A Pilot Test of a Workshop for Pediatric Clinicians About Communicating with Parents About the HPV Vaccine Using the C-LEAR Approach

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Abstract
Low HPV vaccinations rates lead to missed opportunities to prevent cancer. Specifically, some parents (12–76%) report never receiving a recommendation for their child to receive the vaccine. Current models for talking about HPV vaccination fall short in that they focus primarily on how to introduce the vaccine with limited guidance on how to follow through with the conversation, particularly with those parents who may be hesitant. We developed the C-LEAR approach, an easy to remember, evidence-informed mnemonic to guide clinicians through the process of introducing and discussing the HPV vaccine with parents. We pilot tested this approach with a total of 20 pediatric clinicians (n = 13 residents; n = 7 attendings) in 60-min Zoom workshops that included a short didactic session, a demonstration of skills, and a small group, facilitator-led role play session. On an immediate post-training survey, all participants stated that the training was helpful and easy to understand. Ninety-four percent responded that they would implement what they had learned in their clinic. Participants reported appreciation for the small group sessions. While not specifically asked or required to incorporate the material into their practice, 1 year following the training, 8/9 (88%) participants reported using the C-LEAR approach in their clinics “most” or “all of the time.” We are further testing this model through teaching our workshop in a large, randomized trial across the state of Florida.

Keywords HPV · Vaccine · Physician–patient communication

Introduction
Across the USA, an unprecedented missed opportunity to prevent cancer is signified by the low human papillomavirus (HPV) vaccine initiation (receipt of 1 dose or more) and up-to-date rates (among adolescents who start the series: before age 15 years = 2 doses or at age 15 year or later = 3 doses) [1]. The HPV vaccine prevents up to six types of cancer including cervical and oropharyngeal cancers and is recommended for all 11- to 12-year-olds [2–5]. Nationwide, among 13- to 17-year-olds, 75% have initiated and 59% are up-to-date for the HPV vaccine. Compared to the national average, fewer 13- to 17-year-olds living in Florida have initiated the HPV vaccine (68%) or are (52%) are up-to-date [1]. At the same time, Florida has the 3rd highest rate of HPV-related cancers by state [6].

Focusing implementation efforts on clinician recommendations is warranted as the clinician’s recommendation has been shown repeatedly to be associated with positive vaccine outcomes for boys and girls at series initiation and completion [7, 8]. However, the percentage of parents who report receiving a clinician recommendation for HPV vaccine ranges from 12 to 76% [9]. In one study among parents who did receive a recommendation, only about half stated their clinicians expressed urgency of vaccinating during the visit, indicated the vaccine was important, or mentioned that the vaccine prevents cancer [10]. In response, national health agencies such as the Centers for Disease Control, the American Academy of Pediatrics, and the President’s Cancer Panel have adopted recommendations for how clinicians should discuss the HPV vaccine...
with parents [2, 3, 11, 12]. Yet these approaches focus primarily on what the clinician should say when they are introducing the HPV vaccine to the parent and discuss answers to frequently asked questions. Yet, knowing how to discuss parents’ questions and concerns, known as vaccine hesitancy, is key to effective communication [13].

Residency is an opportune time to teach good communication skills in order to help trainees develop practices that they can use throughout their career, whether that be practicing in academia or practicing in the community. The limited published work on residents’ HPV communication skills indicates that there is a great need for training during residency [14, 15]. In addition, residents report learning from watching faculty [15]. Therefore, it is important to also ensure that attending faculty are modeling good communication skills about HPV vaccination.

Current approaches for talking about HPV vaccination are lacking in that they focus primarily on how to introduce the vaccine. Although there are resources available for answering questions about HPV, including prescriptive messages related to parents’ common questions [16], there is no guidance on how pediatric residents and attending physicians can incorporate communication skills to effectively proceed through the full conversation about the HPV vaccine. Despite the evidence of the impact of empathy on the clinician-patient relationship and important outcomes [17], current resources do not include empathy as central to this conversation.

Thus, we developed an approach for clinicians to recommend HPV vaccinations, the C-LEAR approach. It is easy to remember and can be used with the national health agencies’ recommended approaches for discussing the vaccine [11]. The aim of this study was to pilot test the C-LEAR approach in a training workshop with clinicians.

**Methods**

**Participants and Recruitment**

Participants were pediatric physicians, including residents, attending physicians, and a community physician. Participation was voluntary. Participants who were residents were invited to participate through an email from the first author that was disseminated through their residency listserv. Participants who were practicing physicians were invited to participate through an email from one of the authors who is their colleague. Those who were interested contacted the study coordinator to sign up for a workshop. The University of Florida Institutional Review Board approved this study (#IRB202000278).

**Workshop Content: the C-LEAR Approach**

Building off established training programs and current evidence, we developed the C-LEAR approach, an easy to remember, evidence-based mnemonic to guide clinicians through the process of introducing and discussing the HPV vaccine with parents. We provide an outline of each letter of the C-LEAR approach in Fig. 1 and provide the evidence for each letter and concept below.

**Counsel** The first step in discussing the HPV vaccine is for the clinician to introduce the vaccine. We provided two recommended ways of doing this: (1) a bundled introduction that presents the HPV vaccine along with the two other recommended adolescent vaccines that are consistent with current Centers for Disease Control and Prevention’s recommendations and (2) a benefits introduction that highlights cancer prevention, vaccine safety, vaccine efficacy, and the importance of vaccinating at age 11 or 12 years as recommended by the President’s Cancer Panel [11].

Following the introduction to the vaccine, we advise the clinician to pause to see if the parent or child has any comments or questions. However, after counseling, many parents will not have questions or concerns, and the visit can proceed with the HPV vaccination administered. However, if there are questions then the clinician can continue to progress through the C-LEAR approach. The dash after the letter C in the name C-LEAR illustrates this decision point.

**Listen** If the parent or child asks a question or makes a comment, the role of the clinician first is simply to listen to what they have to say. Even if parents have questions or concerns, that does not mean that they will refuse the vaccine [18]. Studies have shown that vaccine hesitancy can be overcome with good communication [19]. Engaging with the parent or child about the question or concern is key to overcoming hesitancy. [13]

**Empathize** Demonstrating clinical empathy toward the parent or child after the question/concern is critical. There are several skills that can be used to demonstrate clinical empathy. These include exploring, restating, acknowledging, normalizing, and validating. Not every skill will need to be used with each parent/child. The critical point here is that the clinician should use some empathic communication skills before moving to the next step of responding to the concern.

**Answer** After communicating empathically, the clinician should give a brief and accurate answer to the parent/child...
about their concern. Our training provides sample questions and answers to the most common concerns for HPV (Fig. 2).

**Recommend** Immediately after giving the answer, the clinician should reinforce their belief in the importance of the vaccine with a recommendation. A strong recommendation matters [7]. If at this point, the parent/child raises another concern or question, the clinician should cycle back through the approach, starting with the L for Listen.

**Workshop Design and Implementation**

Originally, we intended to run these training sessions in-person. However, due to the COVID-19 pandemic, we moved the training to Zoom. We pilot tested this workshop in 60-min workshops on Zoom, designed to work for 1–9 clinicians. The workshop could be conducted in-person or on Zoom. In-person has the benefit of face-to-face contact, and Zoom has the benefit of facilitating trainings with...
clinicians who are geographically separated. Each workshop used internationally accepted best practices for communication skills training [20]. We began with a short presentation (15 min) that established the evidence for the HPV vaccine and the need for a C-LEAR communication approach. This was followed by a live demonstration of using the C-LEAR approach with two of the authors demonstrating a role play of a pediatrician talking to a parent about the HPV vaccine. As shown in Fig. 1, we gave pocket cards to the participants that outline the C-LEAR approach. As shown in Fig. 2, the pocket cards also had answers to frequently asked questions. Three authors (CLB, LAT, SASS) facilitated small groups of 2–3 clinicians, where each clinician practiced using the C-LEAR approach. We did this using a participant role play method, where one person acted as the doctor, one as the parent, and one as an observer. An outline of the training can be found in Supplemental Material 1.

We designed three scenarios based on real life clinical experiences of one co-author (LAT), a pediatrician. Each scenario focuses on one concern or question that a parent might have, as shown and shared with participants in our FAQ (Fig. 2). The person taking the role of the doctor in the role play does not know what the concern/question is that the parent has; this is only on the instructions for the person playing the role of the parent. The concerns get progressively more difficult to respond to as the group progresses through the role plays. In the first scenario, the parent has a question about side effects that can be easily answered. In the second scenario, the child is nervous about getting a shot, so the parent asks if the shot can be put off for a year. This gives the doctor the opportunity to talk about why getting the shot earlier is better. In the final scenario, the child’s guardian is a grandparent. The grandparent says that they do not want the child to get the shot. The doctor has to use the C-LEAR skills, particularly the skills listen and empathy, to try to understand why. We have written the scenario so that the person playing the role of the grandparent knows the real reason, which is that they are worried that because this shot is associated with sexual activity, the child will think it is OK to have sex after getting the shot, a common concern that parents have [21]. If the doctor successfully uses the communication skills, the grandparent will share the real concern which provides an opportunity for the clinician to address this concern with the family.

Each participant was given a version of the scenarios with specific instructions for their role. Facilitators filled in roles when necessary.

Training Evaluation

Immediately following the training, we asked participants to complete a 19-item post-training survey via REDCap. Participants received a $25 gift card for completion. The post-training survey contained 14 questions evaluating the course, attitudes about the behaviors taught in the training, self-efficacy, and behavioral intentions. It also included 4 questions about the participants’ perceptions of the communication approach taught in the training. Finally, it included one open-ended question for the participants to write any additional comments. A copy of the survey can be found in Supplemental Material 2.

Approximately 1 year following the training, we sent a 6-item survey to participants using REDCap. Participants received a $10 gift card for completion. This evaluation focused primarily on how the participants had used what they learned in the training session in their practice over the past year. It included two questions to ensure that they had had the opportunity to use the C-LEAR strategy, two questions focusing on how often they had recommended the HPV vaccine and how often they had used the strategy, and two open-ended questions asking about their perceptions of advantages and barriers. A copy of the survey can be found in Supplemental Material 3.

Results

We presented this workshop three times: with two groups of pediatric residents (n = 13) and one group of pediatric attendings (n = 7) between June and October 2020.

Immediate Post-Training Survey

Across the groups, 17 participants completed the post-training survey (response rate = 85%). Overall, the training was well-received with 100% (17/17) of responding participants stating the training was helpful and easy to understand. Ninety-four percent (16/17) responded that they would implement what they had learned in their clinic. Aggregated responses to each question are shown in Table 1. In the free-response question for general feedback, participants specifically mentioned their appreciation for the role play breakout sessions where they enjoyed faculty facilitation, receiving advice from their colleagues, and excellent guidance.

One Year Post-Training Survey

Nine of 16 (56%) participants whom we had active email addresses for completed the 1-year post-training survey. This included all seven attending pediatricians who had completed the training workshop. All respondents reported providing the HPV vaccine to 11- to 12-year-olds. All reported that they recommended the HPV vaccine to parents of 11- to 12-year-olds more than 80% of the time. When asked how
often they follow the C-LEAR approach, 7/9 selected “most of the time,” 1/9 selected “all of the time,” and 1/9 selected “about half of the time.”

**Discussion**

Improved physician communication with parents about the HPV vaccination has the potential to significantly improve HPV vaccination rates, and ultimately reduce cancer rates. To do this, we must educate physicians on how to have these conversations with parents, especially parents with vaccine hesitancy. Although current approaches focus on recommendations and provide messages for responding to frequently asked questions [2, 11, 12], they have limited coverage of communicating empathically about the parents’ concerns. Our training is further differentiated by including pediatric residents’ clinics and is consistent with the main evidence-based program by prioritizing experiential work (e.g., role play) for our communication skills training rather than passive learning through videos. [22, 23]

This pilot study of teaching the C-LEAR approach in three workshops indicates the acceptability of the training with pediatricians as well as promising pilot self-report data showing that it impacted pediatrician behavior. Specifically, all participants agreed that the training was helpful and easy to understand. Behavioral intentions were strong with almost 90% strongly agreeing that they intended to regularly encourage HPV vaccination over the next 30 days. All participants agreed that they could address specific questions and concerns about the vaccine.

Our immediate next step is to test this approach in a large randomized controlled trial with clinicians across the state of Florida. Specifically, we will be testing the effectiveness of using two different strategies for introducing the HPV vaccine within the C-LEAR approach, versus

| Table 1: Responses to post-training survey (n = 17) |
|-----------------------------------------------|
| **Item** | Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly disagree |
|-----------------------------------------------|
| This training was helpful | 11 (65%) | 6 (35%) | 0 (%) | 0 (%) | 0 (%) |
| This content was easy to understand | 14 (82%) | 3 (18%) | 0 (%) | 0 (%) | 0 (%) |
| This training will help my practice or clinic improve the HPV vaccination | 11 (65%) | 6 (35%) | 0 (%) | 0 (%) | 0 (%) |
| I will implement what I have learned today at my practice or clinic | 13 (76%) | 3 (18%) | 1 (6%) | 0 (%) | 0 (%) |
| In the next 30 days, I intend to regularly encourage the parents of my 11- to 12-year-old patients to get their children vaccinated against HPV | 15 (88%) | 1 (6%) | 1 (6%) | 0 (%) | 0 (%) |
| I know how to recommend HPV vaccine in a way that leads to vaccination | 15 (88%) | 2 (12%) | 0 (%) | 0 (%) | 0 (%) |
| The HPV vaccine is effective | 15 (88%) | 2 (12%) | 0 (%) | 0 (%) | 0 (%) |
| A clinician’s recommendation greatly increases HPV vaccination | 15 (88%) | 2 (12%) | 0 (%) | 0 (%) | 0 (%) |
| Other providers in my community are recommending the HPV vaccine to 11- to 12-year-olds | 11 (65%) | 3 (18%) | 3 (18%) | 0 (%) | 0 (%) |
| I have enough time during visits to probe parents about their reasons for wanting to refuse or delay the HPV vaccine | 7 (41%) | 8 (47%) | 2 (12%) | 0 (%) | 0 (%) |
| I am influential in parents’ final decision about whether to get the HPV vaccine for their adolescent child | 13 (76%) | 3 (18%) | 1 (6%) | 0 (%) | 0 (%) |
| I am usually able to convince hesitant parents to get the HPV vaccine | 4 (24%) | 11 (65%) | 1 (6%) | 1 (6%) | 0 (%) |
| When parents wish to delay or refuse HPV vaccination, there is not much I can say to change their minds | 2 (12%) | 2 (12%) | 4 (24%) | 7 (41%) | 2 (12%) |
| I am confident I can address specific parental concerns and questions about the HPV vaccine for 11- to 12-year-olds.* | 10 (63%) | 6 (38%) | 0 (%) | 0 (%) | 0 (%) |
| I have a communication strategy that: Makes it easy for me to recommend the HPV vaccine.* | 12 (75%) | 4 (25%) | 0 (%) | 0 (%) | 0 (%) |
| Helps me make the HPV vaccination a part of routine adolescent care.* | 12 (75%) | 4 (25%) | 0 (%) | 0 (%) | 0 (%) |
| Helps me address parents’ HPV vaccine concerns.* | 11 (69%) | 5 (29%) | 0 (%) | 0 (%) | 0 (%) |
| Saves me time when recommending the HPV vaccine.* | 10 (63%) | 4 (25%) | 2 (13%) | 0 (%) | 0 (%) |

*Corresponding values are based on a total of 16 responses
no training. In this trial, we will use pre- and post-test versions of an expanded version of this survey in order to understand how the training affects perceptions and behavioral intentions.

The C-LEAR model makes an important contribution to the research and education literature as it provides guidance for how to respond to parents’ hesitancy. As parents may express hesitancy toward their child receiving the HPV vaccine, it is important that physicians feel equipped to have these challenging conversations as opposed to automatically deferring the vaccine or simply factually addressing the question. We built on the evidence for counseling, answer, and recommendation [24], adding in a series of steps to elicit and legitimize parents’ questions or concerns: listen and empathize. Bringing these elements together into one model is the innovation of this approach.

As facilitators of the program, we have found that participants were very engaged. They appreciated having a focused, prescriptive model to guide them through these potentially difficult conversations. Overall, we have noted two challenges that participants had following the C-LEAR approach. First, participants tended to want to go straight from “Listen” to “Answer.” We focused on helping them to understand the importance of “Empathize” before answering. Second, there is often a hesitation before giving the final “Recommend.” We worked in small groups to help them to practice going straight from “Answer” to “Recommend,” understanding that if the parent has another question or concern, they can cycle back through the model again.

Limitations of this pilot study include that we have only tested the strategy primarily with academic pediatricians and pediatric trainees. Consequently, we do not yet know how generalizable this model is to pediatricians who practice outside of academia or other types of clinicians who may have conversations about HPV vaccinations, such as family medicine clinicians. Furthermore, although we measured physician self-report about behavior change, we were not able to measure whether participating in this training increased the HPV vaccination rates within pediatric practices.

Conclusion

The C-LEAR model is a simple and easy to remember mnemonic that may help improve physician and parent vaccine communication. Beyond HPV, we believe that this model is potentially valuable in helping pediatricians and other clinicians have conversations with patients and families about other types of vaccines, including the flu vaccine and the COVID-19 vaccine [25].

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Code Availability Not applicable.

Declarations

Ethics Approval This research was approved by the (university name removed) Institutional Review Board (#IRB202000278).

Conflict of Interest The authors declare no competing interests.

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