to handwritten notes [7].

Structured admission proformas have been used in the hospital setting to improve the quality and completeness of admission documentation, but there are few studies that directly compare the efficacy of freehand admission notes with a structured admission proforma, particularly in the context of emergency general surgery. We set out to design a standardised, structured admission proforma for use with all emergency general surgery patients admitted through the emergency department in a busy model 3 hospital. With this, we aimed to assess the quality and completeness of surgical admission notes using such a proforma compared to the traditional freehand method.

Methods

The surgical admission proforma was designed based on the standards and recommendations set by the HSE [4]. This was reviewed and approved by all surgical consultants in the department and the hospital documentation committee. Prior to the implementation of this, a retrospective audit of all emergency general surgery admission notes over a 4-week period was performed by four independent data collectors. The data collectors were all surgical non-consultant hospital doctors (NCHDs) working in the department. Each admission note was independently reviewed by two data collectors, with measures taken to ensure that NCHDs did not review their own admission notes. If there was any dispute between the two independent data collectors regarding the findings from the review of an admission note, this was resolved by a further review performed by a senior author.

After implementation, on-call teams were requested to use the proforma instead of freehand documentation. To allow for staff to familiarise themselves with the new system, a 2-week introduction period was put in place, with frequent reminders given to on call staff to ensure awareness of the new proforma. Following this, the audit of admission notes was repeated. On-call staff were not made aware that their documentation would be audited either before or after implementation of the proforma. Documentation both before and after implementation of the proforma was assessed based on the presence or absence of 19 criteria outlined by the HSE Standards and Recommended Practices for Healthcare Records Management [3] (Table 1). These criteria were recorded as being either present or absent by the data collectors.

Admission notes completed by the authors were excluded from the study. Data analysis was performed using Strata 14 (StrataCorp, TX), with the difference in documentation before and after implementation compared using Fisher's exact test. A p value of less than 0.05 deemed statistically significant. As this was an audit, ethics committee approval was not required.

Results

Patient notes were assessed both before and after implementation of the surgical admission proforma (n = 251 and n = 273, respectively). Compliance with the new admission proforma was 97%. Documentation was improved in all 19 of the criteria assessed, with statistical significance achieved in 17 of these. Of those outlined in Table 1, the only two criteria to not demonstrate a statistically significant improvement were the presenting complaint and the history of the presenting complaint (see Table 2).

Key criteria in the initial assessment of the patient including the past medical and surgical history, medication list, allergy status, social history, family history, physical examination findings, vital signs, blood results and the management plan all showed significant improvement after implementation of the admission proforma.

A safety checklist was included as part of the design of the proforma, which aimed to ensure important steps regarding patient management and communication with relevant staff

Table 1 Criteria for documentation

Criteria
Patient identification
Presenting complaint
History of presenting complaint
Past medical history
Past surgical history
Medications list
Allergy status
Family history
Alcohol consumption
Smoking history
Occupation
Activities of daily living
Review of systems
Vital signs
Physical examination
Results of investigations performed
Impression/diagnosis
Management plan
Signature, grade and Irish Medical Council (IMC) number of the admitting doctor

Table 2 Comparison of documentation before and after proforma introduction

Criteria	Percentage present in freehand admissions (n = 251)	Percentage present in structured proforma admissions (n = 273)	p value
Patient identification	67 (168)	98 (268)	< 0.00001
Presenting complaint	98 (246)	100 (273)	0.1928
History of presenting complaint	98 (246)	100 (273)	0.1928
Past medical history	83 (208)	96 (262)	0.0027
Past surgical history	43 (108)	93 (254)	< 0.00001
Medications list	54 (136)	84 (229)	< 0.00001
Allergy status	36 (90)	91 (248)	< 0.00001
Family history	14 (35)	88 (240)	< 0.00001
Alcohol consumption	23 (58)	59 (161)	< 0.00001
Smoking history	36 (90)	61 (167)	0.0004
Occupation	12 (30)	54 (147)	< 0.00001
Activities of daily living	11 (28)	52 (142)	< 0.00001
Review of systems	7 (176)	71 (194)	< 0.00001
Vital signs	31 (78)	66 (180)	< 0.00001
Physical examination	91 (228)	99 (270)	0.00932
Results of investigations performed	53 (133)	71 (194)	0.0076
Impression/diagnosis	91 (228)	98 (268)	0.002
Management plan	93 (233)	100 (273)	< 0.00001
Signature, grade and IMC number of the admitting doctor	51 (128)	97 (265)	< 0.00001

were performed. A vast majority (96%) of the admission notes reviewed were completed by senior house officers, the most junior doctor on call for the surgical team in the emergency department. However, the proforma safety checklist prompts the admitting doctor to document if the patient has been discussed with their senior. Following implementation of the proforma, 87% of admission notes referenced discussion of the patient with a senior colleague, compared to 53% in freehand notes. The proforma also prompts the admitting doctor to communicate the management plan with nursing staff. Of admissions completed using the proforma, 74% showed that the plan had been communicated to nurses, while none of the freehand admission notes did. With regard to female patients, the result of the urinary pregnancy test was documented in 71% of proforma admissions, compared to 26% of freehand admissions. The fasting status was stated in 87% of proforma admissions compared to 79% of freehand admissions. An improvement in the documentation of whether DVT prophylaxis was required was also seen in the proforma admissions (91% compared to 49%).

Discussion

Complete and coherent medical documentation is essential to ensure patient safety and efficiency of care during their hospital stay. The admission note is particularly invaluable, being frequently referred to during the patient's admission, especially when most are unwell and during handover of care. Despite the critical importance of this, significant failings in ensuring the completion of an adequate admission note have been recognised [5, 8]. We have demonstrated the impact a structured admission proforma can have in addressing these deficiencies in documentation compared to freehand admission notes. Other studies have shown an improvement in admission documentation by use of structured proforma, but few demonstrate this in the context of emergency general surgery [2, 9, 10]. It has been shown that doctors who record more detailed medical notes are more likely to detect adverse events [11]. Our proforma provides a framework to ensure that high-quality admission documentation can consistently be produced by on-call staff.

As well as providing improved patient safety, the proforma also provides many benefits to medical staff. A survey of over 1000 doctors showed that clinicians overwhelmingly prefer the use of an admission proforma compared to freehand notes [12]. A clearly structured document can help streamline the admission process, and acts as a useful reference tool when a doctor is called to see a patient unfamiliar to them. It has been demonstrated that structured proformas improve access to relevant clinical information and reduce delays in the clinical setting [9]. It does so by making important information easier to access by consistency of subheadings appearing in a predetermined order [2, 13]. It is for this reason that structured proformas have also been shown to improve efficiency on post-take ward rounds [2].

The structured proforma may also be useful in a medicolegal context. A significant proportion of litigation relies heavily on documentation in the medical records to determine if appropriate actions were taken [5]. The proforma acts to highlight key steps such as documentation of appropriate investigations, a clear management plan and discussion with a senior colleague. The proforma may also be a valuable tool for doctors that wish to partake in audit and research, with the consistent structure making data collection easier and ensuring that essential information required for projects is not omitted. Importantly, all four data collectors found the data collection process significantly easier with the proforma compared to freehand notes. With regard to clinical coding, the proforma acts to more consistently provide relevant information required to accurately capture the volume and complexity of work performed by a hospital [3].

The proforma serves to act as a reminder of best practice to all doctors that use it. Other disciplines, such as respiratory medicine or obstetrics, have demonstrated that pre-printed forms have a positive impact on doctors' performance [14, 15]. Following implementation of the proforma in our centre, documentation of important details such as background history, medication lists, allergy status, vital signs, blood results and a clear management plan significantly improved. The proforma also ensures essential safety factors are considered, such as discussing the case with a senior colleague, the requirement for antibiotics, the requirement for venous thromboembolism prophylaxis, checking pregnancy test results, if the patient is required to fast or if further investigations are required. The structured document reminds the on-call doctor to consider these factors which could be easily overlooked, particularly in the context of a busy call shift with multiple admissions. The proforma also acts to improve communication, prompting the admitting doctor to clearly communicate the management plan to nursing staff.

Our study is not without limitations. While the 19-point criteria for assessing the quality of admission notes was modelled on HSE recommendations, application of this could be vulnerable to subjectivity. However, efforts were made to overcome this by having each note reviewed by two independent data collectors, with any discordancy in findings resolved by senior author input. Minimal inter-rater variability was noted, with only 9 admission notes requiring senior review. We did not demonstrate if patient outcomes improved following implementation of our proforma. However, it has been demonstrated before that poor-quality admission documentation is associated with negative patient outcomes [2]. It is also important to highlight that, while all aspects of documentation did improve with the proforma, some elements of documentation remained at a poor standard. Factors such as smoking history, alcohol intake and activities of daily living were frequently omitted, and this may reflect an attitude that these details lack relevance as part of a surgical admission, despite being essential factors to consider with regard to any hospital admission, particularly in relation to post-operative recovery. Structured proformas have faced some criticism in that they act to limit free expression and turn medicine into a 'box-ticking exercise' in a context where physicians should be encouraged to be dynamic and innovative [16]. Despite this, it has been shown that their use is preferred by most clinicians, and the benefits towards safety and efficiency for both the patient and doctor that have been demonstrated show a clear advantage towards their use [7].

In conclusion, our study demonstrates that a structured surgical admission proforma significantly improves the quality and completeness of admission documentation. This acts to ensure greater patient safety and greater efficiency of care. This is likely to have a positive impact on patient outcomes, doctors' performance, hospital efficiency, communication and audit quality control, thus providing multiple clear benefits in comparison to freehand admission notes.

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Data availability The data that supports the findings of this study is available from the corresponding author upon reasonable request. Data analysis was performed using Strata 14 (StrataCorp, TX)

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflicts of interest.

Ethical approval Our institutional review board does not require approval for audit or quality improvement projects.

References

1. Mann R, Williams J (2003) Standards in medical record keeping. Clin Med. 3(4):329–332
2. Ehsanullah J, Ahmad U, Solanki K et al (2015) The surgical admissions proforma: does it make a difference? Ann Med Surg (Lond). 4(1):53–57
3. Health Service Executive National Healthcare Records Management Advisory Group (2011) HSE Standards and Recommended Practices for Healthcare Records Management. 87–93

4. Zegers M, de Bruijne MC, Spreeuwenberg P et al (2011) Quality of patient record keeping: an indicator of the quality of care? BMJ Qual Saf. 20(4):314–318
5. Lyons JM, Martinez JA, O'Leary JP (2009) Medical malpractice matters: medical record M & Ms. J Surg Educ. 66(2):113–117
6. Osborn GD, Pike H, Smith M et al (2005) Quality of clinical case note entries: how good are we at achieving set standards? Ann. R. Coll. Surg. Engl. 87(6):458–460
7. Ho MY, Anderson AR, Nijjar A et al (2005) Use of the CRABEL score for improving surgical case-note quality. Ann R Coll Surg Engl. 87(6):454–457
8. O'Driscoll BR, Al-Nuaimi D (2003) Medical admission records can be improved by the use of a structured proforma. Clin Med. 3(4): 385–386
9. Irtiza-Ali A, Houghton CM, Raghuram A, O'Driscoll BR (2001) Medical admissions can be made easier, quicker and better by the use of a pre-printed medical admission proforma. Clin Med. 1(4): 327
10. Faraj AA, Brewer OD, Afinowi R (2011) The value of an admissions proforma for elderly patients with trauma. Injury. 42(2):171–172
11. Lilford RJ, Mohammed MA, Braunholtz D, Hofer TP (2003) The measurement of active errors: methodological issues. Qual Saf Health Care 12(Suppl. 2):ii8–i12
12. Carpenter I, Ram MB, Croft GP, Williams JG (2007) Medical records and record-keeping standards. Clin Med. 7(4):328–331
13. Nygren E, Wyatt JC, Wright P (1998) Helping clinicians to find data and avoid delays. Lancet. 352(9138):1462–1466
14. Robinson SM, Harrison BD, Lambert MA (1996) Effect of a preprinted form on the management of acute asthma in an accident and emergency department. J Accid Emerg Med. 13(2):93–97
15. Lilford RJ, Kelly M, Baines A et al (1992) Effect of using protocols on medical care: randomised trial of three methods of taking an antenatal history. Br Med J. 305(6863):1181–1184
16. Wrenn K, Rodewald L, Lumb E, Slovis C (1993) The use of structured, complaint-specific patient encounter forms in the emergency department. Ann Emerg Med. 22(5):805–812