Matched comparison of GP and consultant rating of electronic discharge summaries

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Abstract
Queensland Health is implementing a state-wide system to electronically generate and distribute discharge summaries. Previously, general practitioners (GPs) have indicated that the quality of the discharge summary does not support clinical handover. While the electronic system will address some issues (e.g., legibility and timeliness), the quality of the discharge summary content is predominantly independent of method of generation. As discharge summaries are usually generated by interns, we proposed that improvement in the quality of the summary may be achieved through education. This project aimed to compare the perceptions of hospital-based consultant educators and recipient GPs regarding discharge summary content and quality. The discharge summary and audit tool were sent to the recipient GP (n=134) and a hospital consultant (n=14) for satisfaction rating, using a 5-point Likert scale for questions relating to diagnosis, the listing of clinical management, medication, pathology, investigations, and recommendations to GP. Sampling was performed by selecting up to 10 discharge summaries completed by each first-year intern (n=36) in 2009, during the second, third and fourth rotations at the Townsville Hospital until a total of 403 was reached. Matched responses were compared using the Kappa statistic. The response rate was 93% (n=375) and 63% (n=254) for consultants and GPs respectively. Results from this study demonstrated that GPs were more satisfied with discharge summaries than were consultants. An anomaly occurred in three questions where, despite the majority of GPs rating satisfied or very satisfied, a small but proportionally greater number of GPs were very dissatisfied when compared with consultants. Poor or fair agreement between GPs and consultants was demonstrated in medications, pathology results, investigations and recommendations to GP, with GPs rating higher satisfaction in all questions. Lower consultant satisfaction ratings compared with GP ratings suggest that consultants can evaluate discharge summary content to the level required by GPs for clinical handover. Therefore, consultants can appropriately educate interns on discharge summary content for GP needs.

Keywords (MeSH):
Medical Records, Computerised; Patient Discharge; Education; General Practice; Hospital Medical Staff; Quality Assurance

Supplementary Terms:
Electronic Discharge Summary; General Practitioners

Introduction
Poor hospital-GP communication has been documented in the literature for decades (Tulloch et al. 1975) and continues to be a problem in Australia (Alderton & Callen 2007) and overseas (van Walraven & Rokosh 1999; Kripalani et al. 2007). Discharge summaries are vital communication tools that ensure safe ongoing management of patient conditions and the avoidance of potential adverse events. However, there is no unanimous definition of discharge summary quality in the literature, nor how to achieve it. In order to continue the management of a patient, a discharge summary must contain a minimum dataset of information. In 2006, O’Leary conducted a study that ranked discharge summary content items according to importance for GPs as follows: 1) discharge medications, 2) follow up issues, 3) discharge diagnosis, 4) procedures performed, 5) pathology results, 6) pending test results, 7) procedure reports, 8) stress test report, 9) dates of admission and discharge, and 10) problem list. Many other studies have consistently included many of these content items, despite wide methodo-
logical variations in the design of the study (Tulloch et al. 1975; van Walraven & Weinberg 1995; van Walraven et al. 1998; van Walraven & Rokosh 1999; Spatz et al. 2001; O’Leary et al. 2006; Kripalani et al. 2007; Callen, Alderton & McIntosh 2008; O’Leary et al. 2009), which confirms the importance of this information for GPs.

In recent years there has been widespread uptake of electronic versions of discharge summaries. Prior to computerisation, discharge summaries were either dictated and transcribed or handwritten. Enhanced legibility and timeliness have been demonstrated with electronic discharge summaries when compared with dictated versions (O’Leary et al. 2006; Kripalani et al. 2007). Content has also changed, with diagnosis and test results more frequently included in the electronic version compared with the dictated version (van Walraven & Weinberg 1995). Authors of discharge summaries are reported to prefer electronic summaries due to ease of completion (Maslove et al. 2009), leading to higher likelihood of timely completion (O’Leary et al. 2006).

There are conflicting results for recipient GPs’ acceptance of electronic discharge summaries, with some indicating mistrust of the electronic system (Weir & Nebeker 2007). However, more recent studies indicate a preference for the electronic version (Alderton & Callen 2007). Benefits of electronic summaries include fewer content omissions, potentially reducing the risk of an adverse event (O’Leary et al. 2009), and more timely dissemination to GPs (Kripalani et al. 2007). The drawbacks of electronic discharge summaries include reduced decision making by authors regarding the relevance of the information being inserted if it is ‘cut and pasted’ from another electronic medical database. Additionally, recipients have indicated increased distrust resulting from the inclusion of excess or out-of-date results or images (Weir & Nebeker 2007). A trend towards increasing discharge summary length has also been demonstrated since the introduction of electronic discharge summaries (Chow & Szeto 2006), whereas shorter summaries have been shown to be of higher quality (van Walraven & Rokosh 1999).

As at most hospitals, the task of completing discharge summaries at the Townsville Hospital (TTH) is predominantly performed by interns or junior doctors, who may lack clinical expertise to accurately summarise complex cases. A poor electronic summary may be due to lack of education or training, computer literacy or lack of integration into work processes (Callen, Alderton & McIntosh 2008). Although it is not clear which factors contributed to discharge summary incompleteness, Callen et al. (2008) found that electronic versions were more likely to be incomplete when compared with handwritten versions. Furthermore, incremental positive effects were seen with education and education plus feedback. When instruction on how to complete discharge summaries and their importance is included as part of the intern education curriculum, significant improvements in the quality and organisation of the dictated discharge summaries have been demonstrated (Myers et al. 2006). Since 2008 at TTH, the GP Liaison Officer (GPLO is author LS) has educated interns of GP needs regarding discharge summaries at the start of each academic year. Technical education and ongoing support is provided by the Enterprise Discharge Summary (EDS) Coordinator at TTH. Mentoring and feedback is provided to interns by the respective hospital consultants in each unit.

The EDS is a new electronic system for producing and distributing discharge summaries, now in operation at most Queensland public hospitals. Development of EDS arose from a need for numerous and alternative purposes for discharge summaries, including its use as an aid with Queensland Health funding models. Auto-population of fields in EDS was designed for efficiency and to minimise the risk of transcription errors. In EDS, authors can enter free text information in fields such as: principle diagnosis; clinical management; other problems; and recommendations to GP.

For many years, the GPLO has received complaints from GPs regarding the content and timeliness of hospital discharge summaries for their patients. It was assumed that the discrepancy between the actual content of discharge summaries and what information GPs require may be due in part to consultants’ misconception of GPs’ needs. If this were the case, consultants would be unsuitable to guide and supervise junior doctors on appropriate discharge summary content. Thus, this study was developed to determine if there was a difference between GP and consultant perceptions of discharge summary quality and content.

**Method**

**Participants**

Specialist consultants (n=14) from TTH were invited to participate by request of the GPLO from Townsville General Practice Network (TGPN). GPs were included in the study if they were named as the patient’s usual GP on the EDS and if they returned the completed audit tool. Both consultant and GP reviewers were asked to self rate the discharge summaries using a 5-point Likert scale, without the aid of the patient’s
medical record, and then return the completed audit tool to TGPN for transcription and analysis.

Sampling was performed by selecting up to 10 discharge summaries, which had been completed by each first-year intern \( (n=36) \) during the second, third and fourth rotations in 2009 at TTH. Collection of discharge summaries commenced in the third week of the intern’s rotation in all units in which the EDS system was used for producing discharge summaries. The two-week delay from the start of the rotation allowed time for interns to become familiar with their new unit. Discharge summaries not addressed to a Queensland GP were excluded from the study.

**Measures**

The audit tool was developed by the authors and included questions pertaining to discharge summary content items that had been rated as important by GPs in the literature (O’Leary et al. 2006) and confirmed by personal communication with other GPs. The tool consisted of eight questions relating to: clear and accurate diagnosis; other active problems listed; avoidance of acronyms; the listing of relevant clinical management, medications; inclusion of relevant pathology results; inclusion of investigations; and recommendations to GP (questions shown in Tables 1 and 2). Responses to the questions were benchmarked on a 5-point Likert scale with a score of 1 corresponding to very dissatisfied and 5 corresponding to very satisfied. A space for reviewer comments was included on the audit tool as part of Question 8.

**Procedures**

**GP process**

Selected discharge summaries were faxed to the GP named on the hospital records as the patient’s usual GP. A copy of the audit tool and a cover letter explaining the audit process were included in the fax. GPs were asked to return the completed audits to TGPN for collation and subsequent analysis. GPs were not given instructions on how to complete the audit tool.

**Consultant process**

Groups of 10 to 15 hard copies of the discharge summaries along with the audit tool were distributed arbitrarily to each TTH consultant who had agreed to be a reviewer \( (n=14) \) via their mailbox or in-tray. All consultants received an information pack, sent electronically. The pack contained four discharge summaries, the matching audit tool previously marked by a GP, plus brief comments on the rationalisation for the GP mark.

**Data analysis**

Results from the audit tool and associated information were entered into SPSS. Descriptive statistics were performed on numerical data and described as mean and standard deviation or median and interquartile range as appropriate. Categorical variables were described using valid percentages (i.e. percent calculated without using results with missing data). Matched comparisons were measured for agreement using the Kappa statistic following the Chi square contingency table for association. Altman (1991) devised the following ratings to interpret Kappa: values between 0 and 0.2 indicates poor agreement, 0.21 to 0.4 fair agreement, 0.41 to 0.6 moderate agreement, 0.61 to 0.8 good agreement, and 0.81 to 1.0 indicates very good agreement. All other relationships between variables were tested using one-way ANOVA.

Comments written on the audit tool by either GP or consultant reviewers provided additional insight to reviewers’ perceptions of the quality of the discharge summary. Comments were transcribed onto an Excel spreadsheet, segregated by question. They were analysed for prevalent themes using iterative thematic analysis (Hansen 2006) and compared for consensus by two of the authors.

Discharge summaries that were longer than 10 pages were reviewed by the GP Clinical Reference Group (an advisory group to assist the GPLO regarding clinical decisions impacting on local GPs), to determine if the length was justified by clinically relevant information.

**Ethics**

Ethics approval was obtained from Townsville Health Service District Human Research Ethics Committee.

**Results**

A total of 403 discharge summaries were selected for the study, with 14 TTH consultants and 134 GPs participating as reviewers. Consultants rated 93% \( (n=375) \) and GPs rated 63% \( (n=254) \) of the selected summaries. The median length of the discharge summaries was 4 pages, with an interquartile range of 3 to 5, and a range of 2 to 15 pages.

**GP satisfaction rating**

Overall, there was a very positive response by GPs to the discharge summaries (see Table 1). Sixty percent of GPs rated the principle diagnosis question at 5 (very satisfied), which was the most positive response of all questions. Between 36% and 43% of GPs rated 5 on all other questions. The ratings for other questions on the audit tool showed an overall decreasing trend,
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with between 27% and 44% of GPs rating 4 (satisfied), between 5.9% and 14.5% rating 3 (neutral), and between 2.8% and 6.5% rating 2 (dissatisfied). There was an anomaly at the low end of the scale, where more GPs rated very dissatisfied (between 3.2% and 9.3%) when compared with GPs who rated dissatisfied (between 2.8% and 6.5%).

Consultant satisfaction rating

Our results show that consultants gave positive satisfaction ratings to the discharge summaries (Table 2). On all questions, the largest proportion of consultants rated their satisfaction at 4 (between 31.4% and 49.0%) with decreasing proportions rating 5 (between 22.5% and 37.6%), 3 (between 13.0% and 24.7%), 2 (between 1.4% and 12.2%) and 1 (between 0.6% and 10.6%). The one exception to this decreasing trend was the question pertaining to the listing of other active problems, where a greater proportion of consultants rated 1 (3.6%) compared with consultants who rated dissatisfied (between 2.8% and 6.5%).

Comments associated with audit questions

Many consultants and GPs included comments on the audit tool, either in the space provided in Question 8 or hand written on other questions (Table 3 refers). In total, 96% of the consultant-reviewed summaries contained comments (n=360) and 46% of the GP-reviewed summaries (n=117) contained comments. The largest proportion of comments was in relation to medication. Themes found in comments associated with the medication question were that medication information was (a) missing (‘no medications listed’), (b) incomplete (‘was frusemide resumed at time of discharge’), or (c) inaccurate in some way (‘cessation mentioned in summary but not under medications ceased’). Warfarin was the drug most frequently named.

Table 1: Proportion of GPs who rated the discharge summary

<table>
<thead>
<tr>
<th></th>
<th>n*</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle diagnosis clear and accurate</td>
<td>254</td>
<td>4.3</td>
<td>2.8</td>
<td>5.9</td>
<td>27.2</td>
<td>59.8</td>
</tr>
<tr>
<td>All other active problems are listed</td>
<td>248</td>
<td>6.0</td>
<td>4.8</td>
<td>9.3</td>
<td>38.3</td>
<td>41.5</td>
</tr>
<tr>
<td>Overuse of acronyms is avoided</td>
<td>215</td>
<td>3.3</td>
<td>6.5</td>
<td>10.7</td>
<td>39.5</td>
<td>40.0</td>
</tr>
<tr>
<td>Relevant clinical management listed chronologically</td>
<td>247</td>
<td>3.2</td>
<td>3.2</td>
<td>9.3</td>
<td>41.3</td>
<td>42.9</td>
</tr>
<tr>
<td>Medication safely allows for ongoing management</td>
<td>242</td>
<td>7.0</td>
<td>4.5</td>
<td>10.7</td>
<td>34.3</td>
<td>43.4</td>
</tr>
<tr>
<td>All relevant normal and abnormal pathology results are included</td>
<td>246</td>
<td>8.1</td>
<td>5.3</td>
<td>6.9</td>
<td>38.6</td>
<td>40.7</td>
</tr>
<tr>
<td>All relevant normal and abnormal investigations are included</td>
<td>248</td>
<td>9.3</td>
<td>5.2</td>
<td>14.5</td>
<td>33.9</td>
<td>36.3</td>
</tr>
<tr>
<td>Recommendations to GP are appropriate safe and adequate</td>
<td>248</td>
<td>7.7</td>
<td>4.8</td>
<td>13.3</td>
<td>37.5</td>
<td>36.3</td>
</tr>
<tr>
<td>Overall was the information adequate for ongoing management?</td>
<td>248</td>
<td>3.2</td>
<td>5.6</td>
<td>10.9</td>
<td>44.4</td>
<td>35.9</td>
</tr>
</tbody>
</table>

* Number of respondents

Note: 1 = very dissatisfied; 2 = dissatisfied; 3 = neutral; 4 = satisfied; 5 = very satisfied.

Table 2: Proportion of consultants who rated the discharge summary

<table>
<thead>
<tr>
<th></th>
<th>n*</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle diagnosis clear and accurate</td>
<td>370</td>
<td>1.4</td>
<td>3.5</td>
<td>13.0</td>
<td>44.6</td>
<td>37.6</td>
</tr>
<tr>
<td>All other active problems are listed</td>
<td>359</td>
<td>3.6</td>
<td>1.9</td>
<td>13.4</td>
<td>49.0</td>
<td>31.5</td>
</tr>
<tr>
<td>Overuse of acronyms is avoided</td>
<td>307</td>
<td>2.0</td>
<td>8.5</td>
<td>20.8</td>
<td>42.7</td>
<td>26.1</td>
</tr>
<tr>
<td>Relevant clinical management listed chronologically</td>
<td>351</td>
<td>0.6</td>
<td>1.4</td>
<td>17.4</td>
<td>46.7</td>
<td>33.9</td>
</tr>
<tr>
<td>Medication safely allows for ongoing management</td>
<td>360</td>
<td>10.6</td>
<td>12.2</td>
<td>17.8</td>
<td>31.4</td>
<td>27.8</td>
</tr>
<tr>
<td>All relevant normal and abnormal pathology results are included</td>
<td>365</td>
<td>5.5</td>
<td>7.9</td>
<td>19.7</td>
<td>39.7</td>
<td>26.8</td>
</tr>
<tr>
<td>All relevant normal and abnormal investigations are included</td>
<td>355</td>
<td>4.2</td>
<td>9.9</td>
<td>23.7</td>
<td>39.4</td>
<td>22.5</td>
</tr>
<tr>
<td>Recommendations to GP are appropriate safe and adequate</td>
<td>539</td>
<td>6.7</td>
<td>7.8</td>
<td>19.8</td>
<td>40.4</td>
<td>25.3</td>
</tr>
<tr>
<td>Overall was the information adequate for ongoing management?</td>
<td>360</td>
<td>1.4</td>
<td>7.8</td>
<td>24.7</td>
<td>42.8</td>
<td>23.1</td>
</tr>
</tbody>
</table>

* Number of respondents

Note: 1 = very dissatisfied; 2 = dissatisfied; 3 = neutral; 4 = satisfied; 5 = very satisfied.
Table 3: Proportion of reviewed discharge summaries that contained comments by consultants and GPs

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>CONSULTANT</th>
<th>GP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Principle diagnosis clear and accurate</td>
<td>5.2</td>
<td>2.6</td>
</tr>
<tr>
<td>2. All other active problems are listed</td>
<td>6.1</td>
<td>2.6</td>
</tr>
<tr>
<td>3. Relevant clinical management listed chronologically</td>
<td>1.9</td>
<td>0</td>
</tr>
<tr>
<td>4. Medication safely allows for ongoing management</td>
<td>19.7</td>
<td>19.7</td>
</tr>
<tr>
<td>5. All relevant normal and abnormal pathology results are included</td>
<td>12.7</td>
<td>6.8</td>
</tr>
<tr>
<td>6. All relevant normal and abnormal investigations are included</td>
<td>9.4</td>
<td>9.4</td>
</tr>
<tr>
<td>7. Recommendations to GP are appropriate, safe and adequate</td>
<td>9.4</td>
<td>6.8</td>
</tr>
<tr>
<td>8. Overall was the information adequate for ongoing management</td>
<td>35.3</td>
<td>51.3</td>
</tr>
</tbody>
</table>

Fewer comments were written on other questions, with the question about listing in-hospital management receiving the least number of comments. Themes relating to the diagnosis question indicated that the information included was (a) vague, incomplete or missing altogether ('there was no diagnosis'), and (b) the clinical information provided in the discharge summary disagrees with the principle diagnosis ('Why does he have an anastomotic site – background not listed'). A comment suggesting the importance of the principle diagnosis to GPs was 'the principle diagnosis should be in bold print to highlight it'.

Themes emerging from the comments associated with the question on pathology were (a) results were not included ('missing lipids, cardiac enzymes'), (b) no indication if tests were performed ('I take it blood culture not done?'), and (c) acknowledgement or information for management of abnormal results were missing ('elevated WBC – why?').

For the question pertaining to the inclusion of normal and abnormal investigations there was one predominant theme, which was that the relevant imaging results were not included ('X-ray chest not included'). Several reviewers wrote ‘nil’ or ‘NA’ on the audit tool, but it is uncertain if this indicated that the question was not applicable or whether the investigations themselves were not applicable.

For the question regarding recommendations to GP the predominant theme was that recommendations were missing or incomplete ('Vague discharge advice to GP. No specific burns advise'). Other comments generated by this question indicated two minor themes: (a) the medication recommendations were missing or incomplete ('Warfarinised'); and (b) the clinical monitoring guidelines were incomplete ('missing clinical monitoring guidelines for narcotics').

Comments written in the space provided with the overall satisfaction question mainly related to other specific questions on the audit tool. Major themes found in these general comments were: (a) the format of the discharge summary ('At times very busy and difficult to pull out salient information'); (b) the timeliness of the discharge summary ('Often arrives too late to help patient management'); or (c) positive comments about the discharge summary ('Complicated admission summarised very well').

Comparison of responses

Using Altman’s interpretation (Altman 1991), our results (Table 4) show good or very good agreement between GPs and consultants for diagnosis ($\kappa=0.68$), active problems ($\kappa=0.82$), acronyms ($\kappa=0.74$), and overall satisfaction ($\kappa=0.84$). Moderate agreement was observed for the chronological listing of relevant clinical management ($\kappa=0.57$). Fair agreement was observed for the question relating to the inclusion of relevant normal and abnormal investigations ($\kappa=0.22$) and GP recommendations ($\kappa=0.36$). Poor agreement was observed between GPs and consultants for the questions relating to medication ($\kappa=0.02$) and the listing of relevant normal and abnormal pathology ($\kappa=0.01$). Where poor or fair agreement was observed, the difference was due to a lower satisfaction rating by consultants (see Figure 1).

Table 4: Results of the matched comparison of consultant and GP responses to the respective audit questions using the Kappa statistic

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>DESCRIPTION</th>
<th>$n$</th>
<th>KAPPA</th>
<th>INTERPRETATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Diagnosis</td>
<td>249</td>
<td>0.684</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>2. Active problems</td>
<td>238</td>
<td>0.824</td>
<td>Very good</td>
<td></td>
</tr>
<tr>
<td>3. Relevant management</td>
<td>227</td>
<td>0.567</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>4. Medication</td>
<td>228</td>
<td>0.015</td>
<td>Poor</td>
<td></td>
</tr>
<tr>
<td>5. Pathology</td>
<td>236</td>
<td>0.014</td>
<td>Poor</td>
<td></td>
</tr>
<tr>
<td>6. Investigations</td>
<td>234</td>
<td>0.222</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td>7. GP recommendations</td>
<td>235</td>
<td>0.363</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td>8. Overall</td>
<td>234</td>
<td>0.844</td>
<td>Very good</td>
<td></td>
</tr>
</tbody>
</table>

Note: The interpretation shown in the right hand column is based on the work of Altman (1991).

Figure 1 shows that for each question relating to medications, pathology, investigations and GP recommendations, a proportionally greater number of GPs rated very satisfied, whereas for all questions except those pertaining to medications, a greater proportion of GPs rated very dissatisfied.

Comparison of qualitative responses

Overall, more consultants wrote comments on the audit tool than did GPs. A greater proportion of GPs,
when compared with consultants, commented on the format of the discharge summary. The same proportion of GPs and consultants (5%) made positive comments about the discharge summary. Comments about poor timeliness or patients not belonging to the practice were made by GPs but not by consultants.

**Discussion**

Our results demonstrate that the largest proportion of GPs and consultants were *very satisfied* or *satisfied* respectively, with the quality of discharge summary content based on questions asked in the audit tool. On all questions, GPs rated a higher satisfaction than consultants. Comparison between the two groups of reviewers showed poor agreement for questions relating to medication and pathology, and fair agreement for questions pertaining to investigations and GP recommendations. Comments written by reviewers on the audit sheet mainly referred to areas of higher dissatisfaction with the four areas demonstrating fair or poor agreement between the reviewers. It was interesting to note that although reviewers were predominantly *satisfied* or *very satisfied*, there were only a limited number of positive comments.

The high level of satisfaction rated by GPs in the current study was unexpected, as the local GPLO frequently receives complaints regarding content, quality and timeliness of discharge summaries. GP dissatisfaction with discharge summaries has been documented for decades (Tulloch et al. 1975). However, most previous studies were conducted on GP recall rather than on review of actual summaries (Maslove et al. 2009). In a recent survey conducted by General Practice Queensland (GPQ) (General Practice Queensland 2009), Townsville GPs were asked to rate their overall satisfaction with the quality of electronic discharge summaries based on their recollection. Responses of *very satisfied* to this question were 9.3% for the GPQ study and 35.9% for the current study. Recalling negative experiences is called negativity bias (Baumeister et al. 2001). Thus, the GPs response to the GPQ survey suggests a negativity bias, possibly recalling discharge summaries that have caused an issue or adverse effect. When asked to review actual summaries, our results show that GPs are satisfied
that most discharge summaries adequately fulfil their information requirements.

The unexpected high level of GP satisfaction may be due to a number of factors, including: lack of engagement in the audit process; an historically low expectation of discharge summary quality and cross-boundary communication; or it could be a real reflection of their satisfaction. Because the discharge summary is an important clinical handover document, future research should focus on proving the validity of our reported high satisfaction and the reliability of our audit tool. It has been shown that receipt of the discharge summary alone had no effect on ED presentation, readmission or mortality (Bell et al. 2009). Perhaps satisfaction with content quality, in addition to the receipt of the summary, may have a greater impact on these outcomes.

Few studies have previously compared the opinions of GPs and hospital doctors. Our study shows poor or fair agreement between GPs and consultants for questions relating to: (a) medications; (b) the provision of relevant normal and abnormal pathology; (c) the provision of relevant normal and abnormal investigation results; and (d) recommendations to GP. As these content items are also ranked of high importance by GPs (O’Leary et al. 2006), we anticipated that these questions may be rated less satisfactorily by GPs. However, most GPs rated these questions with high satisfaction. It is possible that some GP expectations regarding discharge summaries may have been met in part by the electronic EDS process, which has an auto-populate feature in some fields. Discharge summaries serve multiple purposes, including providing a summary for use by consultants in ambulatory hospital settings. Thus, consultants may require greater detail than GPs for pathology and investigation results, which may also explain their lower ratings than GPs.

A majority of summaries are descriptions of relatively straightforward in-hospital care (e.g. management of uncomplicated surgical procedure) and are completed satisfactorily by junior doctors. In three audit questions (pathology, investigations and recommendations), a larger proportion of GPs rated very dissatisfied compared with consultants. This higher GP dissatisfaction may reflect poorly completed discharge summaries done on complex cases, as complex cases have the potential to cause adverse events if there is inadequate transfer of relevant clinical information. We recommend that the writing of complex cases be supervised by a senior doctor in the future. Furthermore, our future research will be directed to defining the characteristics of complex cases to ensure appropriate supervision of these discharge summaries.

The median length of discharge summaries in this study was four pages. However, some discharge summaries were in excess of 10 pages (n=9). Findings from discharge summaries longer than 10 pages indicated that relevant discharge clinical information was confined to four pages or less, and the remainder was negative or normal pathology results, the most frequent of which was negative infection screen results. The quality of a summary has been shown to decrease significantly when length exceeds two pages (van Walraven & Rokosh 1999). Long discharge summaries were reviewed by the GP-Clinical Reference Group to determine if the length was due to the complexity of inpatient care or non-contributory information. The review indicated that discharge summaries contained relevant clinical information for up to four pages, with additional pages almost exclusively comprising an extensive list of unnecessary pathology results. This indicates that length of summary will not be an appropriate measure for inpatient complexity.

Despite the high overall satisfaction with the discharge summaries, an area of real concern is the higher proportions of GPs who rated very dissatisfied on some questions. This concern is increased by the fact that this anomaly occurs in questions pertaining to medication, pathology and investigation results and recommendations to GP, all of which are of known importance to GPs (O’Leary et al. 2006). The potential for adverse events with poorly completed medication section of a discharge summary is obvious. The absence of pathology or investigation results can cause lost time in following up results or alternatively a doubling up by the GP reordering tests already performed in hospital. Importantly, absence of a key result can have adverse diagnostic and management implications. Our data strongly suggest more effort needs to focus on education of interns to address the satisfactory completion of information for these content items.

Comments were included on 96% of the discharge summaries reviewed by consultants and 46% of discharge summaries reviewed by GPs. The greatest number of comments by both consultants (n=71) and GPs (n=23) was regarding medication with the major theme of ‘information missing or incomplete’. This highlights the importance of a complete and accurate medication section. Incomplete or missing information was the major theme for all questions, suggesting a brief review by a suitably trained clinician to detect missing information could address this issue.
More GPs \((n=4)\) than consultants \((n=1)\) commented on the format of the discharge summary. Prior to the study, many GPs would have received discharge summaries via an application that electronically transfers encrypted information and in doing so removes the original formatting (pathology results are also transferred this way). For the purpose of this study, all reviewers received summaries in original format. It is likely the GP comments refer to the electronically distributed summaries that they had received previously, rather than the faxed version used in this study.

The paucity of GPs comments regarding the question on in-hospital management may indicate their actual satisfaction or it could reflect their respect of clinical boundaries between primary and secondary care. GPs did not add detailed comments to explain their high levels of dissatisfaction on questions related to content items previously ranked as important \((O’Leary et al. 2006)\). The major theme in all of these was again ‘incomplete or missing information’. The relevance of these results to GP perceptions is unclear and would benefit from further investigation.

This study was commenced to determine if hospital consultants understood the GP perspective sufficiently to provide education and support to interns who author the discharge summaries. We considered GPs may have information requirements not readily apparent to hospital consultants. The measure of agreement between the two groups varied substantially between questions. However, where agreement was poor or fair, the difference was due to higher GP satisfaction. Our conclusion from these results is that hospital consultants understand the GP requirements sufficiently well to adequately provide appropriate education to interns on how to complete the summary. In translating this research to practice, information from this study will be used to refine intern education and discharge-summary writing. At TTH, discharge summaries completed by first-year interns in the medical and surgical rotations will continue to be assessed using the current audit tool. Ratings from these discharge summaries will count towards intern year assessment. The implementation of these results in such a short timeframe is a clear demonstration of effective translational research.

Limitations of the study
Consultants were provided with an information pack on how to assess the discharge summaries. However, it is unknown how many used these as guidelines prior to assessing the summaries. Nevertheless, some bias may have been introduced, resulting in the harsher rating by consultants. On the other hand, if consultants were not provided with this information, a bias in the opposite direction may have been introduced because of the very different purposes for which discharge summaries are used by the two groups. Consultants use discharge summaries when a patient re-presents as a summary of prior inpatient management, whereas GPs use the discharge summary as a clinical handover document. Therefore, we felt we needed to provide consultants with baseline knowledge of GPs’ requirements in a discharge summary. GPs were not provided with this information pack because we considered: (a) they should already have a baseline knowledge of GP requirements for discharge summaries; (b) they should already have an established work practice for discharge summary assessment; (c) receiving 31 pages of additional education material by fax may have acted as a deterrent to completing the audit; and (d) electronic communication was not available to GPs.

Conclusion
In summary, this study demonstrates that most reviewers were satisfied or very satisfied with the quality of discharge summary content items ranked as important by GPs. However, the disproportionately higher numbers rating very dissatisfied suggests that more attention is required in the education of medications, inclusion of pathology and investigation results and GP recommendations. Our study also shows that hospital consultants do sufficiently understand GP information requirements to enable them to provide appropriate education to interns on the authoring of discharge summaries.

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