

Improving communication with primary care to ensure patient safety post-hospital discharge

Introduction: Successful communication between hospitals and primary care is of paramount importance to enable continuity of care and maintain patient safety post-discharge. Discharge summaries are the simplest way for GPs to obtain information about a patient's hospital stay. A quality improvement study was conducted with the aim of increasing the content of discharge summaries for inpatients in the authors' department.

Methods: A prospective review of 60 electronic discharge summaries was conducted over a 6-week period. The content of discharge summaries was reviewed in accordance with local trust guidelines. Targeted, intensive, cost and time-effective educational interventions were then conducted. A post-intervention review of 60 discharge summaries was performed. A further review of 60 discharge summaries was performed after 12 months.

Results: Initial results pre-intervention confirmed suboptimal content of discharge summaries. Post-intervention results showed each component of discharge summaries improved in terms of content, with six of eight components having a statistically significant ($P<0.05$) increase. This was maintained after 12 months.

Conclusions: This study has demonstrated how simple, intensive educational sessions can lead to an improvement in discharge summaries and communication with primary care.

The process of discharge from hospital into the community involves a transfer of care from hospital specialists to GPs (Kripalani et al, 2007a). For this transfer of care to be complete, there is a growing reliance on discharge summaries to provide thorough information regarding a patient's hospital admission, including diagnoses, treatments, medication changes, and future specialist follow up (Kripalani et al, 2007a). Sharing accurate records of care and treatment is a key aspect of good medical practice as stated by the General Medical Council (2013).

The importance of this handover of information between hospital and primary care cannot be underestimated. Once dis-

charged from hospital, patients are particularly vulnerable as a result of discontinuity of their treatment if their GP lacks the salient knowledge of their diagnoses and management (van Walraven et al, 2004; Kripalani et al, 2007a). A lack of detail or errors in discharge summaries can result in mismanagement in the primary care setting, risking patient safety and undermining patient satisfaction (Kripalani et al, 2007b).

It has been reported that 49% of patients experience at least one medical error in medication continuity, diagnostic workup, or investigation follow up post discharge (Moore et al, 2003). Moreover, 19–23% of patients suffer an adverse event (Forster et al, 2003, 2004, 2005). Most of these adverse events could be avoided if adequate communication between hospital and primary care existed (Forster et al, 2003).

Owing to the potentially serious consequences of incomplete or inaccurate discharge summaries with regards to patient safety, it was felt important to address this issue in the authors' department. A quality improvement study was therefore conducted with the primary aim of increasing the accuracy and detail of discharge summaries for inpatients in the department.

Methods

This study was conducted in an inpatient orthopaedic department at a level 1 trauma centre. After gaining local research and audit committee approval, a prospective review of 60 electronic discharge summaries was conducted by one author (CB) over a 6-week period. The content of discharge summaries was reviewed in accordance with local trust guidelines (Table 1). The accuracy of information contained within each discharge summary was cross-checked against the patient's case notes.

Intervention

After the initial review, a targeted intervention was implemented. This involved specific educational sessions for the same group of junior doctors ($n=15$) who were involved with creating the discharge summaries that were initially reviewed. Junior doctors in the department receive generic teaching about the department's policies, including discharge summaries, during the departmental induction at the beginning of their rotation. However, as time is limited, this teaching is often brief and may not be assimilated well given the volume of material that is covered at this induction. Thus the repeat teaching sessions were organized by two of the authors (FS and DR) who were not involved in the

Table 1. Content required in discharge summaries

Patient demographics*
Primary diagnosis
Presenting symptoms or mechanism of injury
Patient comorbidities
Drug allergy status
Significant investigations
Treatments and/or operations
Medication list
Follow-up arrangements

*'Patient demographics' was not audited, as it is taken for granted that this is correct on discharge summaries

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initial review of the discharge summaries and were blinded to the results of this. Hence there was no bias when formulating the teaching sessions, which were based on the department's guidelines on how to construct an adequate discharge summary. The sessions incorporated multi-faceted teaching methods including an initial group lecture followed by two short, intensive one-to-one sessions where key points were re-enforced (Table 2).

The initial group education session was conducted by one of the authors (FS). It consisted of a 15-minute PowerPoint presentation detailing all content which should be included in discharge summaries (Table 1). An example of a completed summary was then shown. Any questions or clarifications were answered during this session, and the example discharge summary was emailed to all doctors to have as a permanent reference.

One week later, the authors approached all doctors on a one-to-one basis, and asked each of them to show a discharge summary they had written in the past week. It was checked for quality and feedback given. This teaching lasted 5–10 minutes.

A review of 60 orthopaedic discharge summaries was then repeated over a subsequent 6-week period to assess the effectiveness of the interventions, by the same initial reviewer (CB). With the exception of

the authors, all doctors were unaware of the ongoing data collection.

The intervention described above was subsequently incorporated into the generic induction session for every group of new junior doctors starting the rotation, which was every 4 months. Example discharge summaries were emailed to all new junior doctors by the junior doctor rota coordinator. The one-to-one teaching sessions were left to the responsibility of the registrar in charge of each junior doctor team. This ensured the interventions remained once the authors (FS, CB, DR) changed rotation after 8, 4 and 6 months respectively. To ensure the sustainability of the intervention, a repeat review of 60 discharge summaries was conducted 12 months after the start of the study.

Statistics

Descriptive statistics were reported as actual values and percentages. Pre-intervention and post-intervention categorical data were analysed using contingency table analysis and Fisher's Exact test. All statistical analyses were performed using GraphPad Prism version 6.0a (GraphPad Software Inc., USA).

Results

In total, 120 discharge summaries were reviewed in the initial study. All discharge summaries were from orthopaedic inpatients, with an average length of stay of

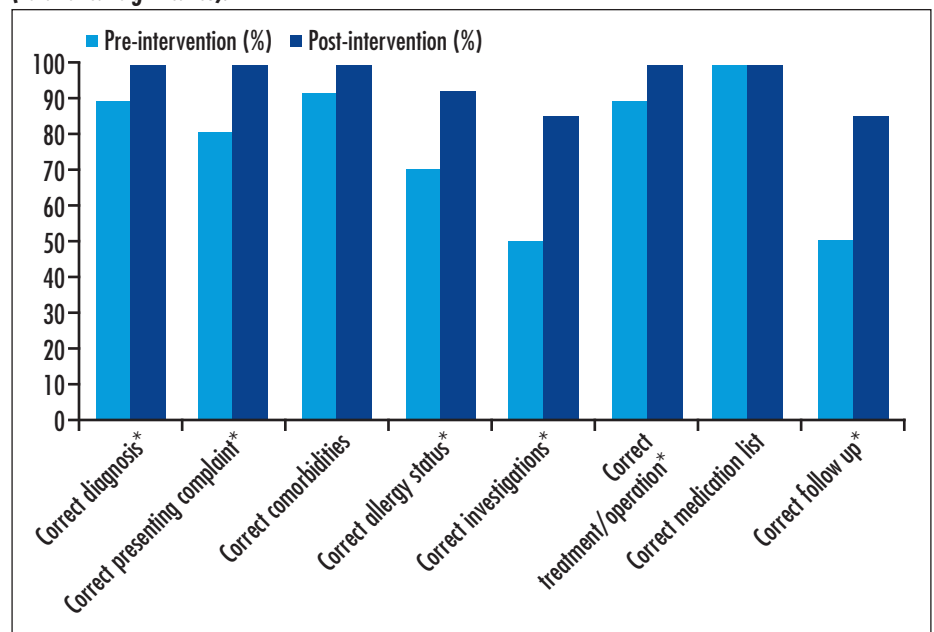
8.9 days. Foundation year 1 doctors wrote 72% (43/60) of discharge summaries pre-intervention and 67% (40/60) post-intervention ($P=0.693$). Foundation year 2 doctors wrote 22% (13/60) pre-intervention and 25% (15/60) ($P=0.829$) post-intervention. Core surgical trainees wrote 7% (4/60) and 8% (5/60) pre- and post-intervention respectively ($P=1.000$).

Each component of the discharge summary improved in accuracy post-intervention (Figure 1). Patient demographics were correct in 100% of discharge summaries pre- and post-intervention ($P=1.000$). Correct diagnoses and presenting complaints significantly improved from 90% (54/60) to 100% (60/60) post-intervention ($P=0.027$), while comorbidities were documented in 100% (60/60) of discharge summaries post-intervention, compared with 93% (56/60) pre-intervention, although this was not statistically significant ($P=0.119$). A correct allergy status significantly improved from 72% (43/60) to 93% (56/60) of patients post-intervention ($P=0.003$). Documentation of investigations and operations increased from 52% (31/60) to 88% (53/60) ($P<0.0001$), and 90% (54/60) to 100% (60/60) ($P=0.027$) respectively. Correct follow-up plans were listed in 87% (52/60) of discharge summaries compared with 52% (31/60) pre-intervention ($P<0.0001$). Medication lists were 100% correct in both groups ($P=1.000$).

Table 2. Study schedule

Weeks 1–6	Initial review of 60 discharge summaries
Week 7	1 x group education session lasting 15 minutes 1 x one-to-one teaching session lasting 5 minutes
Week 8	Further one-to-one teaching session (5–10 minutes)
Weeks 9–14	Repeat review of 60 discharge summaries
Week 16	New doctors start the rotation Group education and one to one sessions repeated
Week 17	Further one-one teaching session Education sessions repeated for every new doctors' rotation
After 12 months	Repeat review of 60 discharge summaries

Figure 1. Graph showing accuracy of components of discharge summary pre- and post-intervention (*statistical significance).



A repeat review of 60 discharge summaries 12 months after the start of the study showed that each component remained more accurate than pre-intervention, and there was no significant change compared with the post-intervention results (*Figure 2*). Correct diagnoses, presenting complaints, comorbidities and medication lists remained at 100% at 12 months ($P=1.000$). A correct allergy status reduced from 93% (56/60) to 90% (54/60) of patients at 12 months ($P=0.743$). Documentation of investigations and operations decreased from 88% (53/60) to 83% (50/60) ($P=0.602$), and 100% (60/60) to 96% (58/60) ($P=0.496$) respectively. Correct follow-up plans were listed in 83% (50/60) at 12 months *vs* 86% post intervention (52/60) ($P=0.799$).

Discussion

This quality improvement study aimed to increase the content and accuracy of patient discharge summaries to enable safe transfer of care from hospital to primary care. The use of simple, cost- and time-effective educational techniques significantly improved discharge summaries and achieved this aim.

The quality of hospital discharge summaries is a constant source of discussion among GPs (Kripalani et al, 2007a). Poor discharge summaries leave GPs and patients dissatisfied, and can directly affect the management of patients in the community, placing patient safety at risk (Harding, 1987).

The pre-intervention results confirmed a common problem in the communication between hospital and primary care (Kripalani et al, 2007a). Important content such as drug allergy status, in-hospital investigations, definitive management and follow-up plans were often missed from discharge summaries, even though these have been shown to be some of the most important details for GPs (Bolton et al, 1998). However, the pre-intervention results are comparable with previous literature. For example, investigation results have been shown to be documented in 20–75% of discharge summaries in previous studies, treatments in 22–45%, and follow-up plans in 23–48% (Penney, 1988; Fair, 1989; Meara et al, 1992; Bertrand et al, 1998).

The authors' methods for improving the quality of discharge summaries consisted of short education sessions in groups and at a one-to-one level. All components of the discharge summary were improved post-intervention, and were maintained at 12 months. Previous studies have also shown an improvement in discharge summaries using education sessions, although there is no published evidence from the UK (Mant et al, 2002; Rao et al, 2005).

There is no doubt that technology also has a significant role to play in the future. Electronic discharge summaries, which contain mandatory fields that require text

to be entered before completion is allowed, would almost certainly improve accuracy and should be encouraged. However, this study has shown that for those hospitals that do not have such facilities, low cost local interventions can be effective in achieving the required aims.

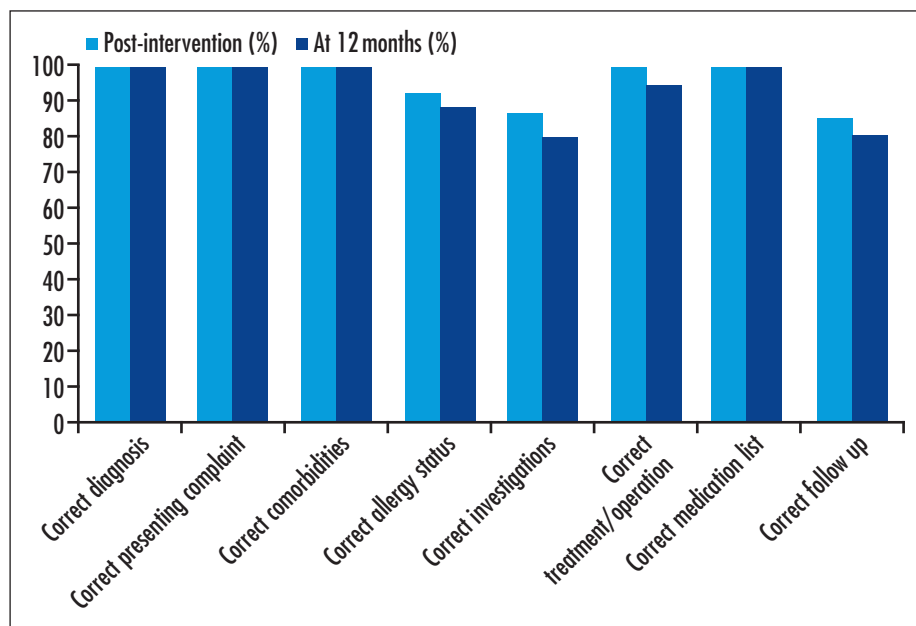
Some targets, such as correct investigations and follow up, did not improve as much as might have been expected. Indeed, both of these components remained below 90% accuracy post-intervention and at 12 months. An explanation for this is that the core understanding of why certain investigations are performed, and hence their importance in the management of patients, may be lacking in junior, non-specialist doctors. Therefore, it is the responsibility of senior doctors to educate juniors in this area, which will result in pertinent investigations being detailed in the discharge summaries. Follow-up details are generally determined by consultants, and therefore it is essential these are detailed in case notes for juniors to be able to transfer the information into the discharge summary.

Limitations of this quality improvement study include the relatively low patient numbers, and low numbers of junior doctors involved in writing discharge summaries. However, this study demonstrates that local level education has a positive effect, and it may be assumed that similar interventions in all departments in a hospital could lead to a hospital-wide and hence regional improvement in the communication with primary care.

There is also a possibility that the observed improvements may lessen over time, as the focus on discharge summaries dissipates. This risk can be reduced by repeating the educational sessions for all new doctors every 4 months, and this can be monitored by yearly reviews.

The major strengths of this study are that it was commenced and completed while the same doctors were working in the department, showing the true effect of the interventions. The longevity and reproducibility of this type of intervention has also been demonstrated by a repeat review at 12 months, showing no significant change in the post-intervention results. All junior doctors were blinded to the commencement of data collection, reducing the risk of a purely temporary improvement.

Figure 2. Graph showing accuracy of constituents of discharge summary post-intervention and after 12 months.



Conclusions

Successful communication between hospitals and GPs is of paramount importance to enable continuity of care and reduce the risk to patient safety. Discharge summaries are the simplest way for GPs to obtain information regarding a patient's hospital stay and future management, so their content must be comprehensive and accurate. This study has shown how simple, intensive educational sessions can lead to an improvement in discharge summaries and communication with primary care. **BJHM**

Statement of contributions: Mr FS Shivji was the primary author of this article and involved in delivering the interventions described in conjunction with Mr DN Ramoutar. Mr DN Ramoutar also edited the article. Dr C Bailey collected the data and performed the analysis. Mr JB Hunter was the senior author and quality improvement lead.

Conflict of interest: none.

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LEARNING POINTS

- A discharge summary may provide the only information accessible to a GP that his/her patient has been admitted, investigated, and treated in hospital.
- Inadequate or inaccurate discharge summaries risk patient safety and continuity of care.
- Simple, short one-to-one educational sessions provide effective learning environments.
- Continual re-auditing is essential to maintain quality improvement.

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Quality improvement projects



BJHM is encouraging the publication and dissemination of findings from quality improvement projects undertaken in a hospital setting.

These should follow the Squire guidelines (http://squire-statement.org/assets/pdfs/SQUIRE_guidelines_table.pdf). The article should be no longer than 1800 words with up to two figures or tables and a maximum of 10 references. There should be no more than 4 authors and a statement of contribution for each author should accompany the submission. All submissions should also include ethics form A confirming exemption from ethics submission – this form should be obtained locally from the authors' local research and development or audit office.

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