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Dermatopathologists' Concerns and Challenges with Clinical Information in the Skin Biopsy Requisition Form: A Mixed Methods Study

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INTRODUCTION

Ineffective communication and failures in information transfer among health care providers plays a significant role in sentinel events and critical medical incidents [1] including laboratory medicine and skin pathology [2,3]. Diagnostic errors, [4,5] occur frequently (10–20%) and in dermatopathology, may occur at any point in the process resulting in adverse patient outcomes and increased healthcare costs. In one survey, pre-analytic errors accounted for 23% of medical errors in dermatology practice [6]. Each step in the skin biopsy care process is dependent on clear communication. Ideally, a specific clinical question accompanies an adequate sample to a pathologist who performs histopathologic interpretation – the gold standard for diagnosis – that is then sent back to the requesting clinician to help guide management. In reality, dermatopathologists often are given incomplete or inaccurate clinical information that hinders their ability to efficiently make diagnostic decisions and relay a definitive diagnosis back to the requester. [7]

The skin biopsy requisition form serves as the primary and usually critical mode of communication between clinician and pathologist, but is susceptible to many of the problems associated with handoffs. The limited literature in dermatology highlights frequent missing clinical information in the requisition form that creates daily practice challenges for pathologists. This study aims to describe and evaluate the perceptions of the American Society of Dermatopathology (ASDP) members about the quality of clinical information from clinicians through an explanatory sequential mixed methods design.

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Conflict of interest: None

METHODS

Ethical Review—This study was reviewed and approved by the Mayo Clinic Institutional Review Board and the Board of Directors of the ASDP.

Design: Mixed Methods Explanatory Sequential Design—We used a mixed methods approach to describe and evaluate the perceptions of dermatopathologists about the quality of clinical information from requesting clinicians using both quantitative and qualitative data and then integrating this data by connecting themes identified in a survey (quantitative study) using detailed perspectives gathered in focus group sessions (qualitative study). The 'explanatory sequential design' has been described previously [8].

Questionnaire Development and Administration—First, we sent a self-administered paper survey to practicing dermatopathologist members of the American Society of Dermatopathology (ASDP). In that survey we assessed the predominant mode of communication of clinical information in the skin biopsy care process, perceived impact of missing clinical information in the requisition form on diagnostic performance and work efficiency and diagnostic uncertainty associated with limited clinical information in the requisition form domains. The primary aim of the questionnaire was to gather self-reported concerns and challenges of dermatopathologists with the quality of clinical information provided in the requisition form. In order to develop the survey we conducted literature review, question development and pilot review of draft survey questions with pathologists. Their feedback informed the final questionnaire.

Primary physician characteristics were captured in responses to two key questions, ' Which of the following best describes how you view your role as a dermatopathologist?' (1- It is my job to provide only a specific histopathologic diagnosis and description of the pertinent histopathologic findings, 2 – It is my job to provide only a clinically meaningful histopathologic interpretation that incorporates guidance in clinical decision making, 3 – Both of the above and 4 – None of the above) and 'What was the nature of your residency and fellowship training?' (Dermatology residency, Pathology residency or Other, please specify). We also included a case vignette with key clinical information and supportive pathologic images to gauge respondents' reactions to missing or incomplete clinical information. The case vignette represented a shave biopsy from the right helix of a 50-year-old woman with clinical impression 'rule out skin cancer'. Two hematoxylin and eosin-stained histopathologic images were provided --low magnification, 4X and high magnification, 10X). We adapted two questions (Q20) from the 'Physician's Reaction to Uncertainty' (PRU) scale by Gerrity MS et. al. to measure reactions to diagnostic uncertainty in dermatopathology practice (9) (used with permission from MS Gerrity). The original instrument development included 61 items completed by 700 physicians using a 6-category response scale (strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, strongly agree). We used a 4-category response scale (strongly disagree, moderately disagree, moderately agree and strongly agree).

Framing variables obtained from the survey included physician demographics, practice setting (academic or community), method of compensation (fee-for-service and salary with

or without bonus), number of pathologists interpreting skin specimens in the practice group, annual and daily dermatopathology case volumes in the practice and proportion of the practice devoted to dermatopathology specimens. Two categories of referring providers, 1) dermatology only and 2) combination of primary care, general surgery and surgical subspecialists and pathologists were created for ease of comparison. Two authors (MP and NC) independently reviewed respondent comments.

This eleven page, self-administered paper survey in its final phase was mailed to all practicing ASDP members (1103) between October 2012 and March 2013. Non-respondents were given 2 additional chances to respond. The initial mailing included a cover letter informing recipients that their responses would be anonymous and included the gift of a laser pointer pen. Second and third mailings were sent to non-responders 5 weeks apart and included a reminder cover letter in addition to the questionnaire.

Focus Group Sessions—Subsequent to the survey, we conducted two focus groups to enhance our interpretation of survey data and deepen our understanding of the challenges they face with incomplete clinical information. These sessions involved a trained facilitator (NC for the first, KH for the second) leading a conversation about physician work flows around these issues with topics such as: Outline of a typical day in the life of a dermatopathologist, ‘quality’ of skin biopsy specimens and clinical information in requisition forms, strategies used to manage inadequate skin biopsy specimens or missing clinical information and strategies for providing clinician feedback on the skin biopsy care process. We conducted these as groups at two separate continuing medical education meetings of dermatologists and dermatopathologists in 2013.

Study Participants and Data Collection—All ASDP members listed as practicing dermatopathologists (not limited to members employed in the US), were asked to participate in the survey (Figure 1). Focus group participants were identified using convenience sampling at two separate dermatology/dermatopathology meetings.

Analysis—The primary survey outcomes addressed in this manuscript include physician self-reported concerns with 1) the quality and completeness of provided clinical information and, 2) the impact of this information on the quality of histopathologic diagnosis. The survey data were summarized using frequencies and percentages for categorical and ordinal characteristics. Bivariate associations between physician characteristics including responses to the two key questions (see section in Methods, ‘Questionnaire development and administration’) and our primary outcomes were tested using Kruskal Wallis (ordinal data) or Fisher Exact (categorical data) tests, as appropriate. Two sided $p </= 0.05$ was considered statistically significant. SAS version 9.3 was used to perform all statistical analyses (Cary, NC).

Qualitative data from the focus groups were categorized into major themes: 1- quality of clinical information in dermatopathology, 2 – quality of skin biopsy specimens, 3- strategies for managing inadequate biopsy specimens and missing or inaccurate clinical information and 4 – suggestions for improvement of the skin biopsy care process.

RESULTS

Out of 1103 dermatopathologists sent a survey, 1 was lost due to problems with labeling. Among the remaining 1102 potential respondents, 598 completed and returned the questionnaire (response rate, 54%). Table 1 summarizes respondent characteristics. A summary of selected comments from the two focus group sessions is presented in Figure 2.

High level summary of demographics and key attitudinal covariates: 67% of respondents were male, had completed pathology residency training prior to dermatopathology fellowship (52%), were in practice for more than 10 years (62%), are situated in community dermatopathology practices without an academic affiliation (36%) and report that dermatologists are their primary referral source (55%). 436 of 548 (79.6%) respondents viewed their role in practice broadly, as providers of 1) specific histopathologic diagnosis with description of pertinent histopathologic features and 2) clinically meaningful histopathologic interpretation that incorporates consideration of the influence of the report on clinical decision making. Higher mean scores (3.4/4; 1= strongly disagree, 4 = strongly agree) in response to diagnostic uncertainty on the PRU scale were noted in this respondent group (91.2%) with a broadly perceived scope of practice. Paper or electronic requisition forms (84.7%; 458/541) were most commonly used by clinicians and were associated with the highest rates of dissatisfaction (‘somewhat’ or ‘very’ dissatisfied) in 36% (193/537).

Primary Outcomes

Quality and completeness of clinical information and biopsy specimens— 42.7% (239/559) of respondents rated the quality of clinical information provided by clinicians as either fair or poor. 78.9% (440/558) felt that the dermatologic experience of the requesting clinician is ‘very’ important to the quality of provided clinical information. Higher ratings of receiving quality clinical information (good, very good or excellent) were noted by respondent groups whose predominant referral base constituted dermatologists as compared with non-dermatologists (188/297; 63.3% vs. 117/242; 48.3% p= 0.0023).

Missing relevant clinical information necessary for histopathologic interpretation was common (about half the time> half the time or always) across three broad disease categories: melanocytic proliferations (53.7%; 298/555), non-melanocytic proliferations (57.4%; 318/554) and inflammatory dermatoses (59.1%; 328/555). Clinical photographs of the lesion or dermatosis was highlighted by focus group participants as an important and potentially sufficient sole piece of clinical information in the absence of a clinical description (Theme 1k,l,f). In the words of multiple participants, “a photo is worth a thousand words” (Theme 1e). EHRs with applications that facilitate the easy upload of clinical images directly into the record have improved clinical efficiency and utility of photo capture devices in busy dermatology practices (Theme 1i). However, despite innovative solutions such as giving cameras to referring clinicians in some practices, skin biopsy specimens accompanied by clinical photos is not standard practice (Theme 1g), because of obstacles that include time and resource constraints associated with image storage, archiving and privacy concerns.

Focus group participants noted multiple benefits and limitations of visit notes in the EHR. While access to accurate clinical information was a commonly cited advantage, the time and

effort required to identify relevant clinical information in the EHR was a significant negative. In particular, the yield of relevant clinical information varied depending on the dermatologic expertise of the clinician. Participants noted that visit notes prepared by dermatology-trained providers (physicians or physician extenders) compared with non-dermatology trained providers, offered information higher in quality and relevance to histopathologic interpretation. A limitation of the EHR is the increasing use of 'templated' visit notes or check boxes with pre-filled phrases, which generally lack the rich clinical narrative descriptions useful in histopathologic interpretation. Such templates were noted to adversely impact clinician recall of critical clinical information (Themes 1, a-d). Some practices have devised strategies such as the attachment of a photograph of the patients' face to the visit note to aid provider recall (Theme 1j). Respondents who receive biopsy specimens from non-dermatologists (primary care, general surgery or pathology) cited higher rates of dissatisfaction (somewhat or very dissatisfied) with the paper/electronic requisition form as compared with those who received biopsy specimens from dermatologists only (99/233; 42.5% vs. 91/287; 31.7% p= 0.0223) (Table 2). Frustrations due to difficulty reaching clinicians via the telephone and inaccuracy of clinical information supplied in the requisition forms typically completed at the end of the day by members of the healthcare team who were not necessarily involved in the skin biopsy were expressed. Most focus group participants similarly highlighted frequent fruitless daily attempts to seek clinical information through various means including phone calls, email messages, text messages with physicians or support staff, direct access to the electronic health record (EHR) visit notes and paper medical charts (Themes 1k-o).

Biopsy specimen adequacy was raised as a concern in the skin biopsy care process with implications for the quality of histopathologic interpretation. Focus group participants emphasized the poor quality of skin biopsy specimens, such as curettings or superficial shave biopsies of inflammatory dermatoses including panniculitis and partial samples (curettings, 2 or 3mm punch biopsies) of pigmented lesions including melanomas. The practice of obtaining small biopsy specimens was noted to be more common in private or community practices than academic settings and was dependent on specific provider preferences and expertise. Errant providers were typically not responsive to feedback either directly or via the pathology report, such as in the 'comment' field - strategies employed by dermatopathologists to address specimen inadequacy. Common reasons suggested by participants for the above trends include lack of provider knowledge about appropriate skin biopsy techniques, extra time and effort associated with performance of adequate skin biopsies, poor clinical outcomes and subsequent patient dissatisfaction associated with pathologically optimal biopsies, delegation of the skin biopsy to less-skilled members of the health care team, perverse financial incentives, skewed priorities with overemphasis on cosmesis and shifting of diagnostic decision making responsibility to the pathologist (Theme 2, a-k)

Impact of information on timely, high quality histopathologic diagnosis— 44.7% (261/584) of dermatopathologists spent 30 minutes or more on average every day searching for relevant clinical information to assist with their histopathologic interpretation. Responses to a case vignette with limited clinical information demonstrated stress associated

with uncertainty of diagnosis (Table 3). A majority of respondents (>70%) noted that the quality, completeness and clarity of clinical information provided within the RF has a 'large' impact on their diagnostic confidence, diagnostic accuracy, specificity of diagnosis, need for additional communication with the requesting clinician and their ability to provide a report with meaningful clinical guidance (Figure 3). In addition, 57.4% (333/580) of respondents noted that their need for additional histopathologic studies is influenced by the quality and completeness of provided clinical information.

Several strategies were employed by focus group participants to manage missing or inaccurate clinical information and inadequate biopsy specimens: 1) daily group consensus conferences among dermatopathology staff (Theme 3a); 2) communication with the clinician or support staff through email messages, phone calls, text messages; 3) report a broad pathologic differential diagnosis (Theme 3b); 4) chart review by faxed paper charts or having support staff read the relevant portions of the visit note by phone (Theme 3c); 5) use of the comment field in the pathology report to highlight potential limitations of the histopathological diagnosis because of poor sample quality or limited clinical information (Theme 3d–g); 6) generation of a medical note in the EHR by the pathologist reflecting the inadequacy of the sample and/or clinical information (Theme 3h); 7) including representative photomicrographs in the pathology report (Theme 3i) and 8) offering interpretation of a second skin biopsy sample for free (Theme 3j). Participants noted that all of the above require significant time, effort, and expense by pathologists, as well as frequent interruptions during the work day of both pathologists and clinicians, which adversely impacts work efficiency, productivity and satisfaction.

Key associations with primary outcomes

1. Scope of dermatopathology practice—In bivariate tests of association, we found that diagnostic unease with vague clinical impressions was associated with respondents whose perceived scope of practice was defined broadly as compared to those with narrowly defined scopes of practice (Mean scores on scale of 1= strongly disagree, 4 = strongly agree: 3.4 vs. 3.1 respectively p= 0.0028). There was either moderate or strong agreement with the phrase, 'vague clinical impressions or missing relevant clinical information in dermatopathology makes me uneasy', (91.2%; 537/589) and 'I find the absence of clinical information in dermatopathology practice disconcerting' (89.7%; 525/585) for most respondents. Dermatopathologists with narrowly perceived scopes of practice were more likely to spend less time (less than 30 minutes) daily, actively searching for relevant information as compared to those with broadly perceived scopes of practice (71.7%; 33/46 vs. 53.6%; 260/485 p = 0.003). Rates of missing relevant information for inflammatory dermatoses was significantly different between respondent groups with broadly vs. narrowly perceived practice scopes (295/486; 60.7% vs. 21/46; 45.6% p = 0.046). While most (491/581; 72.1%) respondents were either moderately or very comfortable with making a diagnosis based on the vignette images, dermatopathologists with narrowly perceived scopes of practice were more likely to indicate higher levels of discomfort (29%) and to require additional clinical information (44%) for accurate histopathologic interpretation, as compared to those with broadly perceived scopes of practice (11% discomfort, 25% required additional information) (p = 0.001 and 0.01, respectively). Furthermore, 45% (262/582) of

dermatopathologists would typically elaborate on the histopathologic findings in the 'comment' field of their report, particularly those with broadly vs. narrowly perceived scopes of practice (218/482; 45.2% vs. 16/46; 34.8% p = 0.03).

2. Nature of training pathway—Respondents with pathology training were more likely to perceive a broad definition of their role than those with dermatology training (93.1% vs. 86.9%; p = 0.004). Paper/electronic requisition forms and phone calls were common modes of communication, utilized more frequently by those with pathology backgrounds (86.7% vs. 84.3% for paper/electronic requisition forms and 10.1% vs. 7.9% for telephone; p = 0.0002). In contrast, face-to-face/oral communication was more commonly used by respondents with dermatology vs. pathology backgrounds (6.3% vs. 1.1%; p = 0.0002). Respondents with dermatology training were more likely to rate the quality of clinical information provided by requesting clinicians as good, very good or excellent (63.7% vs. 52.6%; p = 0.02). Additionally, dermatology-trained dermatopathologists were more likely to spend less than 30 minutes (60.6% vs. 40.8%; p <0.0001) on an average day searching for clinical information to assist with histopathologic interpretation. Pathology-trained dermatopathologists were however, more likely to spend 30 minutes or more each day (57.1% vs. 34.7%; p<0.0001) searching for clinical information. Furthermore, there was a statistically significant difference between the two groups in their perception of the impact of the quality and completeness of provided clinical information on the 'need for additional communication with the requesting clinician' (80.2% vs. 65.6%; p<0.0001). There were no differences noted between the groups based on the impact of provided information on diagnostic confidence, accuracy, specificity and speed, need for additional histopathologic studies or ability to provide meaningful clinical guidance. Both groups appeared similar with respect to the case vignette and reactions to uncertainty in dermatopathology practice.

An additional notable association included a significant difference in the responses to the impact of the dermatologic expertise of the referring clinician on the quality of clinical information between those with dermatology only vs. non-dermatology (primary care, general surgery and pathology) referral bases (218/293; 74.4% vs. 203/244; 83.2% p= 0.0146) (Table 2).

DISCUSSION

This survey and the follow-up focus group data, demonstrate that dermatopathologists perceive that clinical information is crucial for accurate, timely and efficient dermatopathologic interpretation, but that information is missing or inaccurate about half of the time. Furthermore, dermatopathologists reported high rates of dissatisfaction with clinician-pathologist communication in the skin biopsy care process and stress related to diagnostic uncertainty due to missing or inaccurate clinical information. Many of these attitudes are based on whether they viewed their diagnostic role narrowly or broadly. These findings, in conjunction with previous studies [10,11] lend support to the importance of clinical and pathological correlation in dermatopathology and document the importance of considering clinical context in histopathologic interpretation.

The requisition form is the primary mode of clinician-pathologist communication and is often the object of disdain amongst dermatopathologists because of frequent missing and inaccurate clinical information. 45% of dermatopathologists spent 30 minutes or more every day gathering clinical information missing in the RF, by alternate means of communication with clinicians. These daily disruptions were noted to adversely affect both clinicians and pathologists, and were perceived to contribute to practice inefficiencies. Respondents who spent at least 30 minutes daily actively searching for clinical information predominantly relied on the use of telephone or paper/electronic requisition forms to support clinician-pathologist communication. This may reflect barriers to effective use of requisition forms by clinicians or suggest that pathologists who seek additional information are those who value a more comprehensive clinical picture. This stands in contrast to groups reliant on face-face communication that spend less than 30 minutes per day on average searching for clinical information. This is likely due to the ease and efficiency associated with face-to-face communication for directly addressing clinical inquiries with a bearing on pathology interpretation. Some respondents who provide pathology services to dermatology groups also highlighted the value of proximity to the clinical practice, which enables joint clinician-pathologist examination, facilitating viewing of the ‘gross’ pathology and procurement of relevant clinical information. Most respondents who reported satisfaction with the paper/electronic requisition form spent < 30 minutes daily searching for clinical information, which might reflect inherent characteristics of requisition forms or reflect the pathologist’s style/approach. Progressively lower levels of satisfaction with the paper/electronic requisition form corresponded to increasing time spent searching for clinical information. A similar trend was not observed for other modes of communication. Ratings of good or better on the quality of clinical information submitted were more commonly noted with decreasing amount of time spent searching for clinical information.

Despite the benefits of a shared EHR, information-gathering efforts may result in variable yields, perceived as a function of the dermatologic expertise of the clinician [7]. When responses were evaluated by composition of the referral base, there were significantly higher rates of dissatisfaction with the quality of clinical information submitted by non-dermatologists than by dermatologists. Respondents who received a majority of their skin specimens from non-dermatologists were more likely to rate the information provided according to the training of the clinician as either ‘somewhat’ or ‘very’ important, supporting our hypothesis that the quality of clinical information may be related to the dermatologic expertise of the clinician. Pathologists have devised a number of ‘workarounds’ for managing communication deficiencies in practice with unclear but likely not insignificant costs to quality of care. The adequacy of biopsy specimens submitted for pathologic interpretation emerged as a significant concern. The increasing trend towards partial sampling appears to be multifactorial including provider preferences, patient preferences, cosmetic outcomes and practice related factors. Limited literature on this trend emphasizes its potential adverse impact on the quality of patient care [12].

Several significant differences in opinions on the role of clinical information in dermatopathology were noted when responses were assessed by pathologist training pathway – 1: dermatology residency and dermatopathology fellowship, 2: pathology residency and dermatopathology fellowship and 3: other. Higher proportions of respondents

with training type 1 as compared to 2 reported longer years of dermatopathology experience and larger yearly case volumes (> 60,000), likely reflecting practice in larger pathology laboratories by those with training type 1. A higher proportion of respondents with training type 1 compared with training types 2 and 3, noted the predominant use of face-face communication of clinical information. Most dermatology-trained dermatopathologists work in dermatology (single-specialty) groups with close proximity of pathology and clinical practices enabling face-face communication, in contrast to commercial labs that may be situated at a distance from the clinical practices they service with associated obstacles to effective clinician-pathologist communication. Despite several established benefits of computerized provider order entry, especially enhanced communication between clinicians and efficiency (13,14) reports of harm, abound (15, 16). Future studies on the 'ideal' RF should incorporate the unique clinical informational and decision making needs and existing cultural norms, with respect to the division of diagnostic decision-making responsibilities between clinicians and pathologists in the design of computerized provider order entry systems.

The main limitation of the explanatory sequence mixed methods study design is the extended time required to conduct a quantitative followed by a qualitative study. Respondent bias may result in over-representation of the opinions of those who feel most strongly about and/or who are most dissatisfied with clinician-pathologist communication in the skin biopsy care process, which may result in an overly negative view and tendency to offer perceived socially desirable responses and not necessarily what actually occurs in daily practice. Hence responses may not accurately reflect their experiences. Despite the good response rate for the survey with likely limited concerns for response bias, our results should be interpreted with caution for the following reasons: limited information on the characteristics of non-respondents, findings that may not reflect the perceptions of all pathologists, in all practice settings and limitations in drawing cause and effect relationships from survey studies. Additionally, bivariate tests of association are useful in exploratory analyses such as our study and assist with identifying potential associations between variables, however they do not address causation.

In conclusion, ASDP dermatopathologists expressed dissatisfaction with clinical communication in the skin biopsy care process and concerns about adverse impact on their diagnostic performance, efficiency and ultimately quality and safety of patient care.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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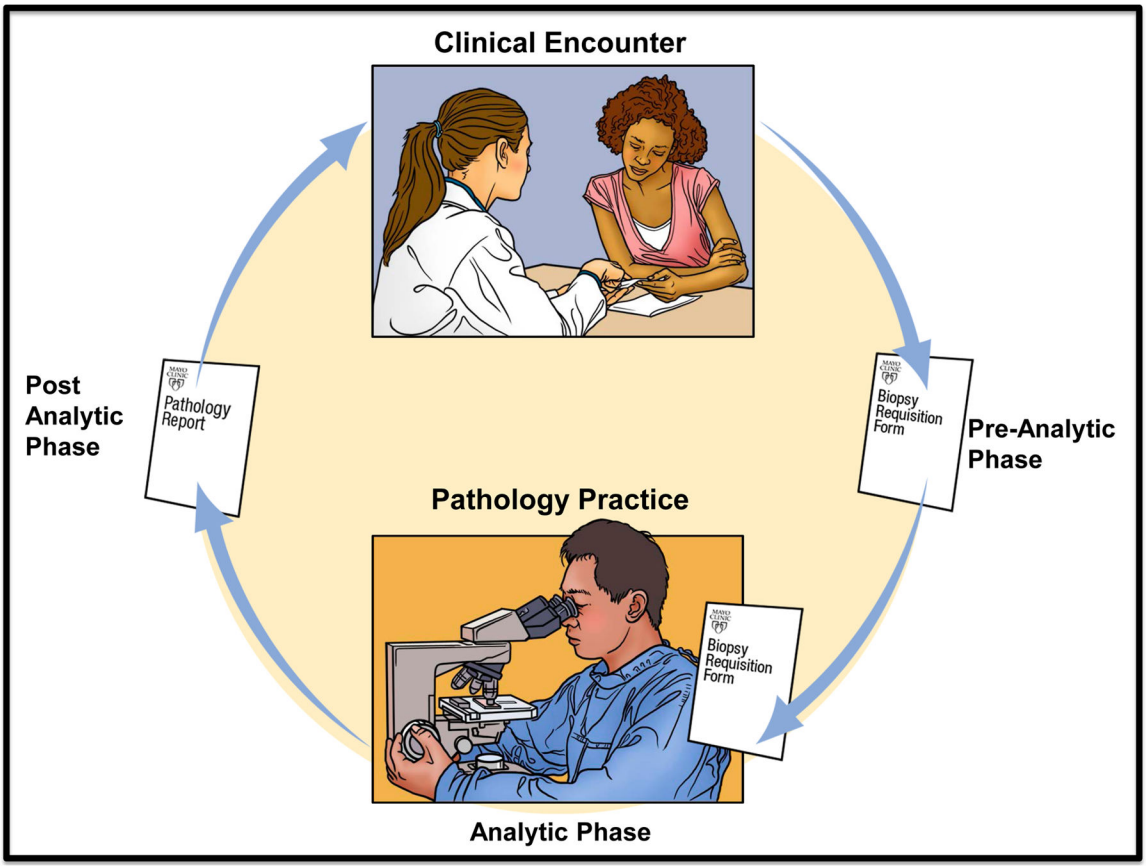

Figure 1.
ASDP Survey Questionnaire (view online at: *need online link here*)

Themes	Comments
1. Quality of clinical communication in dermatopathology	*a."….my internal practice, from a large group, EHR has been a huge advantage. You can go right to the patient chart and look at the history itself.."* *b. "You can read the note. You can really dig in and try to get an idea. Maybe you were thinking of something that they didn't think . . . like there might have been something, you know, a med list or something in their past medical history that never made it to the requisition form. But it takes a lot of time and certainly when doing all the cases. There's always more information in the chart."* *c. "A lot of ours (outside clients) have gone to electronic medical records…. well a lot of these EMRs have templated clinicals and they (outside clients) can't remember the patient for the life of them, what the lesion looked like, and for me….i think of all of our training, the years that we put in to try to accurately describe lesions clinically…I fear that the EMR mandate is really jeopardizing some of that. I spoke with a guy who's well trained, good dermatologist but he… the same day he'll look at his note, you know and he can't tell that patient from the previous one. There's no, kind of narrative."* *d."One thing I'm seeing a lot of that's gotten really bad . . . . . the clinical information has always been a problem, but now with the electronic medical records . . . horrible. … "everything is a tick box now. So everything comes in as telangiectatic papule or a cystic structure or you know that sort of thing. And so there's . . . . . there's no human being writing down a description of the finding and it's really . . . . . I think made it worse rather than better."* *e. "..a picture/photo is worth a thousand words."* *f. "We try to encourage all our PAs to get clinical photos of everything, you know, every biopsy, every rash so I have that information accessible in our EMR."* *g. "I actually gave my top-referring dermatologists cameras, and I don't get pictures."* *h. "I'm doing the converse of that. I actually convinced our cutting room to take pictures of full excisions, and they're even taking pictures of biopsies that have some visible lesion on it,. . . . I gave them cameras. Before grossing, they just put the block in, take pictures…They dump them in folders by week, and folders by month, and per year on the network. I have to go and scroll down to find the number I'm looking for, for like margins of excision pigmented lesion. It helps."* *i.".. the EHR has led to pictures being taken at every single biopsy.. Now, I'm looking at something, and I see the description, I just turn to the computer, pop it open . . . . . pop open the picture, and it's very, very helpful. Before that, taking pictures was time-consuming and someone had to go and organize them, and it's a lot of work. I think some EHRs have made it (clinical photos) a better thing for our practice."*

	j. "We take a photograph just of the patient's face that shows up with every chart, and that's helped with the recall. So if I can't remember a patient, but then I see their photograph on the face sheet, then it really helps." *k. "we've . . . . through our . . . surgeons, tried to insist that people take a photograph of any lesion they biopsy if it's going to go to Mohs because these scars heal up and they have prior whatever . . . . cryo-sites and stuff that they can't tell where the biopsy was taken."* *l."…a photo, I think, is the most powerful, but then if . . . . . if you don't have that, then I think the most experienced clinician, you know, who knows that we like differential diagnoses…, I trust their judgment."* *m. "A well-constructed differential is very powerful…I think the differentials are always very helpful cuz it gives you a sense of telling what they're thinking.."* *n. "But it would be great if dermatopathologists would kind of unite and emphasize how critical it is if there was a photograph with every biopsy…., it would be huge for our specialty".* *o. "We don't get enough information to start with. I mean I don't get enough, even from dermatologists."* *p. "Well, I think, too, you know, again in this high-volume driven thing, they don't sit and actually think about what it could be. I've got 200 referring docs. I can give you many stories, but no they're busy. They don't . . . you know . . I get a GOK every day . . .you know, God only knows but I'm supposed to give them the answer. If I don't give them the answer, you know, I'm not doing my job. And again, you know, it comes back to—they've forgotten that a good part of what dermatopathology does is clinical path correlation. ….25 years I've been doing this in private practice, but it is really, really frustrating. Put that down as your final thought."* *q. "I want to call them up and ask them, do your patients come to you and say, well I'm not going to tell you where my problem is; you have to look at me and figure it out."* *r. "I have to go and look in the chart, paper charts. I go get them myself . . . . . get the paper charts. The problem is, after going through all of this, the dermatologists don't really document very well. Their notes are very, very short, and they . . . . . they have their own symbols."* *s."I wish it only takes 10 minutes. Sometimes, it takes an hour to get someone on the line. Cuz they're busy in their clinic, and you try to track them down, calling them and so it slows down their day, slows down your day, and it makes the patient interaction just a . . . . . well, it just messes up flow on both ends."* *t."But the other thing . . . . . their attitude is annoying to me . . . . . some of them . . . . . when I call them and ask them questions, they are . . . . . why are you calling me like this? It like it's out of nowhere.*

	Why are you calling me? like . . . . . let's talk about this a little bit. *What did you see? What happened?* *Like, tell me the story and then it's like they don't understand."*
2. Quality of skin biopsy specimens	*a."I mean, private practice, again, it's amazing.* *Once the residents leave an academic center, how terrible their biopsy techniques and clinical information get. We, in a day, struggle with superficial biopsies, wrong clinical information, no clinical information.* *It's actually one of the most difficult things after I left fellowship to get accustomed to.* *I was accustomed to punch biopsies, excisional biopsies.* *I get curettings for inflammatory conditions.* *I get curettings of pigmented lesions. . . . . it's a whole different animal whether you're in an academic center or you go to a practice.."* *b." I mean, even now I can tell who's sending what because some people just like to do smaller biopsies, and some people like to do adequate. I think it's just a matter of provider preference."* *c."..they don't realize that, you know, a shave is not adequate for a . . . . . a scarring alopecia."* *d."..poor quality outcome of a punch where maybe it didn't heal well, and the patient complained. I'm sure those are issues that we all face when we do large excisions on the lower extremity over a case of a panniculitis, you know. But in reality, I do think it's time, and it's effort, and you know in a busy practice, shave is easier than a punch…"* *e."..but even in our practice, a lot of times you mark the site; you tell them what type of biopsy you want, but it will still be the nurse doing the actual procedure. So I imagine, take that into other settings, it gets magnified many times"* *f."…there was this strong, kind of, sentiment, and it's still, I think, prevalent that everyone's so worried about transecting a melanoma because you're going to miss the Breslow or something.* *So what we saw and see they're taking 2 mm or multiple biopsies out of a lesion, lentigo maligna or something, and submitting that, and so I get asked this question a lot and talk to residents a lot about this particular issue and should you shave a melanocytic lesion."* *g."…in terms of the priorities, the first priority to taking a biopsy is diagnosis. Second would be you don't want to transect a nerve or cause some functional problem, and then the third would be cosmesis. And I think a lot of times, we worry about the scar or whatever, and we place that priority higher than the top priority of making a diagnosis.* *So if we keep our priorities straight and emphasize that with the trainees and learning how to do a good shave…. I would much rather see a shave of a pigmented lesion . . . . . see that whole . . . . . the symmetry."*

	h."I think there is a complete denial on the part of the clinicians that lesions that are heterogenous and that they occur at multiple levels in the skin. … they think just take something; I have done a biopsy, and then it's like a hot potato. Let the dermatopathologist then put it all together, and they don't really acknowledge. And if you tell them that, they'd say, of course, I understand it. But then they go back to the next patient, and they say well, I'm thinking dermatofibroma, but I'm getting just the epidermis, and then how are we supposed to know what's not on the slide. And then if you read it out as, you know, a superficially transected lesion, then people are upset that you haven't given them an answer; but how can you give them an answer with what you don't have. And I think that's what it boils down to is that they just don't want to acknowledge that you have to take the piece that corresponds to what you're thinking." *i."We, at least in our practice, have the sense that we're getting a lot of superficial shaves for inflammatory dermatosis. But if there's a neoplasm in question and there's not a big enough specimen, you don't know from the other side or whatever's been transected in the deep layers. I mean, you have no idea what's going on, and I think until there's a financial disincentive to do these partial biopsies, this will never change…"* *j."…in fact, people are just making so much money getting a second . . . . . doing the second procedure that they're deliberately doing 3-mm punches off 1-cm lesions. practically committing malpractice, and they'll still do it cuz they're making money."* *k."…they don't do 3-mm punches. They do 2-mm punches on pigmented lesions every . . . . . I've never . . . . now they all go and excise them, . . . but 2- to 3-mm punches on everything . . . . basal cell, dysplastic nevi…."*
3. Strategies for managing inadequate biopsy specimens and missing or inaccurate clinical information	*a."we always do a consensus every day, the five of us, and so we'll share those cases and then invariably end up calling at least to try to get some clinical information. And then you give them a large differential if they're not helpful."* *b. "...if it's a difficult case, first thing, we share it and usually we end up all in the office and trying to get a little more clinical information. … . it's a big time-consumer to do that… unfortunately, you end up calling the clinical practices, and we're doing that a dozen times a day"* *c. ..if there's a chart in the hospital, I'll get the chart. That's my first line of defense. Look at the chart, read the notes myself, I get the feel of the patient, what the problem is, how it's documented there. If it's not there, I need the physician's referral letter and operative report of the surgeon. These seem to solve my problem; and if not . . . . . if there's another hospital, I have the numbers of all medical records in all regional hospitals, I call them and tell them to fax me the notes* *d. ..can't exclude greater degree of atypia beyond, you know, if the lesion extends to the margin or biopsy edge or something or you know, superficial portion of the lesion and then you'd see a comment that this precludes whatever..* *e. …if the lesion persists, clinically, you recommend additional deeper biopsy*

	and try to guide them, umm, when we're not sure we're really seeing what's meant to be. *f. if the diagnosis that comes in is some kind of inflammatory process,* *and I'm what I'm looking at under the microscope looks nothing like that,* *then I start saying that there's a clinical concern and* *additional biopsies are recommended . . . . . something to that effect, you know,* *like send in more . . . . . take a couple more biopsies.* *g. if there's a concern, there's no reason that shouldn't be in bold red in the diagnostic line* *h. anything of import I put in a note for medical only* *i."every one of my reports has a photo on it . . . . every single one that goes out.* *So it all gets correlated with . . . . you know, if a good dermatologist knows how to read* *derm-path, they look at it and go, okay, yeah, there's the margin and there is always a* *bold, bold comment that says, hey, this one's a weird one; see the micro-description* *not on the end of the micro, but on the comment field, where they can go in and say,* *okay, now that makes sense/doesn't make sense* *j. I'll say to the clinician, look I can't interpret this and I don't want your* *patient to have another charge. I will interpret that second biopsy for free..* *I do that because I care about the patient on the other end.*
4. Suggestions for improvement of SBCP	*a."This is probably very draconian, but what if . . . . . .* *you know, there are certain things you have to have on your requisition form.* *You've got to have the patient name, the birthdate, and so on.* *So what if you don't take a requisition form unless it had some key information,* *like I said, like the size of a melanocytic lesion or maybe,* *you know, something . . . . . say, sorry, we're not accepting this.* *And if we united as dermatopathologists and said this is the standard requisition.* *You've got to have this piece of information or it's not,* *you know, going to be processed, we might get some headway in these issues"* *b."…having the specialty society basically set the standard and* *then maybe even tie it to reimbursement, you know, to make sure that people* *. . . . . that there is some penalty, perhaps, for deviating from the standard"* *c."if you send, you know, a tiny bit . . . . . a half a cc of blood, they're just going* *to say—specimen inadequate; and we are never allowed to say—specimen* *inadequate, but if the society were to unite about the specimen because, again,* *with the neoplasms, if you had a complete excision of every neoplasm,* *you wouldn't care that much about the history.* *You would need the photo, and you would have the whole thing."* *d. "the ethical part of the dermatopathologist that wants to process* *everything and charge everything and doesn't want a no-charge for*

	inadequate specimen. You know, they want to call it, you know, mild inflammation or something, and whatever . . . . but I think that's . . . that's the key. It would be nice if you could gross it and . . . . . and then . . . and then some sort of language that would say inadequate." *e."What they should do is not pay for the biopsy that's . . . . . From the referring doc."* *f."So, if you get your empty biopsy sheet, don't . . . . . you know, then that patient . . . . . that referring doc's biopsy charge should be wiped out"* *g.That's where we've failed as a society . . . . . there should be one of us at every family practice meeting, ob/gyn meeting, PA meeting . . . . . having a lecture on the docket how to do a proper biopsy for a certain lesion . . . . . for every . . . . . every meeting because there's always a new cadre of trainees coming into practice and people shifting practices. I think that's on our society to make sure that we're there educating the clinicians that aren't.* *h.Full-thickness excisions of actinic keratoses . . . . . that's my ethical problems with GPs and plastic surgeons. They don't know dermatology, and they are doing inappropriate things, and I can't put that in my report. I want to but I don't.* *i.A 2-mm punch biopsy is an inappropriate sample.* *j.I'd encourage more deep saucerization shaves; that's what I would do; fewer punches; fewer, umm, even excisions . . . . . we could get most of those dysplastic nevus that we get could easily be removed with a deep saucerization.*

Figure 2.
Impact of quality of clinical information on diagnostic performance

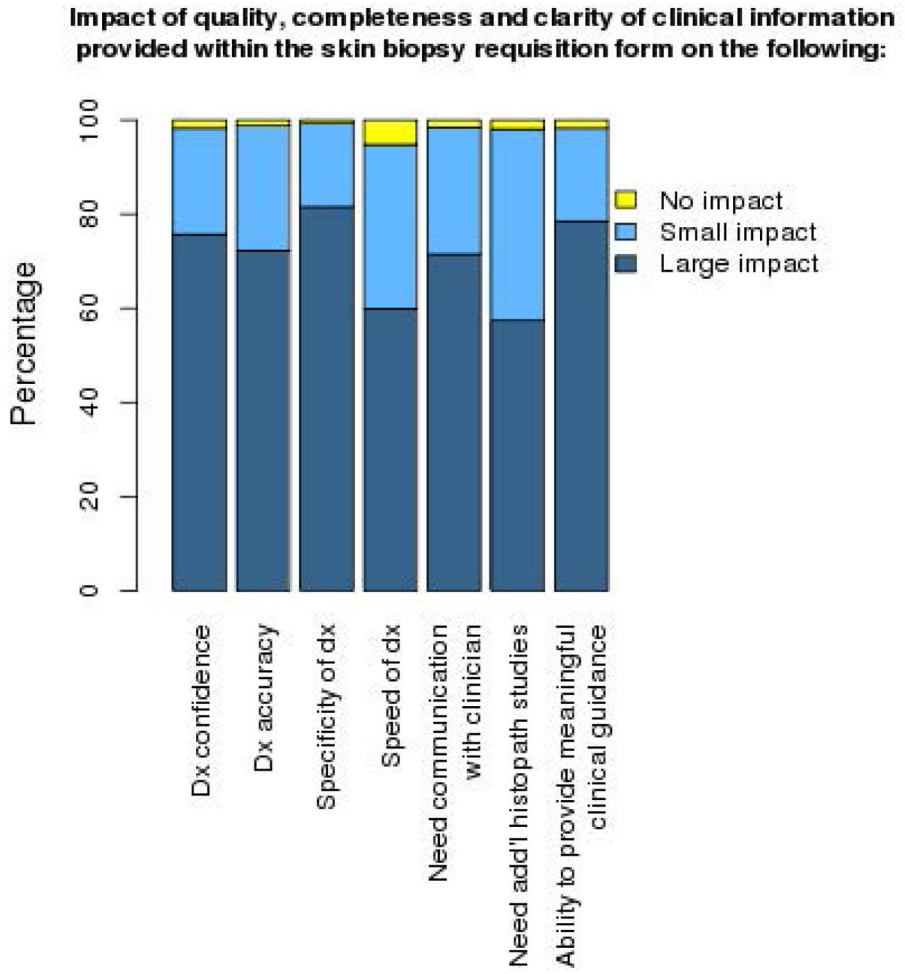

Figure 3.
Focus Group Select Comments

Table 1

Self-reported characteristics of 598 ASDP Dermatopathologist Survey Respondents

Age	
Mean (SD)	52 (11)
Gender	
Male	389 (67%)
Female	192 (33%)
Years of Interpretation	
Less than 5 years	89 (15%)
5 to 10 years	138 (23%)
More than 10 years	366 (62%)
Training	
Dermatology residency + DP fellowship	215 (38%)
Pathology residency + DP fellowship	297 (52%)
Daily interpretive volume	
Less than 50 cases	235 (40%)
50 to 80 cases	194 (33%)
More than 80 cases	158 (27%)
Proportion of practice devoted to dermatopathology	
Less than 50%	168 (28%)
50 to 80%	117 (20%)
More than 80%	265 (45%)
No of pathologists interpreting skin specimens in practice	
1	133 (23%)
2 to 5	359 (61%)
6 to 10	78 (13%)
More than 10	21 (4%)
Referral base	
Dermatology only	311 (55%)
Primary care, General Surgery, or Pathologist	259 (45%)
Primary practice organization	
Community DP practice with academic affiliation	165 (28%)
Community DP practice without academic affiliation	208 (36%)
University-affiliated DP practice	147 (25%)
Other	64 (11%)
Method of reimbursement	
Fee-for-service	215 (37%)
Salary only	129 (22%)
Salary plus bonus	208 (36%)

Table 2

Modes and quality of clinical communication by predominant referral base

Referral Type	Dermatology only (N=311)	Primary Care, General Surgery, Pathology (N=259)
Role as a dermatopathologist		
Role 1 – Provide specific histopathologic diagnosis and description of findings.	26/290 (9%)	19/235 (8%)
Role 2 – Provide clinically meaningful histopathologic interpretation and guidance on decision making and specific histopathologic diagnosis and description of findings	260/290 (90%)	214/235 (91%)
Level of satisfaction or dissatisfaction with paper/electronic requisition forms used by requesting clinicians for conveying clinical information related to skin biopsy specimens		
Very or somewhat satisfied	196/287 (68%)	134/233 (58%)
Very or somewhat dissatisfied	91/287 (32%)	99/233 (42.5%)
For information that is provided by requesting clinicians, please rate the quality of that information		
Good, very good or excellent	188/297 (63%)	117/242 (48%)
Fair or poor	109/297 (37%)	125/242 (52%)
In your experience, how important is the dermatologic experience of the requesting clinician to the quality of the clinical information provided?		
Very or somewhat important	279/293 (95%)	236/244 (97%)
Not important	14/293 (5%)	8/244 (3%)

Table 3

Time and effort associated with gathering necessary clinical information

Missing clinical information >/= 50% of the time	
Melanocytic proliferations	298 (54%)
Non-melanocytic neoplasms	318 (57%)
Inflammatory dermatoses	328 (59%)
Average time spent searching for clinical information	
None	21 (4%)
Less than 30 minutes	302 (52%)
30 minutes or more	261 (44%)
Case Vignette	
Level of comfort with rendering diagnosis	
Very comfortable	126 (22%)
Moderately comfortable	293 (50%)
Not at all comfortable	162 (28%)
Need for additional clinical information to render accurate histopathologic interpretation	
No	145 (27%)
Yes	387 (73%)
Need for additional elaboration on histopathologic findings within 'comment' field of pathology report	
Usually	262 (45%)
Maybe but not always	206 (35%)
Rarely	102 (18%)
Never	12 (2%)
Physicians' Stress from Uncertainty scale	
Vague clinical impressions or missing relevant clinical information in DP makes me uneasy	
Strongly disagree	28 (5%)
Moderately disagree	24 (4%)
Moderately agree	265 (45%)
Strongly agree	272 (46%)
I find the absence of clinical information in DP practice disconcerting	
Stromgly disagree	33 (6%)
Moderately disagree	27 (5%)
Moderately agree	201 (34%)
Strongly agree	324 (55%)