

Original Publication

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Case-Based Workshop for Teaching Child Abuse Prevention to Resident Physicians

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Abstract

Introduction: Child abuse is a ubiquitous problem with personal, interpersonal, and social consequences. Risk factors are well established, and preventive strategies have been effective in decreasing abusive parenting behaviors and child maltreatment incident reports. Curriculum tools are needed to incorporate these strategies into training programs so physicians are adequately trained to identify and prevent child maltreatment at the earliest opportunity. **Methods:** A literature review established the core content for the curriculum. Resident learning needs were assessed with an online survey sent to graduating residents and teaching faculty. Curriculum objectives were composed to target core content and to address learning needs. Adult learning theories were applied to design interactive, case-based workshops to meet the curriculum objectives. A qualitative assessment tool was distributed to participating residents pre- and postcurriculum. Evaluators were blinded to pre/post status. Follow-up surveys distributed 3 months after the curriculum evaluated for retention of content and application to clinical practice. **Results:** After workshop participation, residents showed a greater tendency to associate somatic and behavioral complaints with potential toxic stress or abuse and demonstrated understanding of ongoing needs and risks in affected families. On follow-up surveys, most residents self-reported progress toward incorporating discussion of risk factors, stress, and abuse into routine well-child visits. **Discussion:** Resident physicians who attended the child abuse prevention workshop acquired knowledge and skills relevant to secondary and tertiary child abuse prevention and indicated progress toward primary prevention goals during the subsequent 3 months.

Keywords

Resident Education, Prevention, Family Medicine, Child Abuse, Pediatrics, Public Health, Toxic Stress

Educational Objectives

By the end of this submission, the learner will be able to:

1. Identify child, parent, and environmental risk factors for child abuse.
2. Demonstrate familiarity with common abuse triggers at various developmental stages.
3. Understand how anticipatory guidance relates to abuse prevention.
4. Recognize presenting symptoms that may signify exposure to toxic stress or child maltreatment.
5. Assess for child abuse during a patient-family interview.
6. Know the roles and limitations of the multidisciplinary team involved in child abuse cases.
7. Evaluate a nonaccidental trauma and support the family through the process.

Introduction

Child abuse is a ubiquitous problem with personal, interpersonal, and social consequences. The problem is underrecognized and typically not identified by providers until detrimental effects are apparent. Risk factors for child abuse are well established, and preventive strategies have been effective in decreasing

Appendices

- A. CAP Part 1.pptx
- B. CAP Part 2.pptx
- C. CAP Part 3.pptx
- D. CAP Assessment.pdf
- E. CAP Assessment.docx
- F. CAP Follow-up Assessment .pdf
- G. CAP Assessment Evaluation Guide.docx

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

abusive parenting behaviors and reducing the frequency of child maltreatment incident reports. In 2010, the American Academy of Pediatrics published a clinical report describing the importance of moving beyond identification and management of child maltreatment toward prevention by “[strengthening] families and [promoting] safe, stable, nurturing relationships.”¹ The report outlined child abuse risk factors and proposed strategies for intervention. To move toward the goal of incorporating child abuse prevention (CAP) into common pediatric practice, child abuse risk factors need to be formally taught and preventive strategies widely practiced in resident education programs. Curriculum tools are needed to teach preventive strategies so physicians are adequately trained to prevent child maltreatment and identify abuse at the earliest opportunity. We therefore conducted a project to develop and pilot test a CAP curriculum in our family medicine, pediatrics, and medicine-pediatrics residency programs at the University of Rochester School of Medicine and Dentistry. The curriculum was implemented over 8 months and assessed over a 12-month period. Data collected from the pilot study are being used to improve both the curriculum and the assessment process for future iterations.

The overarching goals of the project were to design and evaluate an effective CAP curriculum using case-based workshops to prepare residents to do the following:

- Identify and address child abuse risk factors during routine care of infants and young children.
- Identify signs and symptoms of family stress as expressed by a parent or child and discuss this matter with families (assessing for child maltreatment).
- Identify signs of abusive trauma, evaluate for past and present injuries, and involve multidisciplinary specialists as necessary.
- Actively incorporate CAP strategies into routine clinical practice.

About 80% of nonaccidental childhood injuries are caused by a parent. There are 3.3 million reports of abuse per year nationwide. In 2010, in the United States, there were five deaths per day secondary to child maltreatment. Aside from physical morbidity and mortality, child abuse is also associated with lifelong mental illness as well as an increased incidence of chronic physical ailments such as heart disease, diabetes, obesity, spinal pain, asthma, headaches, and irritable bowel syndrome.²

As a matter of public health, it is important that child abuse be addressed by primary prevention not only to avoid unnecessary harm but also because abuse commonly goes unrecognized, consequently limiting secondary and tertiary prevention opportunities. A recent study in Canada reviewed evaluation forms completed by adolescents after a family violence prevention program was conducted at various school sites. The study found high rates of hidden abuse. Of 1,099 adolescents who disclosed abuse experience, only 25% had previously reported the incident.³ Adverse Childhood Experience (ACE) data also demonstrate underrecognition of child abuse. Current statistics gathered from formal reports and parent surveys suggest that only 2%-5% of children are recognized to be affected, whereas 28% of over 17,000 adults surveyed in the ACE study disclosed having had physical abuse occur at some point during childhood.⁴

Research evaluating the efficacy of CAP programs finds a consistent reduction in childhood injuries as a result of multifaceted parenting interventions⁵ facilitated by community-based organizations. Programs typically incorporate education and supportive services, and many conduct home visits.

The involvement of health care workers has also been evaluated. For example, Safe Environment for Every Kid (SEEK) is a primary care-based program that is designed to routinely address known risk factors (parental depression, substance abuse, major stress, and intimate partner violence). SEEK has been effective in decreasing self-reports of maternal aggression and minor physical assaults in both high- and low-risk patient populations.⁶ It logically follows that this positive change might be multiplied if all risk factors were routinely addressed in general practice.

The risk of abuse-related mortality is highest in the first 3 years of life. Primary care providers have multiple contacts with families throughout these years, including at least eight well-child visits in the first year alone. Each visit provides a potential opportunity to prevent child abuse.

CAP requires familiarity with risk factors and common triggers, as well as the ability to support and guide a family toward healthy, nurturing problem-solving and effective relationship-building strategies at every developmental stage. Physician education is largely driven by the goal of preparing trainees for board certification. Currently, in the psychosocial section of the American Board of Pediatrics board exam content specifications, topics related to child abuse focus on recognition and evaluation of abusive trauma. This core content needs to be perpetuated. Since abuse tends to be a recurrent problem throughout generations, with recognition of abusive trauma, appropriate intervention is a form of tertiary prevention (healing and minimizing the associated morbidity and mortality). In order to accomplish primary and secondary prevention, the content of resident education needs to be expanded. Currently, risk factors for child abuse are not specifically listed in the content specifications. Abuse triggers are not included. While many aspects of anticipatory guidance are included in the content specifications, the potential role of anticipatory guidance as a means of preventing child abuse by establishing realistic expectations for developmentally appropriate behavior and guiding parents toward emotionally healthy discipline strategies is not commonly understood or emphasized.

The medical community recognizes the need for routine prevention of child abuse.¹ Training programs are now beginning to respond to this need. Boykan, Quinn, and Messina recently published a curriculum innovation that teaches residents to identify established risk factors for child abuse through use of GUIDES, a mnemonic used to recall multiple risk domains.⁷ After this teaching intervention, residents showed improvement in addressing questions in the areas of growth and behavior/development. Further work like this in the area of physician training is needed to equip all primary care providers with the essential knowledge and skills to achieve the goal of preventing child abuse by addressing the many known risk factors and signs of family stress and consistently providing developmentally appropriate anticipatory guidance that fortifies the emotional well-being of families.

Current theories of adult learning emphasize the importance of acknowledging learners' existing mental models and using these cognitive processing maps as a structural foundation for understanding new content. In effective teaching of new information and ideas, these models are used and expanded, and as a result, they evolve into new mental models as learners embrace new ways of thinking. In medical education, all trainees are taught a standard mental model for clinical problem solving: evaluating presenting signs and symptoms by gathering a history and physical, considering a differential diagnosis, using applicable labs and imaging, and then compiling the data to arrive at a diagnosis and treatment. Use of this mental model to develop case-based instructional techniques is an effective way to deliver new information, and it is an important tool for this CAP curriculum, as discussed in the Methods section, below.

Adult learning is best achieved when the content is perceived to be important to the learner and congruent with established beliefs and is incorporated into the learner's practiced thoughts or activities such that a sense of competence is achieved. Therefore, preassessing the learner's value for the content allows tailoring of a curriculum to match learners' interests and needs. Understanding and using the learner's current mental models and providing opportunity for engaged activity (such as discussion and practice) also increase the likelihood of success.

A focused needs assessment was conducted to illuminate the learning needs of resident physicians at the University of Rochester Medical Center with respect to CAP. Graduating pediatric and medicine-pediatric residents (14) were surveyed and responded with self-assessments of knowledge, skills, and attitudes related to CAP. Likewise, continuity clinic attending physicians (18) were surveyed and responded with their perception of the average graduating resident's knowledge, skills, and attitudes. All topics were rated on a 5-point scale.

On average, both resident and attending responses indicated that residents' desire to participate in CAP exceeded knowledge and skills (Figure 1). Average ratings of desire to incorporate CAP into clinical practice were 4.79 for residents and 4.00 for attending physicians. However, on the same scale, average ratings of residents' knowledge and skills related to child abuse risk factors were 3.83 (residents) and 3.74 (attending physicians), and average ratings of residents' knowledge and skills related to anticipatory

guidance about various child abuse topics were 4.07 (residents) and 3.79 (attending physicians). These data suggest a high motivation for learning about this important topic.

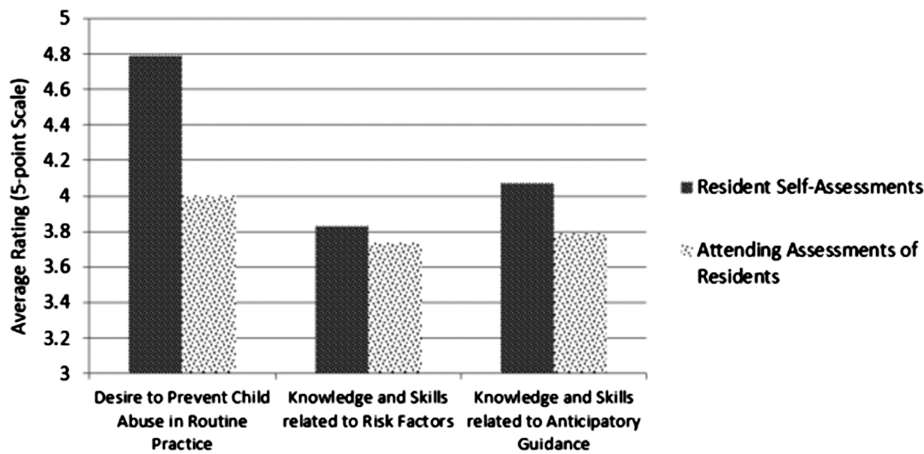


Figure 1. Curriculum needs assessment: desire, knowledge, and skills.

Figure 2 illustrates another discrepancy: Although residents' knowledge and skills in providing anticipatory guidance were quite high (4.07 for residents and 3.97 for faculty), ratings were much lower for residents' ability to help a struggling family avoid child abuse (3.36 and 2.94, respectively). This result demonstrates a lack of understanding of how anticipatory guidance can be used for effective CAP.

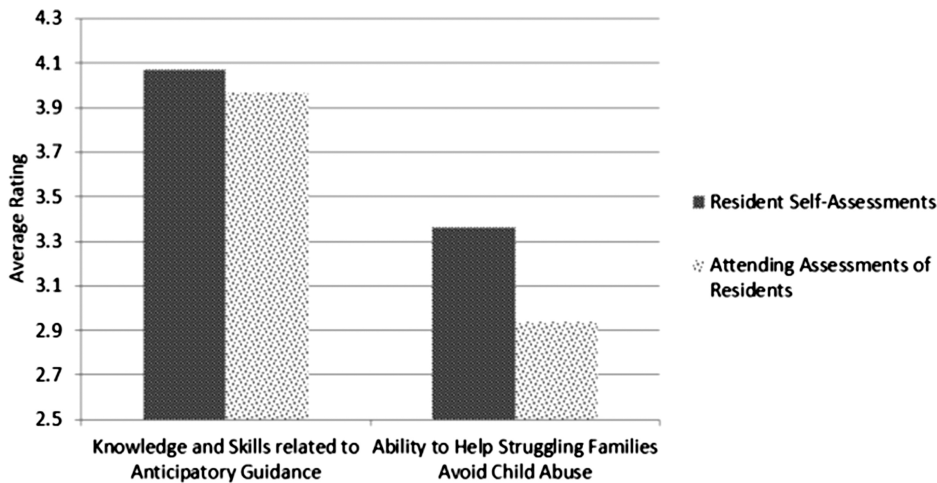


Figure 2. Curriculum needs assessment: anticipatory guidance and ability to help.

Finally, in survey responses from both residents and attending physicians, one of the lowest-scored areas involved patient-family communication related to child abuse (“[Residents] feel comfortable raising the question of potential child abuse with a family”). Average ratings for this item were 3.36 for residents and 2.94 for attending physicians. Given the high ratings for desire to prevent child abuse shown above, these responses indicate high motivation and significant need for learning communication skills in this area.

Methods

The CAP curriculum, a 3-hour workshop, was delivered to residents in small-group sessions over the course of an academic year. Participants (internal medicine-pediatric residents, pediatric residents, and family medicine residents) were scheduled to attend the workshop (a single 3-hour session) during

protected education time. A total of six sessions were taught: five internal medicine-pediatric/pediatric sessions (ranging in size from four to six participants each) and one family medicine session (18 participants).

The CAP workshop sessions were facilitated by two of the curriculum authors, including a board-certified child abuse pediatrician. PowerPoint presentations were used as the content guide. Workshop content was divided into three parts: primary prevention (Appendix A), secondary and tertiary prevention (Appendix B), and evaluation and management of abusive trauma (Appendix C). The curriculum is interactive by design, so the different small-group sessions varied according to the participant input (comments, questions) and group conversation. Working through the familiar case-presentation format and allowing for learner-guided discussion were strategies that we used intentionally to maximize learning. Small-group discussions allowed for shared ideas and experiences to expand each participant's personal toolbox for approaching challenging patient-family situations. Scratch paper (for breakout group discussions) and a marker board at the front of the room were helpful but not mandatory materials. Total workshop time was 3 hours, including two brief breaks.

The PowerPoint slides included in Appendices A, B, and C are annotated in the notes section of the slides to provide additional information for facilitating group discussion. Italicized instructions for the presenter (e.g., suggested questions for small-group discussions) are also included.

To enhance the validity of assessment responses, we designed the assessment tools with careful consideration of current concepts in validity and reliability for education assessment tools and specifically addressed the areas of content, response process, and internal structure.⁸

With reference to content validity, our assessments adhere closely to our educational objectives, as does our workshop curriculum. The objectives reflect the content knowledge and attitudinal beliefs essential to incorporating evidence-based strategies for CAP into clinical practice and thereby offer a comprehensive but concise structure for both. We used an iterative consensus process amongst ourselves. Specific and clear language was used and verified by piloting the assessment with recent pediatric resident graduates.

With reference to the validity of the response process, we utilized a short-answer format and aligned our questions with the educational objectives, using specific language to elicit cognitive processes consistent with Bloom's learning domain taxonomy.

By the iterative process of revision and pilot testing, we enhanced the respondents' understanding of the question intent (content validity), observed the cognitive process of the respondents through the use of the short-answer format (rather than offering choices from a list of possible responses; response process validity), and observed consistency in responses amongst similarly trained individuals (internal structure validity).

Prior to the delivery of the curriculum, residents received an emailed link to the precurriculum assessment, which was a REDCap survey.⁹ Appendix D is a PDF version of the online survey. Appendix E is a Word document and is provided as an optional paper format (with the same questions). Following the curriculum session, participants received an emailed link to the postcurriculum assessment (REDCap survey, same as precurriculum assessment). Aggregate pre- and postcurriculum scores were compared to determine knowledge acquisition and attitude change.

Three months after the workshop, to evaluate for both retention and application of content, a follow-up assessment (Appendix F) was sent by email to participants who had completed the postcurriculum assessment. Aggregate results were compared to the postcurriculum scores. The follow-up assessment included additional, open-ended questions about application of the curriculum content into clinical practice. Responses were evaluated qualitatively, and emergent themes were identified.

The pre- and postcurriculum assessment tool consisted of seven short-answer questions. Each completed assessment was reviewed and scored independently by two of the curriculum authors, who were blinded to pre/post condition. A curriculum assessment evaluation guide (Appendix G) was created to assist with scoring. Discrepant scores were discussed and reconciled by mutual agreement.

The scoring method used was driven by question type. Specific content-recall questions (such as “List the established risk factors for child abuse”) were scored according to the number of correct responses that were given by participants. For open-ended questions (such as “Explain how and why anticipatory guidance relates to abuse prevention”), a qualitative analysis was applied in accordance with the framework of phenomenology. Responses to each open-ended question were compiled, and line-by-line coding of the responses was completed by study investigators. Hence, a list of codes was generated for each open-ended question, and codes were subsequently grouped into categories. To determine scores for these questions, each code was determined to be either represented (1) or not represented (0) in the response given by the participant.

The follow-up assessment tool was distinguished from the pre- and postcurriculum assessment tool by inclusion of three additional questions that asked about application of the curriculum content in clinical practice. These were all open-ended questions. Study investigators completed line-by-line coding and then identified emergent themes amongst responses. As this tool was different from the pre- and postassessments, study investigators could not be blinded to the follow-up condition. The first seven questions on the follow-up assessment were identical to the pre- and postcurriculum assessment questions; the scores for the follow-up responses were aggregated and compared to the postcurriculum results to determine retention of the content over a 3-month period.

Statistical analysis was also driven by question type. Specific recall questions on assessments were scored, and the average score was calculated within each group (precurriculum, postcurriculum and follow-up). Pre/post averages were compared by one-sided *t*-test comparison at a significance level of $\alpha = .05$ to determine the learning impact of the curriculum. Postcurriculum and follow-up averages were compared by one-sided *t*-test comparison at a significance level of $\alpha = .05$ to determine retention of content over 3 months.

Scoring of the open-ended questions resulted in a tallied list of codes and themes that were indicated by the participants. For each code and for each theme, the proportion of respondents who included that code or theme was calculated. To evaluate the learning impact of the curriculum, proportions of pre-versus postcurriculum assessments were compared by a one-sided *z*-test comparison at a significance level of $\alpha = .05$ for each code and each theme. For some questions, the average number of examples within a particular theme (e.g., the number of somatic or behavioral complaints that were described within the theme of “early, subtle symptoms of child stress”) was calculated. For these questions, the pre/post averages were compared by one-sided *t*-test comparison at a significance level of $\alpha = .05$. Similarly, postcurriculum and follow-up averages and proportions were compared (by *t* test or *z* test, respectively) to evaluate for retention of content over 3 months.

Results

A total of 34 resident physicians (20 internal medicine-pediatric/pediatric and 14 family medicine) participated in the CAP workshops. Of the 34 participants, 19 (56%) completed the postcurriculum assessment. The follow-up assessment, intended to test for retention and application of content after 3 months, was distributed to these 19 participants, with 12 completing it (63% of the group of 19 respondents, 35% of the total group of participants).

Chief residents reported high satisfaction among participants. We were asked to repeat the workshops to the next class of second-year residents the following year. According to analysis of survey scores, the most positive impact was made in the areas of secondary and tertiary prevention. Improvements in knowledge, change in attitude, and impact on clinical practice were all evident.

Primary Prevention

Before and after the workshop, participants were asked to recall established risk factors and trigger events, and no statistically significant difference was found between groups. Likewise, the average number of named risk factors and trigger events did not change significantly at the 3-month follow-up. Participants were also asked how anticipatory guidance relates to CAP. After the workshop, participants

were more likely to discuss the incorporation of established risk factors during routine health visits (29% vs. 37%); however, the improvement was not statistically significant, and it was not sustained at the 3-month follow-up (25%).

Secondary Prevention

Participants were able to name more examples of early, subtle complaints that are potentially related to toxic stress or abuse (an average of 2.47 examples per respondent before the workshop and 2.68 examples per respondent after the workshop, $p = .039$). This improvement increased during the 3-month follow-up period to an average of four examples per respondent, and the difference between postcurriculum and follow-up responses was significant ($p = .030$). These examples included complaints such as regressive behavior, school problems, behavior problems, substance abuse, sleep problems, apathy, headache, abdominal pain, and mental health diagnoses. Respondents also listed complaints indicative of nonaccidental trauma (such as bruising and lethargy). The proportion of complaints related to nonaccidental trauma (vs. behavioral and somatic complaints) decreased after the curriculum (20% vs. 4%, $p = .002$), and this decrease was sustained at the 3-month follow-up, indicating a shift toward recognizing earlier, more subtle signs of child stress.

Pre- and postcurriculum assessments also evaluated the participants' approach to communicating with families about suspected child abuse. Participants were asked to state how they would open a discussion about possible toxic stress or child abuse with the parents of a child with somatic complaints. After the workshop, participants were more likely to describe provision of interpersonal support and supportive resources in such a discussion (6% vs. 37%, $p = .006$; Figure 3). This improvement increased again during the follow-up period (37% vs. 41%, $p = .019$; Figure 3). Other themes that emerged from the responses included assessment of related factors such as stressors, coping skills, risk factors, and support system; indirect, open-ended questions ("Do you feel safe?", "Is anything happening at home?"); and direct, open-ended questions ("Do you ever think about hurting your child?", "Are there any problem relationships at home?"). There were no significant changes between the pre- and postcurriculum assessments when these themes were compared. Examples of verbatim responses are provided in Table 1, categorized by theme.

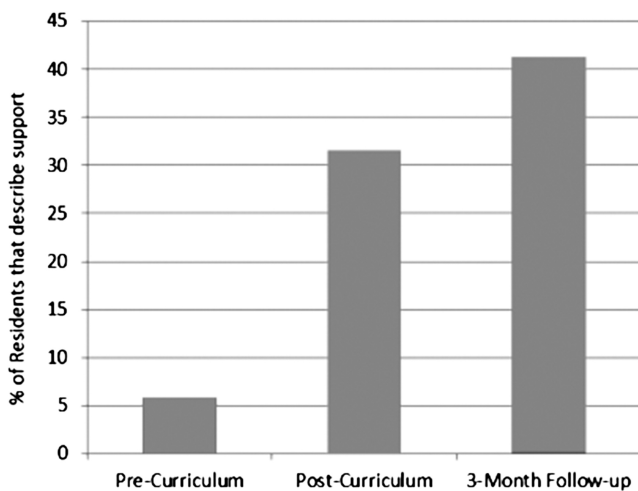


Figure 3. Residents' self-reported intention to provide interpersonal support and supportive services while exploring possible abuse with patient families. Data were obtained from the assessment question "For a child with somatic complaints, what would you say to the concerned parent(s) to open a discussion about possible services while exploring possible toxic stress or abuse at home?" Resident responses were coded, then grouped by theme. Codes represented in this theme (intention to provide interpersonal support and/or supportive services) included validating family stress, providing empathy/support, and offering supportive resources. This theme was represented by 6% of resident responses precurriculum, 37% postcurriculum, and 41% at time of follow-up.

Table 1. Examples of Responses, Categorized by Theme, to “Describe How You Would Open a Conversation With a Family About Toxic Stress and/or Child Maltreatment”

Theme Represented	Examples of Participant Responses
Validate family stress	<ul style="list-style-type: none"> Wow. I can tell you have a lot on your plate. All the medical appointments, therapies, and medications can easily be overwhelming. Normalize it (I talk to all of my patients about this), feed off of what the parent brings up (babies with colic can be really frustrating). I would let families know that children can be frustrating and they respond to the environment around them. I would let them know that it is okay for them to have feelings of being overwhelmed but that we want to help find ways for the family to cope before any incidents occur.
Educate re child stress	<ul style="list-style-type: none"> Children are small and vulnerable and can be at risk if their family members are stressed.
Provide resources	<ul style="list-style-type: none"> Here are some ideas that have worked for other families. I would offer counseling services and/or a follow-up appointment to discuss stressors.
Educate re family stress	<ul style="list-style-type: none"> Things seem to be very stressful right now in your life. How do you think that this is affecting Alice? When you are living with a chronic level of stress, even small everyday things are enough to make you reach your breaking point. It is important to be aware of this and recognize when you are becoming frustrated.
Provide support/empathy	<ul style="list-style-type: none"> I want to make sure that you are taking care of yourself. I would let them know that we want to find ways to help the family cope.
Assess family functioning	<ul style="list-style-type: none"> I would ask about who lives at home, who takes care of the child (school, daycare, after school, etc.). I would ask about any family stressor. How do you feel things are at home?

Tertiary Prevention

After participating in the workshop, participants were more likely to demonstrate an understanding of ongoing stress/needs/risks for families affected by abusive trauma (41% before and 68% after, $p = .029$; Figure 4), and they were able to describe specific strategies to address the family’s needs. Improvement was sustained at the 3-month follow-up ($p = .152$; Figure 4). Examples of verbatim responses are provided in Table 2, categorized by theme.

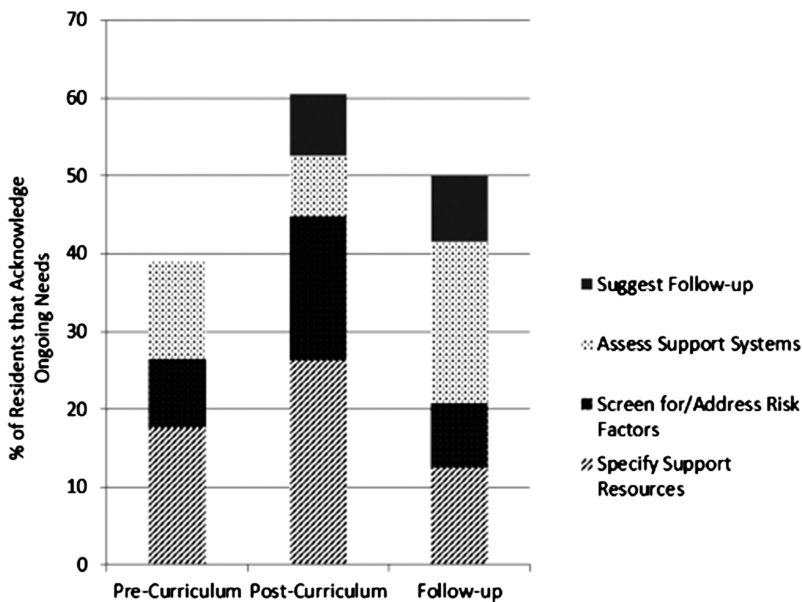


Figure 4. Residents' acknowledgment and addressing of ongoing needs of families affected by abusive trauma. Data were obtained from the assessment question “Your patient presents to clinic for follow-up after hospitalization for evaluation of child abuse. He was discharged home with the accused parent (with involvement of supportive services through CPS [Child Protective Services]). What do you say to offer your support during the visit?” Resident responses were coded, then grouped by theme.

Clinical Application of Content, Emergent Themes

During the workshop, participants were asked to make a professional goal (of any type) related to CAP, and they were asked to disclose the goal at the 3-month follow-up. Most stated goals related to well-child

care, and two predominant themes emerged from qualitative review of the responses: discussion of risk factors and discussion of child abuse and toxic stress. When residents were asked for a self-assessment as to whether or not they were making progress toward their stated goal, all reported some progress (Table 3). Four of the 12 participants stated that they had forgotten their specific goals, but two of these still noted progress in applying CAP strategies in clinical practice. Participants were also asked to discuss any obstacles they had encountered while attempting to accomplish the goal. Participants cited time constraints during well-child visits and lack of practice opportunity (i.e., lack of clinic time in their schedule or lack of pediatric patients in family medicine clinic).

Table 2. Examples of Participant Responses, Categorized by Theme, to “Your Patient Presents to Clinic for Follow-up After Hospitalization for Evaluation of Child Abuse. He Was Discharged Home With the Accused Parent (With Involvement of Supportive Services Through CPS [Child Protective Services]). What Do You Say to Offer Your Support During the Visit?”

Theme Represented	Examples of Participant Responses
Specify support resources	<ul style="list-style-type: none"> I would ask if they have childcare, and if not, help them find places they might be able to look into. Counseling, psychologist/psychiatrist. I would ask if patient is receiving counseling (depending on age).
Assess risk factors	<ul style="list-style-type: none"> I would give the parents a chance to get help to address the underlying issue that led to the incident in the first place.
Assess support system	<ul style="list-style-type: none"> I would ask who is in the community they have for support, like friends or family members. See if there are any specific needs that they have now that presumably the abuser is no longer helping to support the child. I would check in with the parent to see what other types of support that they have for themselves to cope if the child was removed from the home.
Suggest follow-up	<ul style="list-style-type: none"> Schedule more frequent follow-up. Ask if office can call in a few days.
Generic question (i.e., How are you doing?)	<ul style="list-style-type: none"> Ask how transition home is going, how child is doing/adapting to interventions/treatments. Ask about [the parent's] mental/physical health. I would ask how things are at home.
Offer generic support	<ul style="list-style-type: none"> Consult social work as needed. Talk about how our priority is to keep their child safe, and we want to work together to help them achieve this goal. I would ask the care giver if there is anything they need help with.

Table 3. Clinical Application of Workshop Content to “What Professional Goal Related to Child Abuse Prevention Did You Set at the End of the Workshop? How Did It Go? What Obstacles Did You Encounter?”

Participant	Description of Professional Goal	Self-Assessed Progress	Obstacle
1	Take comprehensive social history	+ risk factor screening, stress assessment	
2	Discuss nonaccidental trauma at WCC	+ risk factor screening	Limited time in WCC
3	Assess for risk factors in WCC	+ risk factor screening	Lack of scheduled clinic time in recent blocks
4	Do not recall		
5	Do not recall		
6	Give more anticipatory guidance at WCC	+ provide tools (e.g., crying infant)	No perceived connection with families
7	Discuss toxic stress and child abuse at WCC	+ discussing stress, abuse	Limited time in WCC
8	Stress assessment during WCC	+ stress assessment	Lack of child appointments
9	Include abuse screening and education in WCC	+ risk factor screening	Limited time in WCC
10	Discuss risk factors and behavioral modification, parenting classes	+ parenting discussions	
11	Be mindful of risks and open to discussing at WCC	+ comfort engaging parent in prevention discussions	
12	Do not recall		

Abbreviation: WCC, well-child check.

Discussion

CAP is a complex challenge that requires a strong fund of knowledge, keen perception, skillful communication, and, above all, a willingness to approach the problem of abuse from a perspective of prevention even in the context of difficult circumstances.

Assessment of our CAP curriculum during the pilot test year demonstrated the most notable changes in residents' knowledge, skills, or attitudes in the domains of secondary and tertiary prevention. At the level of secondary prevention, our results indicate that after participating in the curriculum, residents were more likely to associate somatic and behavioral complaints with the possibility of toxic stress or child abuse in

the family (knowledge). Furthermore, our results suggest a positive change in attitude, as participants were more likely to include offers of interpersonal support and supportive resources when describing communication with families who might be presenting with early signs of abuse (skills and attitudes). Both of these findings were more pronounced at the 3-month follow-up. It may be that clinical practice reinforced the curriculum content, although it is possible that clinical practice and other learning experiences resulted in positive change independent of the curriculum.

At the level of tertiary prevention, residents were more likely to acknowledge ongoing stress, needs, and risks in families of children who have experienced abusive trauma, indicating examples of strategies to address these family issues. This improvement was sustained at the 3-month follow-up, suggesting good retention of this knowledge-based skill. This finding is also suggestive of a positive change in attitude sustained over time.

At the level of primary prevention, participants did not demonstrate improved recall of specific, established risk factors and trigger events and as a group did not demonstrate an enhanced understanding of anticipatory guidance as an opportunity to prevent child abuse. Although this content was conveyed through interactive case presentations, our results suggest that other approaches or more repetitions may be needed for effective learning in this critical topic area. Creating opportunities for longitudinal practice and reinforcement is being planned.

Despite the lack of significant measurable improvement at the level of primary prevention, it was precisely at this level where participants created professional goals and reported progress at the 3-month follow-up (generally by discussing risk factors, stress, and abuse with patient families at well-child visits). Our group of respondents at follow-up represented 35% of the total participants, so the sample is quite limited. Nonetheless, the residents' reported application of primary prevention strategies suggests positive change even though they did not demonstrate expanded recall of specific examples of risk factors.

At follow-up, residents cited lack of practice opportunity and well-child visit time constraints as obstacles hindering progress toward CAP goals. Adult learning theory informs us of the need for incorporating new, relevant content into the learner's practiced thoughts and activities. Resident reports of limited opportunities and time for application of their learning in practice highlight the importance of providing multiple opportunities for residents to revisit and engage in CAP strategies.

Postcurriculum assessments were completed by 56% of participants, and 3-month follow-up assessments were completed by 35% of the total. If the respondents differed from nonrespondents in a meaningful way, the results may have been affected by nonresponse bias. To maximize our response rate, we opted to keep our surveys concise, for example, by not requesting demographic data. Demographic data would have enabled a comparison of respondents to nonrespondents. We suspect, however, that nondemographic factors were more likely to have played a significant role in determining response likelihood. As all participants were concurrently engaged in residency training and thereby immersed in a demanding work and learning environment, the voluntary nature of the task of completing the surveys was a likely driver of nonresponse. We suspect that the most important factors that determined whether any particular resident responded to the surveys were competing demands on his/her time (which varied individually by clinical and personal demands and academic projects aside from clinical obligations) and interpersonal differences in administrative and compliance behaviors.

In the future, improving response rate to minimize the possibility of nonresponse bias could be achieved by simplifying the response process using common, closed-ended questions (Likert scales, visual analog scales). Survey research demonstrates that simplification of a survey tool results in improved response rate.¹⁰ Therefore, changing the question format may improve the quality of data by decreasing nonresponse bias and response variability.

Another strategy to improve the response rate would be providing a paper version of the assessment and protected time at the end of the workshop for the postcurriculum assessment. This strategy would also

enhance learning if we discussed the responses at the end of the workshop after the assessments have been collected. In addition, participants might leave the workshop with a more secure memory of the key concepts and might therefore be more motivated to complete the 3-month follow-up assessment.

To improve response rate to the follow-up assessments, we could also use a *recognized sponsor*, which is a well-established strategy for improving response rate.¹⁰ For example, we could ask the chief residents to send out a reminder email to nonresponders. As a rule, people are more inclined to respond to a survey if they recognize a credible sender.

A consistent problem with our 3-hour workshop sessions was that every session was short on time. For the sake of consistency, we prioritized coverage of the core content over expanded group discussions. However, we know from adult learning theory that exploring learner perspectives and beliefs and providing time to practice and incorporate new ideas are important to adult learning. These exercises require ample interactive time. Extending the workshop time is not feasible, but in subsequent workshops, we plan to offer the multidisciplinary case presentation as an emailed YouTube link for individual review, allowing us an extra 45 minutes for the expanded interactive discussion. With that extra time, we could consider different ways of incorporating practice opportunities, such as use of video/playback role-play scenarios to develop communication skills.

To improve recall of established risk factors and trigger events, it may be beneficial to ask workshop participants to engage in a higher level of cognitive processing. In the current workshop, participants are asked to identify risk factors represented by presented cases; the lists of established risk factors and trigger events are then reviewed in a mini-lecture format. An application activity could be used to increase the level of cognitive engagement with this content. For example, in small groups, participants could design a systematic approach to incorporating developmentally appropriate risk factors and trigger events into the age-appropriate anticipatory guidance section of each well-child visit (e.g., discuss crying as a trigger event during the newborn exam, discuss corporal punishment as a risk factor at the 18-month exam).

To promote ongoing opportunities for practice, participants could be sent periodic email reminders of their CAP goals. In addition, goals could be formulated by continuity clinic teams, and residents' colleagues and faculty preceptors could encourage, support, and guide their progress. We are currently working with continuity clinic faculty to devise a plan for longitudinal practice of CAP techniques. These strategies would keep the curriculum content more current for residents and might also improve compliance with the 3-month follow-up survey assessment.

Resident physicians who attended an interactive, case-based CAP workshop demonstrated knowledge acquisition and skill development, as well as attitude change, that are relevant to secondary and tertiary CAP. They also reported progress toward implementation of their personal primary prevention goals during the subsequent 3 months. Repetition and practice constitute a key component of adult learning. We intend to continue to engage residents in this curriculum to create a strong foundation for routine practice of CAP.

While the CAP workshop appears to have been an effective introduction to knowledge and skills, the content delivered needs to extend beyond a 3-hour educational experience in order to be practiced and internalized. A natural extension of CAP education could be longitudinal experiences incorporated into pediatric or family medicine continuity clinics, where children at risk for abuse are all too common. Precepting faculty could facilitate the practice of preventive strategies, reinforcing content knowledge and developing skills. Such a curriculum could result in common practice of CAP strategies and institutionalize such practice within training programs.

To further the development of communication skills within the context of CAP, motivational interviewing strategies could be incorporated into the workshop. This method is well established as an effective model

for behavioral change counseling and is therefore an ideal method for counseling families about concerns related to child stress. Moreover, most trainees are familiar with motivational interviewing techniques to encourage lifestyle changes in children and families. In accordance with adult learning theory, extending these familiar techniques to CAP would help residents expand upon a mental model that is already part of their repertoire.

This MedEdPORTAL publication is part of our strategy to build upon our experience with CAP education by teaching the teachers to use our curriculum. We are also considering adaptation of the workshop curriculum for delivery to nonprimary care specialties

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Prior Presentations

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Ethical Approval

This publication contains data obtained from human subjects and received ethical approval.

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