

## Original Article

# Rates of provision of clinical information in the skin biopsy requisition form and corresponding encounter visit note

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Received: 13 June 2016

Accepted: 09 August 2016

Published: 01 September 2016

## Abstract

**Background:** The skin biopsy requisition form (RF) serves as a key communication tool for transfer of relevant information related to skin biopsy between clinicians and pathologists. Clinical information in the skin biopsy RF is frequently missing or incomplete. **Objective:** To determine the rates of provision of critical clinical information necessary for histopathologic interpretation in the skin biopsy RF and encounter visit note (EVN). **Methods:** A retrospective review of 300 RFs and corresponding EVNs from May 1 to 7, 2012, in a tertiary care dermatology practice. **Results:** Age (100%), lesion location (100%), and clinical impression (93%) were the most commonly supplied elements in the RF and EVN. Clinical elements that were commonly not provided in the RF but present in the EVN included sampling method – partial versus complete (46%), duration of lesion (54%), morphology of lesion (97%), clinical symptoms (63%), clinical photos (63%), previous clinical (97%), and dermatopathologic diagnoses (82%). **Limitations:** Retrospective study design. **Conclusions:** These data suggest that while missing critical clinical information in the RF is often present in the EVN, some information is still not present in either source.

**Key words:** Computerized provider order entry, dermatopathology, electronic health record, encounter visit note, requisition form

### Access this article online

Website:  
[www.jpathinformatics.org](http://www.jpathinformatics.org)

DOI: 10.4103/2153-3539.189705

### Quick Response Code:



## INTRODUCTION

In the dermatologic evaluation, skin biopsy is an important diagnostic tool. Biopsy specimens are submitted with a corresponding requisition form (RF) that bears relevant clinical information to the pathologist who provides a histopathologic interpretation. The advent of computerized physician order entry (CPOE) has led to more efficient and accurate test ordering, including skin biopsy with regards to correct specimen labeling and testing.<sup>[1]</sup> CPOE has also provided a means of electronic RF entry, minimizing lost RFs.<sup>[1]</sup> Despite the implementation of CPOE, the RF, which represents the primary means of communication between the requesting clinician and dermatopathologist, often

contains incomplete or inaccurate clinical information and varies in structure and content across practices.<sup>[1,2]</sup>

An examination of dermatologists' self-reported attitudes and practices related to skin biopsy revealed

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### This article may be cited as:

Olson MA, Lohse CM, Comfere NI. Rates of provision of clinical information in the skin biopsy requisition form and corresponding encounter visit note. J Pathol Inform 2016;7:40.

Available FREE in open access from: <http://www.jpathinformatics.org/text.asp?2016/7/1/40/189705>

that a significant proportion (34%) expressed a belief that pathologists should make a diagnosis without clinical information. In addition, clinicians reported not including clinical information in the RF because they felt it would bias the dermatopathologist.<sup>[3]</sup> In contrast, a self-reported survey of dermatopathologists' perspectives on the quality of clinical information in RFs demonstrated that 80% defined their primary role in dermatopathology broadly as both the provider of a histopathologic interpretation and a clinically meaningful report, and over 70% noted that the quality, completeness and clarity of clinical information within the RF has a "large" impact on both histopathologic diagnosis and meaningful histopathologic interpretation.<sup>[4]</sup> Nearly, half of the dermatopathologists surveyed spend an average of 30 min or more daily searching for relevant clinical information which was lacking in the RF.<sup>[4]</sup> This problem is not unique to dermatopathology: In a large Q-Probes study of surgical pathology, 5594 of 771,475 cases (0.73%) required additional clinical information for diagnosis due to inadequate clinical data provided on surgical pathology RFs. Thirty-one percent of those cases had a delay in completion of the case and in 6%, there was a substantial change in the diagnosis or a revised report was issued based on the additional clinical information obtained.<sup>[5]</sup>

Key clinical elements necessary for histopathologic interpretation vary depending on the dermatologic condition and may include: Age, lesion location, clinical impression, partial versus complete sampling, duration of lesion, lesion morphology, known clinical diagnoses, previous dermatologic diagnoses, clinical symptoms, and clinical photos.<sup>[5]</sup> Certain dermatologic conditions, such as melanocytic lesions and inflammatory dermatoses, may require more detailed clinical information to guide histopathologic interpretation. In a retrospective study, Waller and Zedek demonstrated that important clinical information regarding pigmented lesions is frequently not provided in the RF.<sup>[6]</sup>

Ideally, critical clinical elements that are necessary for accurate, timely, and cost-effective pathology interpretation would reside in the RF; however, frequently such information is absent in the RF but may be supplied in the encounter visit note (EVN). When these elements are absent or difficult to find within the RF or EVN, this may lead to diagnostic delays, unnecessary pathology stains and studies, or surgical procedures with potentially adverse impact on the quality of dermatologic care.<sup>[7]</sup> Ultimately, provision of the necessary clinical elements and clear communication between the clinician and dermatopathologist is vital to quality and safety of patient care.<sup>[8]</sup> The objective of this study was to determine the rates of provision of critical clinical elements in the RF and EVN in a tertiary dermatology practice.

## METHODS

We performed a retrospective chart review of 300 RFs and the corresponding EVNs from May 1 to 7, 2012, in our dermatology practice. Our department is situated within a large tertiary academic center with general and subspecialty dermatology clinics. Our 55 providers include physician staff, physician assistants, and dermatology resident and fellow trainees. For each RF and EVN, we assessed the presence or absence of key clinical elements necessary for dermatopathologic interpretation as previously defined in the survey of dermatopathologists: age, anatomic location of lesion, clinical impression, partial versus complete sampling, duration of lesion, lesion morphology, known clinical diagnoses, previous dermatopathologic diagnoses, clinical symptoms, and clinical photos.<sup>[4]</sup> Within the EVN, we assessed for the location of such information in specific fields within the clinical note: chief complaint, history of present illness, review of systems, medical history, physical examination, and impression/report/plan fields. The clinical impression was considered present if a specific clinical diagnosis or clinical differential diagnoses were given. Partial or complete sampling was considered present if the clinician mentioned complete or entire removal, lesion excision, or specified partial sampling. Partial sampling was presumed for generalized dermatologic conditions and considered present. Lesion duration was considered present if a specific period was documented or if the lesion was described as new, recent, or existing for an unspecified duration of time. Lesion morphology was considered present if a specific description was used. Lesion morphology was considered absent if nonspecific terms such as "lesion" or "bump" were used. Known clinical diagnoses were considered present if there was documentation of prior or current diagnoses, including nondermatologic diagnoses or if additional findings were mentioned in the physical examination. If there was mention of no prior history of cutaneous diseases, the clinical diagnosis was also considered present. Previous dermatopathologic diagnoses were considered present if there was mention of prior or no history of dermatologic disease, prior biopsy, or mention of prior biopsy sites of a specific diagnosis. This was considered absent if there was no mention of previous dermatopathologic diagnosis. Clinical symptoms were considered present if they were reported by patient. Symptoms included enlarging, growing, bleeding, painful or tender, nonhealing, changing, or irritated lesions.

Diagnoses for each case were documented and grouped into five categories: melanocytic proliferations, nonmelanocytic proliferations, inflammatory dermatoses, lymphoma, or lymphoproliferative. Comparisons of the presence of the clinical elements noted above in the RF and EVN by diagnosis category were evaluated using

Chi-square and Fisher exact tests. Statistical analyses were performed using version 9.4 of SAS (SAS Institute; Cary, NC, USA). All tests were two-sided, and  $P < 0.05$  was considered statistically significant.

## RESULTS

Age (100%), anatomic site (100%), and clinical impression (93%) were the most commonly supplied elements in the RF and EVN [Table 1 and Figure 1]. Clinical elements that were commonly not provided in the RF but present in the EVN included sampling method – partial versus complete (46%), duration of lesion (54%), morphology of lesion (97%), clinical symptoms (63%), clinical photos (63%) and previous clinical (97%), and dermatopathologic diagnoses (82%).

When present in the EVN, clinical elements varied in their location. Lesion location was most commonly found in the “physical examination” (98%), “impression/report/plan” (93%), and “history of present illness” (74%) fields. The clinical impression was found most commonly in the “impression/report/plan” field (95%). Although present in <50% of EVNs, partial versus complete sampling was most often found in the “impression/report/plan” field (100%). Lesion duration was most commonly found in the “history of present illness” field (98%). Lesion morphology was most commonly found in the “physical examination” field (99%). Known clinical diagnosis and previous dermatopathologic diagnoses were found most often in the “history of present illness” field (92% and 93%, respectively) although known clinical diagnoses were also commonly found in the “impression/report/plan” field as well (81%). Clinical symptoms were present 98% of the time in the “history of present illness” field.

In the RF, clinical symptoms were provided most frequently for melanocytic proliferations, albeit only 13%

**Table 1: Critical clinical information in the skin biopsy requisition form and encounter visit note, n=300**

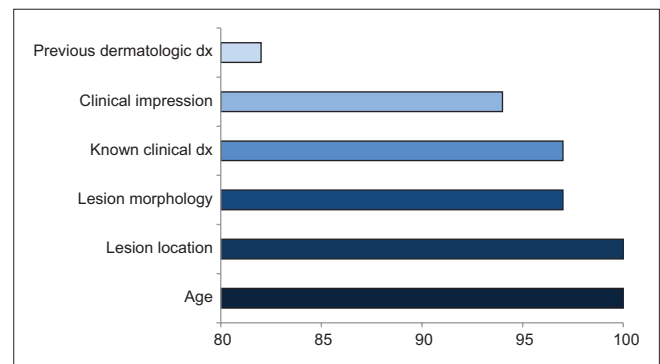
Feature present	RF, n (%)	Visit note, n (%)	Both, n (%)
Age	300 (100)	300 (100)	300 (100)
Location of lesion	300 (100)	300 (100)	300 (100)
Clinical impression	292 (97)	282 (94)	279 (93)
Partial versus complete sampling	4 (1)	137 (46)	0
Duration of lesion	3 (1)	162 (54)	1 (<1)
Lesion morphology	10 (3)	290 (97)	10 (3)
Known clinical diagnoses	1 (<1)	290 (97)	1 (<1)
Previous dermatologic diagnoses	1 (<1)	245 (82)	1 (<1)
Clinical symptoms	10 (3)	189 (63)	10 (3)
Clinical photos	NA	189 (63)	NA

NA: Not applicable; RF: Requisition form

of the time and lesion morphology was provided most frequently (20%) for lymphoma or lymphoproliferative disorders and other although there were only five cases with these diagnoses included in the study. In the EVN, clinical photos and clinical symptoms were provided most frequently for inflammatory dermatoses (71% and 78%, respectively) [Table 2]. Previous dermatopathology diagnosis (88%) was provided most frequently for nonmelanocytic proliferations.

## DISCUSSION

While missing critical clinical information in the RF is often present in the EVN, some information is still not present in either source. This information is important for accurate dermatopathologic interpretation and its absence may impact patient care. Barriers to effective communication between clinicians and pathologists through the RF include a lack of appreciation among clinicians of the importance of clinical information for accurate and timely histopathologic interpretation, level of dermatologic expertise of submitting clinician, completion of RF by health-care staff other than the clinician, trend toward smaller biopsies, lack of training



**Figure 1: Most commonly supplied clinical elements in the encounter visit note (Clinical elements provided in the encounter visit note at least 80% of the time); Dx: Diagnosis**

**Table 2: Clinical information present in the encounter visit note by diagnosis, n=295\***

Feature present	Diagnosis group (%)			P
	1, n=53	2, n=187	3, n=55	
Partial versus complete sampling	32 (60)	56 (30)	44 (80)	<0.001
Duration of lesion	16 (30)	97 (52)	45 (82)	<0.001
Previous dermatologic diagnoses	41 (77)	164 (88)	37 (67)	0.002
Clinical symptoms	37 (70)	106 (57)	43 (78)	0.008
Clinical photos	24 (45)	123 (66)	39 (71)	0.010

\*Diagnosis groups - 1: Melanocytic proliferation; 2: Nonmelanocytic proliferation; 3: Inflammatory dermatoses; categories 4 and 5 not shown given small sample size (n=5). Age and location of lesion data not shown given all specimens had information available for these two features

on appropriate biopsy technique, ease of pathologist access to a shared electronic health record (EHR), time constraints in clinical practice, and fear of loss of clients in private practice if feedback related to poor clinical information is shared.<sup>[8]</sup> When present in the EVN, critical clinical information is provided in a range of fields. Standardization of the location and structure of these clinical elements may save time and improve the accuracy of diagnostic interpretation for dermatopathologists who are searching for this information within the EVN. The types of clinical information provided in the EVN are dependent on the specific dermatologic diagnosis. Our findings support Waller and Zedek's study that important clinical information is not consistently provided for melanocytic proliferations, which is a common indication for a dermatology visit.<sup>[6]</sup> Provision of these critical clinical elements may vary across different practice settings and is likely influenced by both provider- and practice-related factors. At our institution, emphasis is placed on the importance of clinical and pathological correlation (CPC), including the necessity for provision of complete clinical information in the RF and EVN. Our dermatopathology practice is centrally situated within the clinical department which facilitates communication between clinicians and dermatopathologists. Common modes of communication include the participation of dermatopathologists in floor conferences where patient viewing and case discussions with the clinician can occur, as well as through the telephone and secure messaging in the EHR. This is especially helpful in cases where limited information is provided within the RF. Departmental emphasis on and facilitation of CPC and communication between providers is pivotal in changing attitudes related to the provision of clinical information in the RF and EVN. However, despite this noted emphasis, clinicians in our practice still fall short in the provision of relevant clinical information. Thus, additional strategies are required to improve the provision of relevant clinical information to the dermatopathologist at the point of care.

Wong *et al.* make detailed recommendations for improving communication between clinicians and pathologists including definition of critical clinical elements that should be in the RF, standardization of processes for documenting and presenting this information in the EHR, a "pick list" that forces the clinician to provide necessary clinical information, and the development of standards for RFs by professional societies.

An additional strategy in the EHR to consider includes the design of CPOE applications to offer automatic pull of relevant clinical data resident in the clinical note to limit duplication of information entry in the RF and EVN. This may improve the provision of clinical elements

in the RF and communication between clinicians and pathologists. Automatic pull of clinical information from the EVN to the RF will require standardization of clinical data element structure and the situation in specific clinical note fields. The next generation of CPOE needs to address the design, workflow integration, and usability of customized user interfaces that can efficiently search for, retrieve, and present clinical data that are necessary for pathologic interpretation to the pathologist at the point of care.<sup>[7]</sup> Troude *et al.* showed that standardization and computerization of radiology requisitions resulted in a significant drop in missing data, leading to improved quality of information reported on radiology requisitions.<sup>[9]</sup> Implementation of a standardized process for RF submission within the field of dermatology is likely to improve the quality of patient care as well.

Limitations of our study include its retrospective design and the subjective determination of the presence or absence of clinical elements in the RF and EVN.

## CONCLUSIONS

Our findings highlight a need for awareness among providers of dermatologic care of the critical clinical elements necessary for accurate and timely dermatopathologic interpretation and propose standards for clinical information documentation and presentation in the EHR for high-quality dermatologic care.

## Financial Support and Sponsorship

Nil.

## Conflicts of Interest

There are no conflicts of interest.

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