



The quality of dermatology consultation documentation in discharge summaries: a retrospective analysis[☆]

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ABSTRACT

Introduction: Good quality documentation of dermatology consults in discharge summaries allows diagnostic and therapeutic plans to be communicated to other health professionals and ensures that appropriate governmental funds are provided to dermatology departments.

Methods: A retrospective analysis was performed of all dermatology consults seen in 2013 at a public tertiary hospital in Sydney, Australia.

Results: Two hundred nineteen discharge summaries related to inpatient dermatology consultations were analysed; 80.6% of dermatology consults, 72.2% of skin biopsies, and 57.6% of diagnoses were duly included in the discharge summaries; 82.5% of the discharge summaries were completed before the discharge. The accuracy rate of diagnosis documentation was 54.5% and was correlated with clear dermatology team documentation, the use of a problems list, infectious skin diseases and junior medical staff authorship.

Conclusion: This study highlights the need for improvement in dermatology consult documentation in discharge summaries. It suggests the use of a problems list in discharge summaries, clarity in dermatology teams' documentations, and postdischarge follow-up.

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Introduction

Discharge summaries are critical documents in health care. They serve as communication tools and potential tools to determine health service demand. A significant part of the dermatologist's role is in consulting for other specialties' inpatients (Accreditation Council for Graduate Medical Education, 2014). Good quality documentation of dermatology consultations in discharge summaries allows important diagnostic and therapeutic plans to be communicated to the patient's general practitioner (GP) and other health professionals. In Australia, it may also help to ensure that appropriate governmental funds are provided to dermatology departments via activity-based coding, as activity-based coding is performed using a combination of inpatient medical progress notes and discharge summaries. All patients have

to be referred to dermatologists, usually by their GP or by other medical specialists when they are inpatients.

Despite the known importance of discharge summaries, their delivery is often suboptimal. Factors affecting their quality include delays in their completion, poor presentation, and omission of important items such as the diagnosis or investigations performed (Kripalani et al., 2007; Macaulay et al., 1996; Russell et al., 2014; Wilson et al., 2001; Wimsett et al., 2014). Although there has not yet been a standardised assessment method for discharge summaries, punctuality, completeness, presentation, and accuracy are four proposed domains for quality assessment (Kripalani et al., 2007; Russell et al., 2014). Ideal practice encourages that completed discharge summaries be given to patients at the time of discharge, to be subsequently passed onto their GPs at their follow-up visit (Wilson et al., 2001). All completed discharge summaries are also delivered to the GP either electronically via the HL-7 Electronic Health Record program (HL7 Corp., Ann Arbor, MI) or via mailing.

We hypothesised that the quality of dermatology consultation documentation in Australian discharge summaries was relatively poor. To evaluate the hypothesis, this study assessed each discharge summary with regard to punctuality, completeness of the dermatologic care documentation, presentation, and accuracy of the dermatologic diagnosis documentation. It also analysed factors associated with diagnosis documentation accuracy.

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Methods

This study was conducted at St George Hospital in Sydney, Australia, a general tertiary-level teaching hospital affiliated with the University of New South Wales medical school and having a 627-bed capacity. The hospital is also the Level 1 Trauma Centre for the South Eastern Sydney Local Health District. This study was approved by the South Eastern Sydney Local District Ethics Committee as a quality assurance project.

A retrospective analysis of all dermatology consults seen at St George Hospital over a 1-year period (January 1, 2013 to December 31, 2013) was conducted in December 2014. Consults were made via a formalised consult sheet system, faxed to the department after verbal communication. A copy of the consult sheet was then archived in an alphabetical order by the registrar (R.G.) and the department secretary. A tally system was created, which allowed listing of patient details, provisional diagnosis for consult, whether biopsies had been required, and if follow-up consults were required. This study's consult database was established from this archive. Patients who had a consult request but who were discharged before being seen by dermatology were not analysed. Patients who had multiple consults during the same admission were analysed only once, as they only had one discharge summary. Data input was performed by two investigators (R.Y.A. and C.Y.Z.). The analysis was performed by a research fellow (C.Y.Z.) with over 12 months of full-time dermatology experience working at outpatient clinics for approximately 20 hours per week at St George Hospital while completing a master of science degree in clinical dermatology research.

Discharge summary data were collected from a combination of electronic Powerchart (Cerner Corp., London, UK) and written records. Basic demographic data, consult requesting speciality, hospital length of stay, and discharge summary authorship were recorded. Dermatologic consult data including diagnosis, procedures performed, and differential diagnoses were extracted from a combination of written records from the dermatology department's consult archive and the hospital's medical records. The dermatologist's hand-written diagnosis on the consult request sheet was considered the final diagnosis, and in two cases, when this was unavailable, diagnosis from a trained dermatology fellow who thoroughly reviewed the patient was considered. The clarity of the dermatology team's notes was audited based on spelling, abbreviations used, and provision of a diagnosis that can be found in the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10). The diagnoses were then grouped according to the ICD-10 Australian Modification, the same system used by St George Hospital coders for activity-based funding since 1998. Each discharge summary was audited for its punctuality; completeness of dermatologic care (the inclusion of the dermatology consult, skin biopsy performed, and dermatologic diagnosis and differential diagnoses); presentation (the use of a problems list); and dermatologic diagnosis documentation accuracy. Various factors were then analysed for associations with diagnosis documentation accuracy.

Data collation and analysis were performed using Microsoft Excel 2010 (Microsoft Corp., Redmond, WA) and SPSS version 22 (IBM Corp., Armonk, NY). The factors contributing to diagnosis documentation accuracy were analysed using Fisher's exact test for nominal data or Spearman's rho with two-tailed significance testing for numerical data.

Results

Altogether 222 dermatology consults were requested in 2013. One patient was discharged before being assessed, and two duplicated consults from the same admission for the same problem were analysed once each, giving a final 219 consults, which were analysed.

Consults characteristics

Out of the 219 consults analysed, most patients were adults (mean age 62.1 years, median age 67 years, range 1–100 years, standard deviation [SD] 22.5), with only 4.1% (9 of 219) being paediatric patients (≤ 16 years). Our patients were generally older than patients from general hospital admissions (mean age 57.0 years, median age 64 years, range 0–103 years, SD 25.8) in the same period. There was a balanced sex distribution (54.8% female, 45.2% male), comparable with that of patients from general hospital admissions in the same period (49.1% female, 50.9% male). Most patients had lengthy admissions (mean 19.9 days, median 10.5 days, range 1–194 days, SD 25.9), meaning that the admission time was over a week. Patients requiring a dermatologic consultation had longer admissions than general hospital patients (mean 3.8 days, median 1.0 days, range 1–273 days, SD 8.0). Skin biopsies were performed in 22.8% (50 of 219) of consults; 26% (13 of 50) of biopsies were directly requested by the nondermatology team to confirm a provisional diagnosis. A total of 236 dermatologic diagnoses were made by the dermatology team; 11.4% (25 of 219) of consults had two or more diagnoses, 21.0% (46 of 219) of consults had potential differential diagnoses and 4.6% (10 of 219) of consults did not reach a final diagnosis before discharge.

Discharge summary quality

Completeness

We found that 94.1% (206 of 219) of all consults had a completed discharge summary for their overall admission at the time of audit. Of the patients with admission summaries, 80.6% (166 of 206) noted that a dermatology consult was made, 72.2% (33 of 47) noted skin biopsies performed, 57.6% (129 of 224) documented dermatologic diagnoses, and 34.8% (16 of 46) listed proposed differential diagnoses (Fig. 1).

Punctuality

Altogether, 82.5% (170 of 206) of discharge summaries were documented as having been completed at the time of discharge: 71.8% (148 of 206) were completed within a day of the discharge time, 6.3% (13 of 206) were completed 1 day before discharge; and 4.4% (9 of 170) were completed over 3 days before discharge. On the other hand, 17.5% (31 of 206) of discharge summaries were late: 6.8% (14 of 206) were 1 day late; 6.8% (14 of 206) were between 2 and 5 days late; and 1.5% (3 of 206) were over 5 days late.

Presentation

A problems list, as recommended by Russell et al. (2014), with problems in the discharge summary subheadings and arranged in order starting with the primary diagnosis, was utilised in 47.6% (98 of 206) of discharge summaries.

Accuracy of dermatology diagnosis documentation

Fifty-two percent (123 of 236) of discharge summaries had an accurately documented diagnosis; 41.1% (97 of 236) had undocumented or incorrectly documented diagnoses; 2.5% (6 of 236) had misspelt diagnoses; and 5.1% (12 of 236) had no discharge summary. Of the diagnoses that had a completed discharge summary, the accuracy rate was 54.5% (122 of 224).

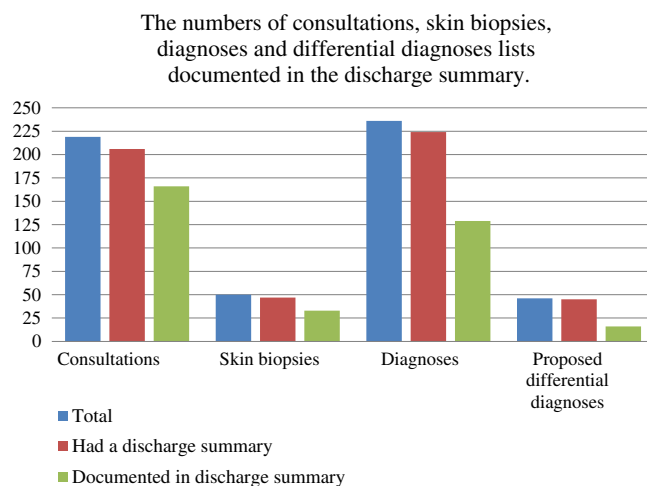


Fig. 1. The numbers of consults, skin biopsies, dermatology diagnoses, and differential diagnoses lists in total with a discharge summary and documented in the discharge summary.

Factors associated with diagnosis documentation accuracy

Dermatology team's documentation

All of the 219 consultations were either documented in the patient progress notes or the consultation request form by the dermatology team. The dermatology team clearly documented the majority of diagnoses (94.5%, 223 of 236). Abbreviations were used a few times (2.3%, 5 of 236), including referring to erythema multiforme (EM), basal cell carcinoma (BCC), and squamous cell carcinoma (SCC). Also, a few diagnoses were not consistent with a straightforward diagnosis as per the ICD-10 (3.4%, 8 of 236); for example, lichenoid reaction or neutrophilic infiltration. Consults with clear dermatology documentation had significantly higher discharge summary accuracy (Fisher's exact test, $p = .001$).

Discharge summary authorship

The discharge summaries were mostly authored by junior doctors not yet enrolled in a training program (in Australia, doctors are required to complete 1–2 years of general house-officer training before applying into a training program; 87.4%, 180 of 206), followed by registrars (doctors enrolled in an accredited training program, equivalent to a U.S. resident) (9.7%, 20 of 206), consultants (trained specialists; 1.0%, 2 of 206), and unspecified authors (2.4%, 5 of 206). Discharge summaries written by junior medical staff had greater accuracy than those written by registrars or consultants (Fisher's exact test, $p = .023$).

Utilisation of a problems list

The discharge summaries with a problems list were more accurate in their dermatologic diagnoses documentation (Fisher's exact test, $p = .002$).

Requesting specialty

Medical specialties requested the most consults (68.0%, 149 of 219) and were followed by surgical specialties (16.3%, 36 of 219); critical care (7.3%, 16 of 219); psychiatry (4.1%, 9 of 219); and paediatrics (4.1%, 9 of 219). The discharge summary completion rates and accuracy rates of each specialty are summarised in Table 1. None of the requesting specialties had significant associations with diagnosis documentation accuracy (Fisher's exact test, all $p > .05$).

Diagnosis subgroups

The most common diagnosis subgroup was dermatitis (30.9%, 73 of 236), followed by infections (27.5%, 65 of 236); neoplasms (6.4%, 15 of 236); papulosquamous diseases (5.1%, 12 of 236); bullous diseases (4.3%, 10 of 236); urticaria and erythemas (3.8%, 9 of 236); and vascular skin diseases (2.5%, 6 of 236). The remaining diagnoses were grouped as "miscellaneous" (22.0%, 52 of 236), examples of which include pyoderma gangrenosum, Henoch-Schönlein purpura, miliaria, and dermatomyositis. The total numbers of inaccurately or undocumented diagnoses versus accurately documented diagnoses by diagnosis subgroup are shown in Figure 2. The infections subgroup had higher discharge summary accuracy than the other groups (Fisher's exact test, $p = .013$). All other subgroups had no significant associations with diagnosis documentation accuracy (all $p > .05$).

Admission length

There was no significant correlation between admission length and discharge summary diagnosis documentation accuracy (Spearman's rho 0.098, $p = .145$).

Discussion

Our study found that although most discharge summaries were punctual, many had incomplete documentation of dermatologic care and poor accuracy. The factors associated with accuracy include clear documentation by the dermatology team, use of a problems list, the infectious diagnosis subgroup, and junior medical staff authorship.

The study's most remarkable finding was that only 54.5% of the 224 dermatologic diagnoses with a discharge summary were documented accurately. Several factors are hypothesised to contribute to this poor accuracy. First, the discharge summaries are prepared by

Table 1

The percentages of discharge summary completion rate and discharge summary accuracy rate by requesting specialty

	Discharge summary completion rate (%)	Discharge summary accuracy rate (%)
Medical	94.0	55.8
Surgical	97.2	47.4
Critical care	87.5	69.2
Psychiatry	88.9	57.1
Paediatrics	100	50.0

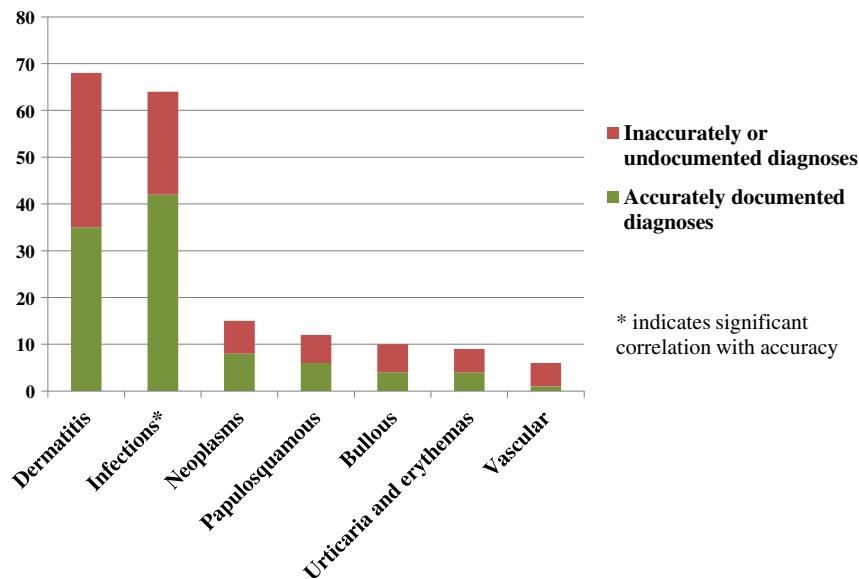


Fig. 2. The numbers of inaccurately or undocumented diagnoses versus accurately documented diagnoses by dermatologic diagnosis subgroup.

nondermatology doctors who may have limited direct involvement in the patient's dermatologic care. Often the patient's consults are requested and communicated via written documentation only, which can lead to information loss. This is evidenced by the fact that our study's accuracy is lower than that found by studies in which the diagnosis audited and the discharge summary author belong to the same specialty (Macaulay et al., 1996; Sund, 2012). This may also explain the fact that discharge summaries authored by junior medical staff are more accurate than those authored by registrars and consultants ($p = .023$), as junior staff are comparably more involved with consult requesting and communicating with the dermatology team.

Second, due to the high turnover, junior doctors are often pressured to complete multiple discharge summaries within a limited time. Therefore, time constraints might preclude accurate and detailed documentation of problems which were otherwise not the primary reason for admission.

Finally, dermatology is not routinely taught in Australian medical schools, despite the implementation of an online dermatology teaching module by the Australasian College of Dermatologists in 2010 for some medical schools (Singh et al., 2011). There is also limited funding for university-affiliated dermatology medical student placements (Sebaratnam and Murrell, 2014) which could potentially lead to inadequate baseline dermatologic knowledge amongst nondermatology doctors.

This study has found that the dermatologic care documentation in discharge summaries is often incomplete. Although the majority of consults (80.6%), skin biopsies (72.2%), and dermatologic diagnoses (57.6%) were included, rates are still relatively poor. This is an issue as the absence of diagnosis listing or incorrect diagnosis and investigation results could lead to inappropriate investigations or prescribing of medications by other health professionals (Callen et al., 2010).

We found that the punctuality of the discharge summaries was promising, with 82.5% of discharge summaries completed before the patient's actual discharge time. This is superior to the findings from most other studies, in which the discharge summary availability rate at the first GP follow-up varied from 12 to 77% (Belleli et al., 2013; Kripalani et al., 2007; van Walraven et al., 2002). Interestingly, 6.3% of discharge summaries were completed 1 day before discharge, and 4.4% were completed over 3 days before discharge. We postulate two explanations for this phenomenon. One could be that the patient was initially clinically ready to be discharged but deteriorated or had

new medical issues after the discharge summary was completed. Another explanation could be that the patient was staying in the hospital for social reasons, for example, poor mobility or awaiting transfer to rehabilitation, palliative care facility, or nursing home. To manage time more efficiently, the junior doctor completed the patient's discharge summary on his or her medical issues pre-emptively.

A limitation of this study is that it is single centered. Its applicability could be improved by repeating it in other hospitals globally. Also, it is difficult to discern whether a particular diagnosis was incorrectly transcribed or omitted. For example, one patient was diagnosed with lichen simplex chronicus by the dermatology consultant. However, in the discharge summary, a diagnosis of scleroderma was given. It was difficult to discern whether the diagnosis of scleroderma was a wrongly transcribed diagnosis related to the lichen simplex chronicus, or whether it was a new diagnosis made by another medical team. Also, this study could be improved by comparing the quality of discharge summaries documentation across specialties, which would reveal whether the poor quality of documentation is unique to dermatology.

Several important clinical implications may be drawn from this study. First, the study supports the use of a problems list in discharge summaries, as it improves the completeness and accuracy of discharge summaries by ensuring key data are included and presented clearly. Indeed, the use of a problems list was associated with superior accuracy of diagnosis documentation ($p = .002$). Second, the study highlights that the dermatology team should always clearly communicate the final diagnosis after all investigations and avoid the use of abbreviations in documentation. Expectedly, clarity in dermatology documentation was associated with improved discharge summary accuracy ($p = .001$). Finally, the study suggests appropriate postdischarge care of the patient.

In conclusion, this study highlights the need for improvement in dermatology consult documentation in discharge summaries. The study suggests the use of a problems list in discharge summaries, improvement in nondermatology doctors' dermatology knowledge, clarity in dermatology team's documentations, and postdischarge dermatology follow-up.

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