Improving communication between hospital and community physicians

Feasibility study of a handwritten, faxed hospital discharge summary

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ABSTRACT

OBJECTIVE To assess the timing, legibility, and completeness of handwritten, faxed hospital discharge summaries as judged by family physicians and to obtain their opinion on the information categories on a standardized discharge summary form.

DESIGN Fax survey of physicians for consecutive patients discharged from hospital over 8 weeks.

SETTING Three wards in a tertiary care teaching hospital.

PARTICIPANTS One hundred two family physicians and general practitioners practising in Hamilton, Ont.

MAIN OUTCOME MEASURES Proportions of summaries that were received, received within 48 hours of discharge, legible, and complete; types of information missing from incomplete summaries; proportion of physicians satisfied with the information categories.

RESULTS Of 271 consecutive patient discharges, 195 (72%) were eligible for study. Among those ineligible, 22 patients (8%) did not have a family doctor identified on their hospital records. Among records that did have a family physician identified, fax numbers were unavailable or unknown for 54 physicians (20%). One hundred two physicians completed 166 discharge summary assessments for a response rate of 85% (166/195). By 3 weeks after discharge, 138 discharge summaries (83%) had been received by patients' family doctors. Among those received, 86% were received within 48 hours of discharge; 92% were legible; and 88% were complete. Hospital doctors' signatures, patients' diagnoses, and follow-up plans were most frequently missing. Ninety-five percent of physicians were satisfied with the information categories included on the standardized form.

CONCLUSIONS Handwritten, faxed hospital discharge summaries were acceptable to family physicians for most patients. Criteria are needed for determining which patients require both handwritten and dictated discharge summaries.

RÉSUMÉ

OBJECTIF Évaluer, du point de vue de médecins de famille, le caractère opportun, lisible et complet de rapports sommaires du congé de l'hôpital, écrits à la main et envoyés par télécopieur, et obtenir l'avis des médecins sur les catégories d'information indiquées sur un formulaire normalisé de sommaire du congé.

CONCEPTION Un sondage envoyé à des médecins par télécopieur portant sur des patients ayant obtenu consécutivement leur congé de l'hôpital durant une période s'échelonnant sur huit semaines.

CONTEXTE Trois services d'un hôpital d'enseignement de soins tertiaires.

PARTICIPANTS Cent deux médecins de famille et omnipraticiens exerçant à Hamilton, en Ontario.

PRINCIPALES MESURES DES RÉSULTATS La proportion de rapports reçus et de ceux reçus dans les 48 heures suivant le congé, le caractère lisible et complet, le genre d'information omise des rapports incomplets, la proportion de médecins satisfaits des catégories de renseignements.

RÉSULTATS Des 271 congés obtenus consécutivement de l'hôpital, 195 patients (72%) étaient admissibles aux fins d'étude. Au nombre de ceux qui n'étaient pas admissibles, 22 patients (8%) n'avaient pas de médecin de famille identifié dans leur dossier d'hôpital. Dans 54 cas (20%) de dossier dans lequel un médecin de famille était identifié, le numéro de télécopieur du médecin n'était pas disponible ou connu. Au total, 102 médecins ont procédé à l'évaluation de 166 rapports sommaires de congé de l'hôpital, soit un taux de réponse de 85% (166/195). Dans les trois semaines suivant l'autorisation de sortie, 138 rapports sommaires de congé (83%) avaient été reçus par le médecin de famille du patient. Au nombre de ceux reçus, 86% l'avaient été dans les 48 heures du congé; 92% étaient lisibles; et 88% étaient complets. Les renseignements les plus fréquemment omis étaient la signature des médecins de l'hôpital, le diagnostic du patient et les plans de suivi. Les catégories d'information indiquées sur le formulaire normalisé étaient satisfaisantes de l'avis de 95% des médecins.

CONCLUSIONS Les rapports sommaires de congé de l'hôpital, écrits à la main et envoyés par télécopieur, étaient acceptables aux médecins de famille de la plupart des patients. Il est nécessaire de définir des critères pour déterminer quels patients nécessitent à la fois un rapport écrit et un rapport sténographié d'autorisation de sortie.

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Given today's shorter hospital stays and fewer family doctors who handle their patients' care in hospital, the need for prompt, efficient communication between hospital and primary care providers has never been greater. Traditional, dictated discharge summaries tend to fall short of this goal in at least two respects: their organization (usually narrative) makes extracting information difficult,[1,2] and they are not available when they are needed most, in the days immediately after discharge.[2-7] In a recent assessment of a local discharge summary system, the median time from patient discharge to summary dictation was 8 days, and fewer than 60% of dictated summaries were actually received by patients' family physicians.[3]

One approach to improving the completeness and efficiency of discharge communication (for producers and recipients) has been to standardize the format of discharge summaries. Compared with more traditional narrative formats, structured summaries tend to be shorter, easier to use, and preferred by family physicians.[1,8,9] Another advantage of structured summaries is the ease with which they can be generated by computer, drawing on information that is often entered into clinical databases as part of routine practice.[10] While the database summaries have advantages, many hospitals do not have the resources to generate them.

Here we report on the feasibility of a simple alternative: a one-page form that hospital doctors complete by hand and then fax. The aims of the study were to assess the timing, legibility, and completeness of handwritten, faxed discharge summaries as judged by family physicians, and to obtain their opinion of the information categories included on a standardized discharge summary form.

METHODS

Study setting and participants

The study was carried out between April 29 and June 30, 1998, at St Joseph's Hospital in Hamilton, Ont, a 370-bed tertiary care teaching hospital providing inpatient care for roughly one third of the region's 450 000 residents.

Phase 1 of the project involved developing a standardized discharge summary form that met three basic criteria:

- it included the minimum data set acceptable to family physicians and hospital administrators;
- it could be completed quickly and easily by medical staff; and
- it could be faxed.

Decisions about the content, format, and implementation of the form were made jointly by the Chief of Staff, Chief of Family Medicine, and administrative team, in consultation with representatives from the Medical Advisory Committee and the region's departments of family medicine (**Table 1**). Data identified as important in previous studies informed these decisions.[1,2,8,9,11-14]

Three medical wards were chosen to participate in the pilot study: a geriatric assessment unit (GER); a short-stay medical assessment unit (MAU); and a clinical teaching unit (CTU) staffed by residents and interns under consultant supervision. On patient discharge, attending physicians (consultant, resident, or intern as appropriate for the unit) were asked to complete a handwritten summary instead of a dictated summary for all but complex patients, as determined by the most responsible physician. For these patients, both handwritten and dictated summaries were requested.

All patients discharged from the units throughout the duration of the pilot study were eligible. Completed forms were submitted to a ward clerk, who faxed them to the family doctor, took a copy for the patient (if the summary was available at time of discharge), and placed the original in the hospital chart. Units were equipped with fax machines and lists of fax numbers for the region's family physicians. Physicians for whom fax numbers were unavailable received their summaries by mail.

Discharge summary assessment

A researcher (J.M.P.) unconnected with production and dissemination of the discharge summaries received faxes from participating units on a daily basis. Each fax listed the names of patients discharged on the previous day and names and fax numbers for each patient's family doctor (if identified on the patient's chart). A log was maintained of the total number of patients discharged by unit; number of

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Table 1. Discharge summary form used in study

St. Joseph's Hospital, Hamilton, Ontario

DISCHARGE SUMMARY

Additional Dictated Summary No ☐ Yes ☐ By _____

Date Admitted _____ YY/MM/DD

Date Discharged _____ YY/MM/DD

Discharged ☐ Signed out ☐
Transferred ☐ Expired ☐
Autopsy: Yes ☐ No ☐

Faxed to: # By Date

MOST RESPONSIBLE DIAGNOSIS (The diagnosis most responsible for patient's stay):

ICD-9 CM CODES

PRE-ADMIT COMORBIDITY (Diagnosis describing other important conditions which may have a significant influence on length of stay):

POST-ADMIT COMPLICATIONS/.INFECTIONS/ADVERSE DRUG REACTIONS (A condition arising after the beginning of hospital observation and/or treatment):

SECONDARY DIAGNOSIS (Condition for which a patient may [or may not] have received treatment but did not significantly contribute to length of stay):

PROCEDURES/INVESTIGATIONS:

COURSE IN HOSPITAL

DISCHARGE PLAN AND FOLLOW-UP ARRANGEMENTS:

Home care (specify): ☐ Physio ☐ Nursing (VON, SEN, PHN) ☐ OT ☐ Nutrition ☐ Speech ☐ Homemaking ☐ Social Work ☐ Equipment

RECORD
Checked by
Coded by

MEDICATIONS ON DISCHARGE

Signature of Resident or Intern

Signature of Most Responsible Physician

Date

patients who did not have a family doctor identified on the hospital record; and among those who did, number of physicians for whom fax numbers were unavailable.

We assessed the quality of discharge summaries by asking family physicians (for whom we had fax numbers) to complete and return a one-page, self-administered questionnaire. Each Discharge Summary Assessment Form referred to a specific patient and episode of care as identified by the patient's name, hospital unit in which care was rendered, and date of hospital discharge. Two attempts were made to obtain an assessment for each discharge summary: 5 to 7 days after discharge; and, if not received, approximately 3 weeks after discharge. Physicians were asked six questions:

- Did you receive a discharge summary on this patient by fax? (yes or no);
- If yes, when did you receive it? (day of discharge, 24 to 48 hours after discharge, or more than 48 hours after discharge);
- Was it legible? (yes or no);
- Was it completed? (yes or no; if no, what was missing?);
- Are you satisfied with the information categories included in the summary? (yes or no; if no, what should be added?); and
- Do you have other suggestions or comments?

Follow-up hospital medical record review

Six months after the physician survey, we reviewed hospital medical records for two groups of patients identified by the survey: those for whom handwritten discharge summaries were not received by family doctors (by week 3 after discharge) and those for whom discharge summaries were deemed illegible. For the first group, the purpose of the audit was to determine whether or not discharge summaries were available on the hospital chart. For the second group, we wished to determine the number of physicians responsible for illegible summaries.

Sample size and data analysis

To help judge whether or not the new system was acceptable to family physicians, we defined some performance criteria based on discussions with members of our department. Legibility and timeliness were their key concerns. Accordingly, we aimed to achieve a sample size that would allow us to show that 80% of summaries were legible and received within 48 hours of discharge. Using "discharge" as the unit of analysis, we determined that 173 discharge summary assessments would be needed to detect the 80% proportion within 5 percentage points with 90% confidence.[15]

Proportions were used to summarize the results for our primary research questions. Physicians' comments and types of information missing from the discharge summaries were grouped into categories and reported as frequency counts and proportions. Data were managed and analyzed using Quattro Pro software.

RESULTS

Two hundred seventy-one patients were discharged during the study period. Twenty-two patients (8%) did not have a family doctor identified on their hospital records. Among those who did, fax numbers were unavailable or unknown for 54 physicians (20%). This left 195 discharges (72%) eligible for study. One hundred two doctors completed a total of 166 discharge summary assessments (23 for patients from GER, 50 from MAU, and 93 from CTU), for a response rate of 85% (166/195).

Table 2 summarizes results for our primary research questions. Although 83% of discharge summaries were received by fax, just 68% met our performance criteria for legibility and timeliness. Eighty-eight percent of summaries were complete. **Table 3** lists the types of comments and information missing from the summaries. In short, physicians were generally pleased with the improved communication and 95% were satisfied with the information categories included on the standardized form.

There are several possible reasons why information about 17% of patients apparently did not reach family doctors:

- discharge summaries could have been received by physicians after our 3-week follow-up period;
- summaries might not have been completed;
- if completed, summaries might not have been sent; or
- the names of or fax numbers for patients' family doctors could have been incorrect.[3]

A review of medical records revealed that handwritten discharge summaries were available for 21 of the 28 patients (75%) for whom summaries had not been received by week 3 after discharge. Only one had an incorrect fax number. Dictated discharge summaries were available for six of the remaining seven patients. Thus, in only one case (0.6%) did we fail to find either a handwritten or a

Table 2. Physicians' assessments of discharge summaries

OUTCOME MEASURE	N (%)
Summary received by fax*	138 (83.1)
Timeliness†	
• Received day of discharge	54 (39.1)
• Received 24-48 hours after discharge	64 (46.4)
• Received more than 48 hours after discharge	20 (14.5)
Summary legible†	127 (92.0)
Summary completed†	122 (88.4)
Physician satisfied with information categories‡	97 (95.1)

**Among eligible discharges (n = 166).*
†Among discharge summaries received (n = 138).
‡Among physicians who submitted discharge summary assessments (n = 102).

Table 3. Comments about and information missing from discharge summaries

COMMENT CATEGORY	NUMBER OF RESPONSES* (%)
Praise	17 (12.3)
Concerns about legibility (eg, "print clearly," "type form," "send on floppy disk")	6 (4.3)
Information missing or insufficient detail	6 (4.3)
• Signature(s) absent	6 (4.3)
• Primary or secondary diagnoses	5 (3.6)
• Follow-up plan or arrangements	4 (2.9)
• Date(s) of admission or discharge	3 (2.2)
• Course in hospital	2 (1.4)
• Test results	2 (1.4)
• Medications in hospital	1 (0.7)

**n = 138; multiple responses permitted.*

dictated discharge summary on the hospital chart. Whether, when, or how family doctors eventually received completed summaries, however, could not be determined from the audit.

Nine hospital physicians were responsible for the 11 discharge summaries family doctors deemed illegible.

DISCUSSION

During this 2-month pilot study in an urban teaching hospital, 83% of patients' family physicians received hospital discharge summaries by 3 weeks after discharge; 81% of these were received within 48 hours and legible. Although we lack information about the efficiency of discharge communication before the pilot study, based on research in other centres,[3,7] we believe these findings represent an improvement in the timing of communication from the units we studied.

In a recent assessment of discharge communication from two Ottawa-area teaching hospitals, median time from patient discharge to summary dictation was 8 days, and fewer than 60% of dictated summaries were actually received by patients' family doctors.[3] An audit of a British general hospital's discharge summary system found even longer delays in summary production (a mean of 21 days), but fewer complete lapses in communication (with a 75% rate of receipt).[7] These results indicate what we might have found had we conducted a prestudy audit. However, given the apparent improvement in communication with the handwritten, faxed summaries, such an audit seems unwarranted.

Information about 17% of patients apparently did not reach family doctors by 3 weeks after discharge. Our chart audit showed only that discharge summaries were completed for these patients; not whether, when, or how family doctors eventually received them. In retrospect, a third questionnaire, sent to family doctors perhaps 2 months after discharge, could have helped answer some of these questions.

Illegible writing is considered an important cause of waste and hazard in medical care.[16] Family doctors were concerned at the outset about moving from typed to handwritten discharge summaries. The fact that just 8% were judged illegible is, therefore, an important finding of this study, and contrasts with other research implying that doctors' handwriting is a much bigger problem. For example, in two separate audits of hospital records, 20% of physicians' medication orders[17] and about 70% of consultants' operation notes[18] were deemed illegible. One possible reason for the high legibility ratings in this study is that our physician-assessors were aware of the study objectives. This could have led to more favourable assessments if doctors had strong preferences for prompt discharge communication. Presumably, their judgments about the timing and completeness of communication, more objective measures, would be less affected by these preferences.

Key points

- Traditional, dictated discharge summaries usually arrive at family physicians' offices far too late (if at all) to be useful for ongoing care.
- This study reported use of a single-page, handwritten summary, which was faxed to patients' family physicians.
- Most (83%) eligible family physicians received a faxed summary, and 86% of these arrived within 48 hours of discharge.
- Nearly all (92%) summaries were rated as legible, and 88% were complete. Overall, 95% of family physicians were satisfied with the faxed discharge summary.

Points de repère

- Les rapports sommaires traditionnels sténographiés de congé de l'hôpital parviennent habituellement trop tard (sinon jamais) au cabinet du médecin de famille pour être utiles dans les soins continus.
- Cette étude portait sur le recours à un rapport sommaire d'une page, écrit à la main, qui était envoyé par télécopieur au médecin de famille des patients.
- La plupart des médecins de famille admissibles (83%) ont reçu la télécopie du rapport sommaire et 86% de ces rapports dans un intervalle de 48 heures après le congé.
- Presque tous les rapports (92%) étaient considérés comme étant lisibles et 88% comme étant complets. Dans l'ensemble, 95% des médecins de famille étaient satisfaits du rapport sommaire de l'autorisation de sortie envoyé par télécopieur.

Even with efforts to improve the legibility of doctors' handwriting, studies show that problems will persist for a small but important proportion of records.[19] Our finding that nine physicians were responsible for the 11 illegible summaries highlights why this can be a challenge. Currently, voice dictation software or automated, database-driven reports offer the only reasonable alternatives to handwritten summaries in terms of production time,[20,21] but at considerable cost. Further, given that physicians' office computers are still used mainly for word processing and billing, the full advantages of digital communication cannot be realized until the necessary technology becomes more widespread. Hospitals might have to take the lead on this movement, with assistance from government to facilitate upgrades in the community.

Elsewhere, hospital admission and discharge reports, referral letters, and laboratory results are exchanged via fax modem or e-mail, or are posted to servers for access via local area networks or the Internet.[20-24] More studies are needed that document the costs and benefits of various information systems from the perspectives of hospitals and community-based providers.

The form we developed for discharge summaries included information most important to family physicians, met the hospital's information needs, and, based on the high completion rate, was acceptable to hospital staff. Although five of the 102 physician-assessors showed some dissatisfaction with the information categories, on further reading their comments indicated concerns with the comprehensiveness of the information provided, and not with the headings themselves. One physician stated that the summary provided a reasonable sketch for patients known well, but would be less helpful for newer patients. Similarly, another was concerned that there was insufficient space for attending physicians to record the necessary detail, a problem that could be resolved by redesigning or expanding the form to include a second page. Criteria for determining which patients require both handwritten and dictated summaries would be helpful. The problem of persistently incomplete discharge summaries is more complex, and could require a multi-pronged solution that includes ongoing feedback from the community.

This study has methodologic strengths and limitations. We asked those who would ultimately use the discharge summaries (local, community-based family physicians) to assess their quality, and our response rate was high. Thus, our results are likely to be generalizable to those who work in and are served by the units we studied. On the other hand, we tested the system in just three wards of a tertiary care teaching hospital. We are unsure whether similar results would be achieved in other services or hospitals, particularly smaller, non-academic centres with fewer physicians-in-training. In addition, our assessors were not blind to the study objectives. This could have led to some underreporting of problem summaries.

Despite these limitations, our findings are encouraging. As a result of this study, a system of handwritten, faxed discharge summaries has been implemented throughout the hospital. Future audits

will explore whether the system is as successful in other hospital units and whether the results reported here persist.

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