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Original Publication

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Cancer Screening for Transgender Patients: An Online Case-Based Module

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Abstract

Introduction: Guidelines recommend that primary care providers complete organ-based routine cancer screening for all transgender patients. Training on critical transgender health topics like cancer screening, as well as residents' confidence in addressing issues their transgender patients may face, remains limited among graduate medical education (GME) programs. Online case-based modules are an effective tool for skills improvement in GME, but their application to transgender health topics has not been assessed.

Methods: I developed a brief online module on cancer screening for transgender patients using Google Forms and offered it to first-year internal medicine residents. The module was optional and asynchronous with other didactics presented during an oncology-themed ambulatory learning block. Pre- and postmodule surveys assessed resident confidence in counseling transgender patients about cancer screening and sharing screening resources. **Results:** Fourteen of 60 interns elected to complete the module, with all participants submitting pre- and postmodule surveys. Respondents reported increased confidence in counseling transgender patients about appropriate cancer screening (mean increase on 5-point Likert scale of 1.29; confidence interval [CI], 0.81-1.76; $p < .01$) and increased confidence in discussing resources on cancer screening for transgender individuals (mean increase on 5-point Likert scale of 1.36; CI, 0.66-2.06; $p < .01$). **Discussion:** While knowledge gaps on transgender health issues like cancer screening remain significant among residents, brief case-based online modules, in conjunction with an expansion of traditional didactics, may help improve confidence among residents in addressing these critical issues with their transgender patients.

Keywords

Cancer, Screening, LGBT, Transgender, Online, Diversity, Asynchronous

Appendices

- A. Transgender Cancer Screening Module.pptx
- B. Pre- and Postmodule Survey Questions.pdf
- C. Formatting the Module on Google Forms.pdf

All appendices are peer reviewed as integral parts of the Original Publication.

Educational Objectives

By the end of this activity, learners will be able to:

1. Evaluate the risks and benefits of various cancer-screening recommendations for transgender individuals.
2. Identify critical questions to use with transgender patients when assessing the appropriateness of various cancer-screening strategies.
3. Describe the resources available to aid shared decision-making conversations with transgender individuals regarding cancer screening.

Introduction

Transgender individuals undergoing hormone therapy are not at increased lifetime risk for malignancy.^{1,2} For many transgender patients, however, education from providers about cancer risk and appropriate screening is lacking. Twenty-five percent of transgender patients have reported teaching their providers about their own health issues.³ Undergraduate and graduate medical education training on transgender health topics, including cancer screening, is minimal and leaves learners feeling unprepared to manage the health issues of this population.⁴ These knowledge gaps may have significant public health implications for a population that faces many barriers to appropriate cancer screening.⁵ While expert guidelines recommend that primary care providers conduct organ-based routine cancer screening for all

transgender patients,⁶ the uptake of these guidelines by residents delivering primary care to transgender patients is unclear.

Online case-based modules have been shown to be effective in skills improvement among residents⁷ and can help supplement the lectures, discussions, and standardized patient sessions that medical schools and residencies have used to expand the breadth of LGBT teaching.⁸ When viewed purely as a compensatory mechanism, self-directed learning among residents, compared to faculty- or peer-led learning, has the lowest correlation with satisfaction.⁹ However, it is not known how much this is driven by time constraints and demands on resident work-life balance, rather than the content delivered or the delivery mechanism. Google Forms is a free resource that requires no coding experience and has been previously deployed in medical education,¹⁰ although not as an online case-based module. Brief learner-guided online modules, created with the goal of expanding resident knowledge of and confidence in cancer screening for transgender patients, have not been previously studied.

Methods

I offered an online module to all categorical and primary care internal medicine interns ($N = 60$) at Massachusetts General Hospital as part of a 2-week oncology ambulatory learning block that was repeated with four different cohorts of interns between April 2018 and June 2018. The ambulatory learning block consisted of a mix of traditional lectures, case-based learning, and skills workshops. Participation in the online module was optional, no prerequisite knowledge was needed by learners, and interns were told that the case typically took 10-15 minutes to complete. I designated a time (Friday mornings, 8:00-9:00 a.m., before ambulatory clinical responsibilities) in which to complete this module and another module on a different topic.

I developed the module utilizing Google Forms and asked a content expert at the Massachusetts General Hospital Transgender Health Program to review it. A modified PowerPoint version of the module that can be utilized by learners without creating a Google Form can be found in Appendix A. Instructions for educators wishing to use this PowerPoint version of the module are also included in Appendix A. At my institution, the text in Appendix A was entered into Google Forms without any branching logic (e.g., interns completing the module would not get different text depending on their answers to questions). The content of the module was supplemented with a pre- and postmodule survey to assess resident confidence in addressing cancer screening with transgender patients. I entered the text of the survey questions (Appendix B) into Google Forms without branching logic (Appendix C). I chose confidence as the primary outcome in the assessment because, while difficult to measure,¹¹ confidence may have a direct impact on the effectiveness of patient counseling.¹² I included seven clinical knowledge questions in the module that pertained to the module's cases (see slides 5, 8, 13, 16, 19, 22, and 25 in Appendix A) and provided residents with the answers to these questions after each section of the module. There were no associated postmodule clinical knowledge questions—rather, the questions included in the module were intended to aid in identifying preexisting gaps in knowledge. Answers to these survey questions and the clinical knowledge questions were extracted using the View Responses in Sheets link at the top of the Google Form Responses tab. Additional qualitative feedback was obtained via open-ended response questions at the end of the module.

I sent interns an email with a link to the module at the start of their ambulatory learning block. They could complete the module at any time during the 2-week block. I compared pre- and postmodule confidence ratings using the paired t test ($\alpha = .05$). Answers to clinical knowledge questions and qualitative feedback were reviewed by the Ambulatory Residency Training Committee at Massachusetts General Hospital to assess the need for further didactics on specific topics.

Results

The online module was implemented in the spring of 2018, with all internal medicine interns offered the opportunity to participate. Fourteen of 60 interns elected to complete the module, all of whom submitted

the pre- and postmodule surveys. The Table shows the results of the pre- and postmodule surveys. Interns who completed the module reported increased confidence in counseling transgender patients about appropriate cancer screening (mean increase on 5-point Likert scale of 1.29; confidence interval [CI], 0.81-1.76; $p < .01$) and increased confidence in discussing resources on cancer screening for transgender individuals (mean increase on 5-point Likert scale of 1.36; CI, 0.66-2.06; $p < .01$). Interns answered seven clinical knowledge questions throughout the module, averaging a score of 67%.

Table. Pre- and Postmodule Survey Results ($N = 14$)

Question ^a	% Selecting 1	% Selecting 2	% Selecting 3	% Selecting 4	% Selecting 5
1. How confident are you in counseling a transgender patient about cancer screening? ^b					
Premodule	29	29	29	13	0
Postmodule	0	0	43	57	0
2. How confident are you in identifying resources for transgender patients about cancer screening? ^c					
Premodule	29	29	29	13	0
Postmodule	0	0	36	64	0

^aRated on a 5-point Likert scale (1 = *not at all confident*, 5 = *very confident*).

^bMean difference in pre-/postmodule confidence scores: 1.29; confidence interval (CI), 0.81-1.76; $p < .01$.

^cMean difference in pre-/postmodule confidence scores: 1.36; CI, 0.66-2.06; $p < .01$.

Direct qualitative feedback in response to the question “Any tips for improving this module?” included requests for more direct links to resources (“Links to a couple of papers included in the [module] are always appreciated”) and comments on the effectiveness of the module (“[It was] helpful to think about how to ask questions” and “I liked that it was short, case-based, and to-the-point”).

Discussion

This brief learner-guided online module led to increased reported confidence among internal medicine interns in counseling and delivering resources about cancer screening to transgender patients. The survey data point to brief (less than 15 minutes) learner-guided modules as a potential model to supplement traditional peer- or faculty-led transgender health curricula with high-yield teaching on specific topics.

The knowledge base of learners participating in the module was low, with 67% of clinical knowledge questions answered correctly over the course of the module, likely reflecting the minimal training and education received by undergraduate and graduate learners on LGBT-related topics. A limitation of this intervention is that clinical knowledge pertaining to cancer screening in transgender patients was not tested again after the module, as there was concern that adding postmodule clinical knowledge questions could drive down rates of participation. This limitation in study design raises a key concern: Learners may feel more comfortable delivering counseling to transgender patients regarding cancer screening following these modules but could provide misinformation or incomplete information. Future studies of brief learner-guided online modules should explore retention of clinical knowledge with follow-up assessments days to weeks following module completion.

Poor prior clinical knowledge was coupled with low premodule confidence scores among participants. This was a voluntary module, and only 23% of the intern class participated. As I did not ask about participants’ interest in or prior exposure to the subject, it is not known whether premodule confidence scores represent an overestimation (if those more interested or more confident in the subject matter than their peers were more likely to participate) or underestimation (if those with lower base knowledge than their peers were more likely to participate).

This module was constructed using Google Forms, a free resource for educators that requires no coding background to construct a learning module. Participants found it easy to use. Google Forms’ functions were likely underutilized—several participants commented that they wanted more embedded links and

pictures within the module, both of which would be easy additions. A limitation of the format is that there is no easy way for participants to see, after their own submissions, what their peers have been submitting in the open-ended answer fields, reflecting a missed opportunity to leverage shared attitudes or misconceptions to motivate engagement in the exercise. Although not used as a flipped classroom exercise, this module and other asynchronous modules like it could be adapted to the flipped classroom model, which, while used extensively at the undergraduate medical education level, remains an active area of study at the graduate medical education level.¹³

Several lessons were learned in the development and rollout of the Cancer Screening for Transgender Patients online module. First, while Google Forms as a delivery vehicle for the module was well accepted by learners, crafting the module on Google Forms took over an hour, not including background research and case development. This is time that many educators may not have; for them, the PowerPoint file in Appendix A may be a more streamlined solution. Second, despite the minimal time commitment involved and even though interns were offered protected time to complete the module, there was poor participation in this voluntary asymmetric learning opportunity. For this model to work, educators must consider how to lower the threshold for participation as much as possible. Third, while it was anticipated that participants would provide minimal responses in the open-ended sections of the module, many supplied robust, detailed answers. Further study is needed to investigate whether seeing their peers' responses changes learners' practices in responding to open-ended questions in these models.

Several challenges face the more widespread dissemination and implementation of this module: Not every institution will be able to protect time in its residents' didactic schedule for them to complete the module; as the module was not offered to residents above postgraduate year 1, the acceptance of this format among upper-level residents needs to be evaluated; and without knowing the impact of the module on clinical knowledge retention, leadership at other institutions may be reluctant to green-light similar interventions.

In summary, ease of use, adaptability, and survey data suggesting increased learner confidence all support the further study of brief learner-guided online modules in the teaching of critical transgender health topics. While this intervention focuses on cancer screening for transgender individuals, similar modules could be added to existing curricula (e.g., cardiovascular risks of hormone therapy during a cardiology learning block) to ensure that transgender patients receive well-informed, evidence-based care from their future physicians.

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Ethical Approval

Reported as not applicable.

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