The general population experiences substantial exposure to traumatic events (50%–75%).\textsuperscript{1-3} Trauma is linked to mental disorders, including posttraumatic stress disorder (PTSD) and interpersonal problems.\textsuperscript{4-6} Interpersonal trauma is high among primary care patients,\textsuperscript{7-9} and current PTSD may affect up to 23%.\textsuperscript{8,10-13} Trauma, adversity, and PTSD predict increased health care costs\textsuperscript{8,14} and negative health outcomes,\textsuperscript{7,8} including chronic cardiac and pulmonary diseases,\textsuperscript{3,15-17} and disability and severity.\textsuperscript{18,19}

Although trauma-exposed patients are common in primary care,\textsuperscript{20,21} many primary care providers (PCPs) report discomfort discussing trauma and its health effects and feel unprepared to do so.\textsuperscript{22-25} Patients with histories of trauma, including those with PTSD, report more negative provider interactions and perceptions.\textsuperscript{26,27} Training of non-psychiatric physicians in trauma-informed care therefore appears to be a necessary, if not sufficient, condition to improve services to survivors. Trauma survivors may be impaired in forming and maintaining trusting relationships and are often sensitive to issues of how power and authority are used in relationships. As the patient’s care team coordinator, PCPs must effectively support patients who, because of their response to trauma, are challenged by their health care experiences and interactions with health care providers. Training needs in the care of trauma survivors are potentially high in medical schools and residencies,\textsuperscript{28-31} yet few programs address communication with trauma survivors or associated PCP discomfort.

Good communication practices are central in primary care and influence patient satisfaction, medical information recall, and compliance with recommendations.\textsuperscript{32-35} Physician communication predicts physiological, behavioral, and emotional outcomes.\textsuperscript{36-38} We are aware of only one...
other randomized controlled trial\textsuperscript{19} for PCPs that incorporated trauma awareness into communication training. This study showed significantly higher patient-centered communication and discussion of adverse childhood events in trained PCPs versus controls a year later. Our study complements this one by integrating the trauma training into the overall training and by including medical residents.

Communication training programs targeting resident physicians can create higher standards of professional behavior to which physicians may adhere throughout their careers. Communication training for residents can improve knowledge, attitudes, and interviewing skills.\textsuperscript{40} Training for practicing physicians also affects patient perceptions of providers, satisfaction, and health behaviors, even when the training is relatively short (less than 10 hours).\textsuperscript{42} The current concept/pilot study adapted and tested a theory-based, evidence-informed approach to communicating and relating with trauma survivors, Risking Connection (RC), into a 6-hour CME course for resident and practicing PCPs called Trauma-Informed Medical Care (TI-Med). Based on our training goals, our outcome was trauma-informed, patient-centered communication, with the PCP addressing psychosocial topics, attending to the doctor-patient partnership, and empathy.\textsuperscript{41} Training for practicing physicians met the same objectives as the training provided to PCPs in all other settings, even though the instructional strategies and delivery context were different. Elements of evidence-based learning were incorporated, including the use of a detailed, realistic case study introduced at the beginning of training and advanced throughout the curriculum.\textsuperscript{49}

**Methods**

The training offered in our study is a derivative of the RC curriculum,\textsuperscript{44} a strength-based approach to understanding and responding effectively to the needs of people who have been wounded in interpersonal relationships. The training model teaches clinicians, agency-based service providers, and frontline helpers of all types how best to respond to survivors of interpersonal trauma such as child abuse. RC focuses on the qualities, values, and skills for building relationships as the keys to promoting healing, and it also emphasizes that helpers must attend to self-awareness and self-care. RC has a delivery and implementation history in mental health settings, congregate care environments, faith communities, and medical facilities.\textsuperscript{45,46} Its theoretical basis is relational-cultural theory\textsuperscript{47} and McCann and Pearlman’s Constructivist Self-Development Theory, which elaborates the encoding of a trauma and its relationship to aspects of the self.\textsuperscript{48}

While audience requirements result in different instructional strategies, all derivative works align with the core RC content. Thus, the training provided to PCPs in this study met the same objectives as the training offered in all other settings, even though the instructional strategies and delivery context were different. Elements of evidence-based learning were incorporated, including the use of a detailed, realistic case study introduced at the beginning of training and advanced throughout the curriculum.\textsuperscript{49}

**Adaptation Process**

The adaptation followed Weisz and colleagues.\textsuperscript{50} Revisions of the manual and training curriculum incorporated input from targeted PCPs and patients, ie, low-income minority patients,\textsuperscript{49} enhancing its transfer to real-life settings.\textsuperscript{52} We began with content common to both the original text and the derivative for faith communities.\textsuperscript{53} As the instructional design was developed, we framed the common content to strengthen learning about the relationship between adverse experiences and health care issues, striving for cultural sensitivity to a diverse community. Next, we conducted three focus groups, two with providers and one with patients, to review and comment on the materials. Suggested changes were incorporated into the final curriculum draft.

In the second phase, we conducted a two-session pilot training at a local primary care site using the modified curriculum; six PCPs and 19 staff attended at least one training session. A concluding segment allowed participants to discuss content and logistics, knowledge gained, and value/usefulness to clinical practice. Further participant feedback was gathered via conference call about 10 weeks after training. Based on the feedback, we chose a 6-hour curriculum delivered in two sessions at least 1 week apart, in order to give trainees the opportunity to practice new skills and then to return and discuss their experience.

**Training Content**

The TI-Med curriculum focused on understanding that traumatic events may overwhelm an individual to the extent that he or she perceives threat to life or mental or bodily integrity. The experience of trauma is seen as subjective, manifested in part by a person’s inability to stay in the present, integrate feelings, and make sense of an experience. PCP training participants are taught to assume that people are doing the best that they can, that each trauma survivor has an individualized response to his or her traumatic experiences, and that behavior experienced as problematic to a provider is somehow useful to the person in adapting to the trauma experience. The training is not meant to teach universal screening for trauma, although sensitive ways to do this are discussed, nor how to identify PTSD, although PTSD is presented and discussed. Rather, it focuses on maximizing the understanding and healing power of interactions between trauma survivors and providers so that other activities like asking about trauma or symptoms, or making mental health referrals, can be done in the most trauma-informed way possible, with the best chance of trust, honesty, and follow-through.

Following the introduction of this frame, experiential exercises, such as having the group generate and define different types of trauma (eg,
interpersonal, political) and then discuss their common dimensions, helped PCPs recognize the universality of first- and second-hand trauma exposure, including their own. This foundation was followed with a focus on the impact of overwhelming experiences in early childhood from an attachment-informed frame, including recognition that parents and caregivers help children learn how others respond to their distress.

RC uses two core concepts to reinforce and enhance the role of relationship: the RICH® relationship and feelings skills referred to as self-capacities. The RICH® relationship focuses on extending Respect, Information, Connection with others, and Hope. The self-capacities, which allow the individual to maintain a consistent sense of identity and self-esteem, are managing and modulating feelings, having and calling on strong positive connections with others even in their absence (attachment), and feelings of self-worth. As participants learn and master each section of the content, they are asked to reframe and revise their responses to the main case study (ie, a trauma patient’s visit to the doctor).

Finally, the course emphasizes the role of self-awareness and self-care in mitigating the impact of vicarious trauma on the provider. Empathy, the ability to relate to and connect with patients, is grounded in self-awareness. Vicarious trauma is seen as an inevitable consequence of empathic engagement with traumatized individuals. Care of both parties—provider and patient—is viewed as critical, with PCPs modeling respect, empowerment, collaboration, and connection.

Within the context of these principles, the training included specific content about how trauma affects people’s lives—common impacts of traumatic events on body and brain, including symptoms of PTSD and depression, and broader changes, including effects on memory and perception, judgment, beliefs and worldview, and emotional skills. Studies linking trauma exposure to negative physical health outcomes were reviewed. Background material included aspects of child development and attachment (and how attachment can be disrupted by trauma) and the physiology of fear.

A model of the impact of trauma on relationships was presented and displayed as a poster during the training. As noted, a case of a challenging patient with trauma was presented and revisited throughout the training as each module was completed. This case illustrated training concepts and provided the opportunity for participants to develop a deeper understanding of the manifestations of trauma and to consider more nuanced possibilities for responding. As participants discussed the case at each phase, the trainers could demonstrate appropriate and trauma-sensitive responses. Worksheets helped the participants identify vicarious trauma as it may be affecting them in their jobs and to make plans to address this through discussed self-care activities. Participants also received a manual that included the material in more depth, with additional readings, and a “job aid” with the realms of trauma impacts, the self-capacities, and the elements of RICH® relationships.

To strengthen the organizational response to the inevitable presence of psychological trauma in patients and vicarious traumatization in staff, nursing and support staff were invited to each training, as suggested by Glisson et al. and Aita et al.59

**Randomized Trial of Training Curriculum**

**Overview**

Four primary care sites (two within family medicine residency programs, two in the community) were randomized into two conditions crossed with site. The primary outcome consisted of ratings from audiotapes of the PCPs interacting with standardized patients (SPs). Each condition had three clinical encounters (evaluation visits) with SPs. The immediate group had a pre-training visit, a post-training visit, and a follow-up visit, while the delayed group had two pre-training visits and a post-training visit (Figure 1). This design allowed us to make two comparisons: (1) Training to No Training (independent groups), and (2) Before Training to After Training (all participants, within subjects).

**Participants**

Participants were 30 PCPs recruited via site directors.

**Procedure**

PCPs agreed to attend training, be taped for three SP visits, and allow up to 30 of their patients to fill out self-reports. They signed informed consent, with a separate audiotaping consent. Community physicians received CME credits, and all PCPs received $100.

SPs and cases were systematically assigned to PCPs so that no PCP would see the same actor or experience the same “case” in their three “visits.” SPs were female actors who routinely served as SPs in regional medical schools. PCPs knew that these were SP visits and were asked to conduct the visits as if they were authentic encounters with real patients.26 Visits were coordinated with PCP schedules and were audiotaped. One site requested videotapes for training purposes (separate consent obtained); only the audio portion of the videotapes was used to assign ratings.

The clinical scenarios/cases comprised returning patients in a primary practice. Each PCP reviewed a “door note” before the “visit,” including complaints, vital signs, and brief medical and social history. Instructions read, “Please take a focused medical history and treat/counsel the patient. Do not conduct physical examinations. You will have a maximum of 15 minutes to complete this encounter. When you conclude the encounter, please leave the room.” A reminder knock was provided at 10 minutes.
IRB Approval
This study received IRB approval from Georgetown University, Howard University, Providence Hospital, and the Johns Hopkins School of Public Health.

Instruments
Development of SP Cases. Study personnel developed three SP “cases” in consultation with Dr Roter and our SP trainer, who trains SPs for Georgetown University medical students. Cases were based on common complaints in primary care, such as back pain and weight loss. Each case included a trauma history, but trauma was not a presenting complaint, reported only if the PCP asked sensitive questions. The SPs received an extensive “back story,” including family, medical, social, and psychiatric history, a sample interview script, and the “door note” (see above) for each case. SP training comprised two to three sessions, in a group or individually as needed for scheduling.

Coding of SP Visits. Audiotapes were coded with the Roter Interactional Analysis System (RIAS) in Roter’s lab. Raters used standard codes and were blinded to training status. RIAS categories reflect socio-emotional and task-focused elements of the medical dialogue. Codes are mutually exclusive and exhaustive. Reliability averages .85 for patient and physician categories in Roter’s lab, with inter-reliability of scales with more than four items ranging from .76 to .81. For this study, reliability ranged from .86 to 1.0 for individual items.

Statistical Analyses
We focused on a RIAS patient-centeredness composite (PCC), which incorporates a psychosocial approach and the doctor-patient partnership, to evaluate the training. The PCC score includes frequencies of doctor statements regarding psychosocial data gathering, giving information about lifestyle, education and counseling, and rapport-building/emotional, divided by number of statements about biomedical information gathering and counseling. Our primary goal was to estimate effect sizes.

The PCC underwent two types of analyses. Two-sample t tests compared mean changes in the PCC between the experimental and delayed groups, using the first to second visit scores (trained versus not trained). The average effect of the intervention was tested using a pretest-posttest training t test for the combined group. Differences in the PCC changes between resident and community sites were tested using two-sample t tests and nonparametric rank tests.

Due to a technical problem, data from one PCP visit had measurement error. We imputed data for this visit using the first estimated total visit length as a function of PCPs IDs and site and visit orders (R²=0.72). We then used total visit length as an independent variable to estimate PCC (R²=0.92) for this visit.

Results
Participants
PCPs included 17 family medicine residents and 13 community providers, primarily female (70%) and Caucasian (50%), with 23% Asian and 23% African American. The most common specialty was family medicine (83%).

Figure 1: Study Design
Provider Ratings
The between-group comparison on the PCC for the two groups of 15 providers (Table 1) yielded a mean change score difference of 1.44 between trained and untrained groups, with the trained group improving their PPCs and the untrained group decreasing theirs, \( t(28)=1.76, P<.09 \). The associated effect size, Cohen’s D, was .66, a moderate effect size. The within-group comparison of all 30 providers before to after training (see Table 2) showed a significant paired-\( t \) value of 3.17, \( df=29, P<.01 \), effect size=.61. Figure 2 shows all three points in graphic form.

No differences were found by type of site (community, residency) or visit length. Notably, the higher PCC scores did not require additional visit time.

Discussion
Based on the PCC score, PCPs had more patient-centered interactions with SPs after training. The training followed recommendations by CME program reviewers that training should be based on explicit theoretical frameworks and incorporate interactive and ongoing testing and practice.\(^{58,59}\) This is the first test of CME training for PCPs of which we are aware with an overall focus on potential trauma issues in patients. It complements the Helitzer and colleagues\(^{59}\) study of didactic training in adverse events in their PCP communication training. The relative lack of training in trauma-informed care, and particularly the evaluation of such training, is a clear gap, given that trauma exposure and related mental disorders are extremely common in primary care\(^{6,11}\) and are linked with poor physical outcomes\(^{16,17}\) and decreased preventive care.\(^{59}\) Because providers are not comfortable discussing these issues,\(^{25}\) the presence and influence of trauma exposure may go undetected and adversely affect a patient’s ability to engage with their PCPs about their own health and care. This may reduce compliance with PCP recommendations and negotiation on issues requiring trust/engagement. This training is an opportunity to enhance the PCP-patient relationship.

Another innovative aspect was the development of standardized patient cases typical of primary care that can be used in other studies to assess training. Anecdotal feedback from PCPs suggested that these SPs came across as typical patients. While actual patient encounters may be more desirable, requiring patients to return for unneeded visits after training was impractical. Future studies could track routine visits among trained and untrained PCPs to clarify whether TI-Med knowledge and skills are integrated into practice.

The study had several limitations. As a pilot, it used relatively small samples of PCPs. However, effect sizes for RIAS codes were moderate, and findings were significant when all PCPs were combined before to after training and likely to be more significant with larger samples. All of the SP cases were women, for interchangeability of actors and homogeneity, but future studies should include SPs of both genders. PCPs and residents were primarily from family medicine specialties, so future studies should broaden this representation. Only short-term outcomes were addressed. A major shortcoming is that the RIAS, while an excellent system for rating patient-provider communications, is not specific to trauma. Since there are not currently robust rating tools validated for trauma, we chose the RIAS. While it is possible to add specifically developed counts or ratings to the RIAS for specific studies, it was

| Table 1: Patient Centeredness Score Means (Between-Subject Comparisons) |
|-----------------|---------|--------|------|--------|--------|
|                 | Visit 1 |       | Visit 2 |       | Change |
|                 |         | Mean (SD) | Mean (SD) | Visit 2 - 1 | Mean (SD) |
| Condition       | n       |         |        |        |        |
| Experimental    | 15      | 2.8 (2.0) | 3.7 (2.8) | 0.88 (2.64) | 4.1 (2.9) |
| Delayed         | 15      | 3.1 (1.7) | 2.5 (1.6) | -0.55 (1.76) | 4.3 (2.3) |

Note: Bolded cells are pre-training/post-training intervention; \( t(28) V_2 - V_1 = 1.76, P<.09 \)
Cohen's D=.66

| Table 2: Patient Centeredness Score Means (Paired Comparisons) |
|-----------------|---------|--------|------|
|                 |         | Mean (SD) | 95% Confidence Interval |
| Time            | n       |         |                  |
| Pre-training intervention | 30      | 2.68 (1.74) | 2.02—3.32 |
| Post-training intervention | 30      | 3.99 (2.52) | 3.05—4.93 |

Note: \( t(29)=3.17, P=.004, \) Cohen's D=0.61
not feasible to develop new codes for this pilot. Thus, future studies need to include more trauma-specific outcomes to clarify the extent to which the training conveys concepts and skills that are trauma related and not limited to improving general communication.

This study showed promising results for a primary care-based CME training to improve communication with trauma-exposed patients. The training increased positive aspects of the PCP-patient partnership, and the residency programs welcomed it. Specialty settings may also benefit from this training. Further work needs to address the longevity of effects, impacts on interactions with actual patients, and whether and how this modest 6-hour training affects patient health outcomes.

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Conflict of interest/disclosure: Esther Giller, MA, Sidran Institute, CEO (Ms Sidran owns the original version of Risking Connection (RC)); Elizabeth Power, MED, EPower & Associates (EPower & Associates, Inc. is an authorized provider of Sidran’s RC training and works on the development of derivative works).

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