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Providers' Experiences with a Melanoma Web-Based Course: a Discussion on Barriers and Intentions

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Abstract Primary care visits provide an opportunity for skin examinations with the potential to reduce melanoma mortality. The INFORMED (INternet curriculum FOR Melanoma Early Detection) Group developed a Web-based curriculum to improve primary care providers' (PCPs') skin cancer detection skills. This study details feedback obtained from participant focus groups, including the feasibility of implementing in other PCP practices. Practicing PCPs at Henry Ford Health System and Kaiser Permanente Northern California completed the curriculum. Feedback sessions were conducted with standardized questions focusing on four domains: (1) overall impressions of the curriculum, (2) recommendations for improvement, (3) current skin examination practices, and (4) suggestions for increasing skin screening by PCPs. Discussions at each site were audio recorded, transcribed verbatim, and de-identified. Providers (N=54) had a positive impression of the Web-based curriculum, with suggestions to provide offline teaching aids and request assistance. Despite having improved confidence in diagnosing malignant lesions, many providers felt a lack of confidence in performing the screening and time constraints affected their current practices, as did institutional constraints. Providers intended to increase

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discussion with patients about skin cancer. The accessibility, effectiveness, and popularity of the curriculum indicate potential for implementation in the primary care setting. Participating providers noted that institutional barriers remain which must be addressed for successful dissemination and implementation.

Keywords Continuing medical education · Primary care · Melanoma · Qualitative research methods · Cancer screening and prevention

Introduction

Melanoma is the fifth most common cancer among males and seventh among females in the USA, with evidence that incidence is increasing [23]. Melanoma comprises an estimated 75 % of skin cancer deaths even though detection and treatment at an early stage can be curative [1]. Skin examination by a skilled clinician improves the opportunity for early-stage detection of melanoma, which could contribute to a reduction of mortality [15].

The United States Surgeon General recommends that all providers remain vigilant about suspicious lesions [24]. While primary care visits provide an opportunity for observation of the skin during physical examinations, some primary care providers (PCPs) feel inadequately prepared for skin cancer detection or overburdened with addressing other health concerns [12, 9]. Research regarding barriers to implementing skin examinations in primary care practice indicates that most PCPs do not feel confident in their ability to detect skin cancers [16]. Interest in dermatology and courses related to skin cancer is increasing among PCPs [2, 10] as well as diagnostic aids for melanoma detection [14]. Evidence is growing that relevant specialty training completed by PCPs improves evaluation and diagnosis of melanoma [4, 13, 11].

The INFORMED (INternet curriculum FOR Melanoma Early Detection) Group, a collaboration of dermatology specialists and primary care, epidemiology, and behavioral science researchers, developed an interactive, online skill-based skin cancer curriculum that focuses on melanoma and skin cancer detection [7]. The curriculum was designed to inform practicing PCPs while improving confidence and skills for skin cancer detection. Given that skills and attitudes compose only one set of factors required to change provider practice, it became vital to explore potential implementation issues for a Web-based curriculum to aid efforts to increase melanoma screening in primary care. Feedback was solicited via focus groups among PCPs with the goal of refining and improving the curriculum and its content. Herein, we summarize the qualitative feedback obtained on the Web-based skin cancer detection curriculum and the feasibility of implementing skin cancer screening in primary care practices.

Methods

The INFORMED curriculum content emphasized identifying melanoma, basal and squamous cell cancer and common *mimickers*, and a short segment on how to do a complete skin examination.

Providers practicing at two health maintenance organizations of the nine integrated health systems that are members of the National Cancer Institute-supported Cancer Research Network (CRN), Henry Ford Health System and Kaiser Permanente Northern California, were recruited [25]. To encourage participation, participants were offered continuing medical education (CME) credits for completing the training, an honorarium for focus group participation, and a dermatoscope for each practice. Institutional review board's approval was granted from all investigative sites.

After completing the training, clinicians participated in a 30-min feedback session led by an experienced focus group moderator and the site investigator. Discussions at each site were audio recorded, transcribed verbatim, and de-identified.

The feedback was collected using a semi-structured interview guide (a standardized set of open-ended questions that allows for flexibility of discussion based on the participants' responses) that focused on four general domains: (1) overall impressions of the curriculum, (2) recommendations for improvement, (3) current skin examination practices of participants, and (4) suggestions for increasing skin screening by PCPs. After all of the sessions were completed, standard qualitative methods were utilized by two qualitative researchers using a priori themes [3]. Subthemes which emerged from these four broad categories were also examined. For discordant coding, the analysis team discussed those items and then came to consensus on appropriate coding. Overall, themes that emerged from the focus groups were similar between those conducted at Henry Ford Health System and at Kaiser Permanente Northern California; thus, no further distinction is made in the presentation or discussion of results.

Results

In total, 54 providers (53 physicians and 1 nurse practitioner) practicing internal medicine, geriatrics, or family medicine from nine practices participated; all providers who viewed the training participated in the focus groups. Providers' years in practice ranged from 1 year to more than 30 years, with the majority practicing between 10 and 19 years. Fifty-four percent of the participants were women, and the participants were diverse in race/ethnicity. Complete demographics have been previously published [7]. The four domains from feedback sessions are presented below, and the representative quotations are presented in corresponding tables.

Domain 1: Overall Impressions of the Curriculum

Overall, feedback from practicing PCPs was positive and demonstrated an interest in learning more about skin cancer and benign lesions, not only melanoma. PCPs were open to improving their skills, especially if they had easy access to online medical education materials that were accessible for further reference, or reinforcement, once they had completed the training.

Subtheme 1.1: Differentiating Lesions

Specific features in the curriculum to reinforce learning were mentioned. The review and repetition of the A-B-C-D-E (asymmetry, border, color, diameter, and evolving) criteria for evaluating pigmented lesions like melanoma was considered valuable. The providers reported appreciation for the extra time devoted to melanoma; however, some noted that it is much more common to see basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) in clinic and would have preferred more information on these. Favored aspects of the curriculum content included multiple photo examples of each cancerous lesion and comparison of benign mimickers to malignant skin cancers. While the curriculum helped to differentiate some of the cancers, some participants requested teaching/reference aids, such as a summary table or pocket references displaying all three skin cancers (melanoma, BCC, and SCC), and trademark clinical findings that they could easily access when providing clinical care.

Subtheme 1.2: Appreciation of Review

Many PCPs expressed that the curriculum was a good review of information they had previously learned but noted greater confidence in their knowledge post-review. Many participants said they would like to review all or part of the curriculum information again in the future (Table 1).

Table 1 Quotations representative of domain 1: overall impressions of the curriculum

1.1 Differentiating lesions	
General impressions	"I like the fact that they started with melanoma, which is what we all worry about the most"
	"But I loved the pictures and I loved the explanations, but I just, you know, I couldn't absorb it all in one"
	"It was concise and the pictures were clear, and I liked how to play with them, how you could magnify them. I like the bullet points and there were like not more than 3 in 1, one slide, so that was good"
ABCDs and ugly duckling	"You definitely knew the A-B-C-Ds, the ugly duckling sign and some of the things that you [the curriculum] have…but just in regard of how to diagnose…they come out over the years with just more specific details about how you can remember things"
Comparisons of skin cancers	"The best thing which I like…is…the comparison between the different kinds of cancers like the basal cell, nodular type from the nodular melanoma…it helps in… differentiation different types of cancers"
	"The best thing about this is it's basically a comparison…here the different thing is comparison between the different cancers and so that this is something new and it's like really learning for us…"
	"And you've got the 2 pictures, and you say A, is this or B? Just to compare the 2. I think that was a good question, a really nice question"
	"I thought maybe it would be good if we could see all 3 of 'em' and maybe like in a summary…. 'Here is a melanoma…and then squamous cell and the basal cell' so we could just like differentiate"
1.2 Appreciation of review	
Repetition	"I liked how they did a lot of repetition and how they started off with some facts, asked you questions and they repeated it and you had a quiz, and then you had the final posttest, which was good"
	"It was a very good review because we…know about the dermatology…but…I think that this is the first time I am seeing and going so much in depth, and that's why it needs to be repeated…so that we can grasp more of it"
Improved confidence	"…I realized that there was so much more that I was missing and it has made me more confident just learning from the curriculum itself"
	"I learned a lot and confidence to make a little more differential diagnosis better myself…. And I think it's a good refresher. I think I did a web based one dermatology but I don't remember much. A-B-C-D-E and all of those things I knew but this is pretty good with a lot of skin lesions to be seen on that"
Access to curriculum in the future	"I mean after what I saw here, I would love to go back and do this with time and learn all the details and memorize that chart that distinguished all of those lesions…"

Domain 2: Improving the Curriculum

Providers generally felt more comfortable with deciding what lesions were appropriate to be referred to dermatology, reinforcing the quantitative findings of improved confidence and attitude towards skin cancer identification [7]. Many participants desired more time with the curriculum, and a few suggested having an expert-guided (dermatologist) curriculum so as to be able to ask questions and receive direct feedback. Some respondents also requested more comparisons between concerning and non-concerning lesions to better distinguish characteristics unique to lesions that should be referred.

Subtheme 2.1: Confidence Regarding Reassure vs Refer

Nearly every group commented on their discomfort with their role in making dermatology referrals and whether all of these referrals were clinically appropriate. Many said that this curriculum helped to increase their confidence in diagnosing possible skin cancer and making appropriate referrals. Some participants reported concerns of continuing to feel unprepared and not yet confident to make distinctions for complex lesions.

Subtheme 2.2: Learning Styles

Participants preferred the self-paced and self-evaluation aspect of the Web-based curriculum. The interactive and repetitive nature of the curriculum was also popular. As a demonstration of the variety of learning styles among our participants and perhaps reflecting the two-dimensional nature of online learning [5], some participants mentioned that viewing two-dimensional lesions in the curriculum was helpful but learning might be more effective with evaluating an actual lesion on a patient, especially with expert guidance. Several respondents indicated their preference to discuss content and consult with PCP colleagues during their clinical decision processes (Table 2).

Table 2 Quotations representative of domain 2: improving the curriculum

2.1 Confidence regarding reassure vs refer	
Increasing referrals	"I think by the end of this I will be sending more pictures [to the dermatologist]"
	"And it's better to refer a benign lesion than to risk…to miss it"
	"So that's what I wanted, [seeing] which one to refer and which one to not"
	"…most likely I will still be referring cases with more knowledge that, 'Okay, this might likely to be cancerous than non-cancerous'"
	"…it was very helpful kind of telling me which things I should at least be worried about and refer to the dermatologist"
Improving quality of referrals	"No, it actually helped me because I had—like when I looked at it, then I realized that I had been sending probably patients to derm who had seborrheic keratosis. You can feel…a little more reassured that you can tell the patient to watch the lesion and don't have to immediately send them to derm…"
	"I'd be a lot more confident telling patients what kind of things they should watch for in the lesions…"
	"[The] greatest benefit in the curriculum like I said is the heightened awareness because you know, 'I need to send this patient to be seen'"
2.2 Learning styles	
Need for physical interaction with lesions	"I mean anything that's two-dimensional is tough, but just trying to figure out, 'OK, what's the relationship with this to the rest of the skin? And if I was sitting there feeling, holding, moving, and maneuvering, what would I experience as opposed to just sort of looking at it?'"
	"…if we could have access to it and we could look at it"
	"And that information is not there that, 'If you touch, what would it feel like?'"
Collaboration with dermatology or PCPs	"…what would be nice is at the end to go over those questions, maybe even as a group, and say what we thought it was. Then each person could voice their opinion on what they thought it was…then we can get a consensus from all of us because, you know, individually we may not know the answers but collectively we could probably…learn a lot"
	"I enjoyed it [the online curriculum], and I think I learned things. But at the same time, I think…if you had a dermatologist here initially and he spoke for an hour and gave us something about melanoma and skin cancers and then we had this, then I think it would be more productive"
	"It would be more helpful if there was an explanation with the picture of what features make it suspicious for a nodular melanoma versus a pigmented basal cell. That would have been a lot more helpful"

PCPs primary care providers

Domain 3: Current Skin Practices

Generally, clinicians reported systematic and personal barriers to incorporating skin examinations in their daily practices. Time constraint was the most common barrier. Nearly all participants commented on the demands to attend to other health maintenance issues during increasingly shorter appointments. Most PCPs felt that they could complete an opportunistic examination during a physical examination (e.g., lung auscultation). Undressing of patients was a full skin examination barrier.

Several providers expressed the barrier of uncertainty about the extent of their role and responsibilities, including concern in pursuing lesions not previously identified by patients. Some respondents preferred to continue referrals to dermatologists when managing their patients (Table 3).

Domain 4: Intent and Increasing Frequency of Skin Screening in Primary Practice Setting

Generally, most PCPs felt that they had a grasp of the dermatology diagnostic process after the curriculum. Practically, several participants expressed that they intended to discuss warning signs, skin protection, and regular self-examinations with their patients. Many providers suggested that they could increase attention to skin irregularities during routine examinations and inquire about family history of skin cancers. Many PCPs agreed that they would ask their patients more frequently about skin changes.

Providers commented that support from the clinic administration and support staff of including skin checks would increase the likelihood of performing skin examinations. Some providers voiced concern that practice likely will not change after completing this educational program due to rigid time and workload constraints. Though their practices may not change, participants noted that the quality of their skin examinations would likely improve due to heightened awareness of distinguishing characteristics of skin cancer (Table 4).

Discussion

Our focus group findings indicate that PCPs found the curriculum informative and increased their confidence in diagnosing and managing skin cancers. Participants recommended allocating time in the training session for questions, and some participants indicated that they would prefer to evaluate an actual lesion on a patient with expert guidance. Many providers commented that a lack of confidence in performing the screening and time constraints were the main barriers to incorporation of skin examinations during clinical visits. With improved confidence post-training, participants indicated that the quality of their skin examinations would improve but some noted that they did not feel confident in routinely performing or incorporating the exam into their practice. Despite improved confidence in diagnosing and managing skin cancers, participants indicated that time and institutional constraints remain to be barriers to implementation of skin examinations in clinical visits. PCPs also intend to increase discussion regarding skin protection and skin self-examinations with their patients. Focus group comments were incorporated

Table 3 Quotations representative of domain 3: current skin practices

Lack of expertise	"When they go downstairs for a derm check, Dr. spends a good 10 minutes just looking at their skin. I'm not going to be spending 10 minutes with their skin"
	"If they spend that $25 [copay] to see me, and I don't do anything else—they're going to feel cheated because I'm not an expert—you know what I mean?"
	"I have not done that [encourage skin self-examinations] in the past, so I might change that"
	"…you don't want to necessarily bring up something if they're not aware of it because you don't want to stir up things"
Lack of time	"Patients are very conscious of skin lesions…most people…bring the moles to your attention…because we are all practicing geriatric type medicine. We've got 20 different medications…and there are so many new initiatives"
	"…that's another kind of sad situation…. I have people with CHF and 5 other medical problems…it just can't be done in the time period we have"
	"I definitely agree with whatever everybody said. I think it's just time constraint-wise. There's so many other things on the plate. People don't come to the doctor as often, insurance issues and you just have so many things you have to think about things that would kill them tomorrow or next week versus what could be a little bit longer and so it's hard"
	"Yeah, my last biopsy we had to stop our whole side…we did a skin biopsy and…we had to stop to find the container and to find different things. And so it's a huge ordeal here"
Improving current referrals	"Same thing: leading questions. 'Are there any skin changes, anything that has changed size, shape, or color?' 'If yes, go see derm'"

Table 4 Quotations representative of domain 4: increasing frequency of skin screening in primary practice setting

Increasing high-risk screening	"Maybe screen more for the high risk patients and do the screening for those patients"
	"'Have you ever noticed any kind of suspicious lesions?' and a lot of time when the spouses come along, you could always have their input as well 'Have you noticed anything?'"
Changing PCP and office practices	"I think it [the curriculum] was very helpful…about making us realize that when we are examining the patient, focusing a little bit more on…rather than the diagnostic part, the primary care part like how to, at least, start the process"
	"That this would influence what we do in primary care and how patients are prepared, so that when we go into the room there's an expectation. I actually thought that that was actually a very good thing, even though it is a challenge to get these patients undressed"
	"It makes it easier actually to have a program like this to say that, you know, this is just the expectation and then all the medical assistants can work accordingly. I think that would probably be a very positive thing"
Increasing skin examinations	"Teach the patient in a bit more organized [way] how they should do it [self-examination], the 5 steps and like that"
	"I think so, at least for the high-risk patients, I want to do it [skin examination]. I mean, I don't want to miss a melanoma"
	"I think it (the curriculum) provided a more systematic way of where to look for in a patient (during skin exams)"
	"Do the full body exams at the time of your physical exam better than what we have been doing, with the knowledge we have right now"
Improving quality of skin examinations	"I don't think it's going to change any except for quality…well I'll look at lesions real carefully, the individual lesions. But I just—man, time is just such a precious commodity…"
Patient education	"…we can educate the patients about the skin protection and we are not doing that on a regular basis when they're coming for a complete physical so apart from doing the skin examination"
Increasing referrals to dermatology	"I think by the end of this I will be sending more pictures (to derm)"
	"I think as a result of this, I won't be doing any more full skin exams because of the time issue. I am certainly convinced more of the value of that and I don't have any problem referring to the dermatologist because that's what they do. They do it better than I do an again, we're so limited…[to conduct] the physical to then incorporate a full body exam and to start to talk about the abnormal lesions, just I can't ever see myself doing it. It's a time factor…"

PCP primary care provider

into the final Web-based version (http://www.skinsight.com/info/for_professionals/skin-cancer-detection-informed/skin-cancer-education).

The feedback demonstrates that the curriculum was appreciated among participating PCPs, but it is also effective in improving their subjective confidence in when to refer patients to dermatology. Adoption of the Web-based curriculum in primary care practices at Henry Ford Health Systems and Kaiser Permanente Northern California has also shown quantitative improvement in the diagnosis and management of skin lesions [7]. Participants completed pretest, immediate posttest, and a 6-month posttest and demonstrated significant improvement in scores for correctly reassuring patients regarding suspicious lesions [7]. Participants' confidence in performing a skilled complete skin examination improved from pretest score 3.6 (1.1) to immediate posttest score 4.3 (0.7) and sustained confidence at the 6-month posttest with 4.2 (1.0) [7]. This is important as previous reports have cited PCPs' lack of confidence as the main barrier to implementing skin cancer screening [16]. However, despite improving confidence through the INFORMED curriculum qualitatively and quantitatively in diagnosing and managing skin cancers, participants remained hesitant to incorporate skin cancer screening in their daily practice.

Some barriers to successful implementation defined by this study include time, workload, and institutional barriers. Providers expressed concerns about competing demands for their time and with integrating the skin examination into established clinic flow. Participating PCPs felt that they may not be able to increase skin cancer screenings, because both administration and support staff may not have similar expectations. Feedback from PCPs in this study suggests that even in large integrated health system environments dedicated to health maintenance and promotion, institutional barriers exist; this may be even more challenging in other settings. It is established that common barriers preventing implementation of an evidence-based intervention include lack of participant enthusiasm, an organization's culture, high cost of

implementation, intensive time demands, and interaction among these factors [6, 8, 18, 21, 22]. While our focus groups were targeted at helping us to improve the Web-based curriculum, participant feedback underscored the importance of addressing PCP concerns as demands and the interaction of practice and institutional obstacles to ensure success of integrating skin screening into practice. If effectively addressed, integration of more routine skin examination by PCPs has the potential to make an impact on the earlier diagnosis of melanoma. Empowerment, managing expectations, and confidence building will be a key to successfully weaving skin cancer screening into primary care.

While barriers to skin cancer screening implementation have not been well examined, the literature exploring barriers to colorectal cancer, cervical cancer, and breast cancer screening demonstrates that physicians noted managing work overload, addressing comorbid medical illness, and treating competing priorities as barriers to screening [17, 19]. Thus, addressing the organizational issues of work overload and time limitations may help improve not only skin cancer screening but also cancer screening, in general, in the primary care setting.

Both quantitative and qualitative feedback of the curriculum is vital for the successful implementation of a skin screening program internally and for future dissemination [7]. The CRN facilitates cancer research in integrated health-care settings and may be an ideal beginning for implementation of the curriculum in multiple integrated health-care settings before disseminating more broadly among PCPs. The qualitative feedback presented in this study is important for directing changes that may be needed for the possible dissemination and implementation of a Web-based skin cancer curriculum in other primary care practices both at the clinic and institutional level. Committed institution-level support and planning to identify and address both practice and institutional barriers to implementation is imperative for implementation and dissemination of the INFORMED skin cancer curriculum. This ability to scale up an effective intervention is a key issue for dissemination and implementation science [20].

Study Limitations

These study's findings should be interpreted within the context of its limitations. First, all providers self-selected to complete the curriculum and may have been more interested to incorporate skin cancer screening in their daily practice than general PCPs. Additionally, participants completed the curriculum and subsequent focus groups after long clinic days. Because of the time needed for administrative and study details, participants' pace through the course at those sessions was accelerated and both of these factors may influence their perceptions of the curriculum. While this evening session may have found providers tired, this may also demonstrate a realistic perspective on how the skin examination and this curriculum fit into providers' busy schedules and viewpoints. Although this study was open to nurse practitioners and physician assistants, there were a limited number in this study and those present were outnumbered by physicians; hence, interpretation in this group is limited. Participants were employed by two large health maintenance organizations that tend to emphasize preventive efforts more so than some other health systems; thus, further exploration with similar health maintenance organizations is warranted as this curriculum is well aligned with health maintenance organization missions.

Conclusion

Participants were able to absorb new training and improve their skin screening skills, improving confidence in when to refer and when to reassure patients about concerning lesions. Despite improving PCP's confidence in their ability to detect malignant lesions, participants still noted additional barriers to incorporating skin cancer screening in their practice. The popularity of low-cost, Web-based delivery supports the possibility for widespread dissemination. Future efforts should focus on reducing institutional barriers to implementation of skin cancer screening. Given the rising incidence of melanoma [23], the number of dermatologists available to screen patients will not meet needs. We hope our finding will help inform institutions, who may be considering implementation of INFORMED or similar skin cancer programs, to better prepare and plan for the incorporation of skin cancer screening into practice. Our findings support that provider confidence and skills improvement are insufficient alone; planning and preparation at the institutional level are imperative for successful implementation into practice. Convenient, economical, and accessible online educational curriculum hold potential for improving skin cancer prevention and detection by PCPs.

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