

# System Factors Affect the Recognition and Management of Posttraumatic Stress Disorder by Primary Care Clinicians

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**Background:** Posttraumatic stress disorder (PTSD) is common with an estimated prevalence of 8% in the general population and up to 17% in primary care patients. Yet, little is known about what determines primary care clinician's (PCC's) provision of PTSD care.

**Objective:** To describe PCC's reported recognition and management of PTSD and identify how system factors affect the likelihood of performing clinical actions with regard to patients with PTSD or "PTSD treatment proclivity."

**Design:** Linked cross-sectional surveys of medical directors and PCCs.

**Participants:** Forty-six medical directors and 154 PCCs in community health centers (CHCs) within a practice-based research network in New York and New Jersey.

**Measurements:** Two system factors (degree of integration between primary care and mental health services, and existence of linkages with other community, social, and legal services) as reported by medical directors, and PCC reports of self-confidence, perceived barriers, and PTSD treatment proclivity.

**Results:** Surveys from 47 (of 58) medical directors (81% response rate) and 154 PCCs (86% response rate). PCCs from CHCs with better mental health integration reported greater confidence, fewer barriers, and higher PTSD treatment proclivity (all  $P < 0.05$ ). The PCCs in CHCs with better community linkages reported greater confidence, fewer barriers, higher PTSD treatment proclivity, and lower proclivity to refer patients to mental health specialists or to use a "watch and wait" approach (all  $P < 0.05$ ).

**Conclusions:** System factors play an important role in PCC PTSD management. Interventions are needed that restructure primary care

practices by making mental health services more integrated and community linkages stronger.

**Key Words:** primary care, posttraumatic stress disorder (PTSD), system factors, barriers

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Primary care clinicians (PCCs) are often the first contact with the ambulatory health care system for patients suffering from posttraumatic stress disorder (PTSD) because most people with common mental health disorders do not seek treatment from mental health specialists.<sup>1</sup> Up to 8% of adults in the general population have experienced PTSD within their lifetime (with over 50% of people reporting having experienced some form of trauma).<sup>1–4</sup> Prevalence is even higher for primary care populations (range 9%–17%)<sup>1,5</sup> and potentially even higher among underserved populations such as urban low-income minorities<sup>6</sup> who are at greater risk for PTSD resulting from interpersonal, political, and community violence (CV).<sup>7</sup> Moreover, PTSD is poorly detected, under-treated,<sup>8–12</sup> and costly.<sup>13</sup>

Many barriers hamper the ability for PCCs to deliver high quality care for PTSD. Barriers may stem from patient concerns about the consequences of revealing emotional problems (stigma) and the associated trauma they have experienced. Patients also face barriers to access and insurance limitations. Clinicians may not have sufficient knowledge about PTSD recognition and treatment which, in turn, leads to discomfort with screening and treating the problem.<sup>14,15</sup> PCC's ability to deliver care may also be hindered by systemic barriers. Two key system factors that are critical to care for mental health problems are access to mental health specialists and linkages with other community services, such as social and legal programs, to help with related social and behavioral problems.

Social psychologic and organizational theories suggest that these types of system factors in health care delivery may influence individual clinician practices. Innovations that include integrating, linking, or otherwise bringing together various aspects of an organization (ie, people, departments, etc.) or a group of organizations for information exchange and/or resources to accomplish a common goal are associated with many beneficial outcomes.<sup>16</sup> These include practice reorganization to facilitate care through multidisciplinary

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clinical teams and interorganization coordination to ensure high quality treatment of chronic health conditions.<sup>17–19</sup>

The literature also suggests that the use of these models combined with efficacious treatments (medication and psychotherapy) can improve the care for patients with depression in primary care settings.<sup>20</sup> A systematic evaluation of interventions to improve the management of depression in primary care<sup>21</sup> provides further support for system factors. The evaluation found that a greater degree of integration between primary and secondary care, such as the use of consultation-liaison models, is an effective strategy to improve patient outcomes when included in complex interventions that also include clinician education and nurse case management. One study found that the delivery of depression care depends on level of mental health integration with primary care.<sup>22</sup> PCCs who worked in integrated practices reported time constraints and a greater tendency to provide referrals and watchful waiting. Conversely, PCCs in less integrated practices (eg, no readily available mental health providers) reported limited access to mental health providers and a greater tendency to treat patients themselves.

Interorganizational linkages to coordinate services for multiple problems are also relevant to addressing PTSD because many also need adjunct services (social and legal) in addition to health care. Samet et al<sup>23</sup> reviewed the literature on models that linked medical and substance abuse services. Their review suggests that there are many potential benefits of creating systems in which primary care, mental health, and substance abuse services are meaningfully linked and recommend additional studies to implement, examine, and measure the real impact. In fact, Friedmann et al<sup>20,24</sup> found that on-site service delivery promoted greater use of adjunct services for patients needing both psychologic and medical care.

We hypothesized that 2 system factors (mental health integration and community linkages) would affect individual PCC's perceived self-confidence, barriers to care, and proclivity to assess and manage PTSD.

We based our expectations on Social Cognitive Theory<sup>25</sup> that emphasizes the interplay between the environmental setting, the beliefs and expectations formed about their capacity to perform, and the likely results of taking some action. According to this theory, PCCs learn, through direct or indirect rewards or punishments, to form expectations about the likely results of taking some action (outcome expectancies) and acquire knowledge about their capacity to perform the behavior (self-efficacy beliefs). The environment provides behavioral models on which to base these expectancies and beliefs. We expected that PCCs, with relatively effortless access to mental health services and established relationships with adjunct services, would feel more confident in their ability to deliver PTSD care. PCCs in better integrated practices would also perceive fewer barriers to delivering care and would be more likely to take initiative in getting patients the care they need.

Patients with PTSD are often in need of adjunct services such as social and legal assistance related to the violence they have experienced. Further, victims often show up in multiple systems of care (eg, hospital emergency rooms,

law enforcement, social services, and faith-based systems, in addition to primary care settings) that typically do not coordinate with each other. There is currently no information in the literature about the extent to which these important system factors—mental health integration and community linkages—influence care for PTSD in primary care practices. To address this gap, we studied PCCs' reported perceptions and practices regarding the recognition and management of PTSD and the association of system factors with those PCC perceptions.

## METHODS

### Design

We analyzed data from medical directors and PCCs from Community Health Centers (CHCs) in New York and New Jersey that are members of Clinical Directors Network (CDN—www.CDNetwork.org), a practice-based research network that works with primary care practices in medically underserved communities. All study procedures were approved by the RAND and CDN institutional review boards. Directors and PCCs were sent a letter requesting their participation in a web-based survey (on Zoomerang). PCCs who did not respond to the web survey were mailed a hardcopy survey. Surveys were also distributed in-person at board meetings, and by telephone. Participants were entered into a raffle to win one of 3 prizes: an IPOD, movie certificates, or coffee gift cards. Prizes were awarded at the end of the data collection period. We also conducted an expert panel with a subset of the medical directors and clinicians (primary care and mental health) from a subset of 5 CHCs. These 10 stakeholders first agreed on the particular types of barriers (patient, clinician, and system) that are most important to address, and then prioritized intervention components that would be most promising and feasible for improving PTSD care.

AQ:2

### Participants

We analyzed data from medical directors and PCCs who work in CHCs affiliated with CDN in the New York and New Jersey region. These CDN-affiliated CHCs are all Federally Qualified Health Centers (FQHCs).

### Measurements

We developed a 2-page survey for medical directors to obtain information about 2 system factors as independent variables: level of mental health integration and extent of community linkages. These items were adapted from the organizational assessment instrument used in the improving chronic illness care collaboratives<sup>17–19</sup> and conceptual work to tailor the items to depression.<sup>26,27</sup>

We also developed a 4-page survey for PCCs to obtain information about professional background and training characteristics, practice volume, as well as 3 dependent variables: perceived confidence, perceived barriers, proclivity to provide care for PTSD. These items were adapted from prior work that assessed clinician attitudes and practices in depression,<sup>22,28,29</sup> with content informed by interviews with medical directors and clinicians at 5 of the CHCs that participated in developmental qualitative work.

### Independent Variables

We measured level of mental health integration with a single item categorical measure that asked medical directors to select 1 of 5 levels of integration, which best describes how their primary medical care services relate to mental health services at their CHC: (1) autonomous—all care is provided by the PCCs with no involvement or consultation with a mental health specialist, (2) independent—both the PCC and the mental health specialist provide direct patient contact with no communication between them, (3) referral—mental health specialist provides the key face-to-face contact with limited communication between the PCC and mental health specialists, (4) consultation—PCC is the main mental health provider with consultation from mental health specialist, (5) integrated team—both the PCC and the mental health specialist are extremely involved in the care of the patient, which may include joint sessions with the patient and are in frequent communication about the patient’s care.

We used another single-item categorical measure to assess the extent of community linkages (Table 1). Medical directors were asked to select from 1 of 4 responses: (1)

limited support, done in an ad-hoc fashion by PCCs with no assistance, (2) basic support, using only a directory of regional shelters, advocacy, clinician, and support groups providing legal or social services, (3) good support, which is accomplished through a designated staff person or resource responsible for ensuring that clinicians and patients have ready access to social and legal service professionals, and (4) fully developed support, through a designated staff person or resource to ensure access to service professionals and ongoing communication between those professionals and PCCs (including collaborative care).

### Dependent Variables

We assessed perceived confidence with 7 items rated on a 4-point scale ranging from “not at all confident” to “very confident.” Clinicians were asked, “How confident are you in your personal ability to perform the following services for patients with PTSD?” Items addressed different types of services that might be provided for PTSD: (1) recognizing that a patient has PTSD, (2) screening a new patient for PTSD, (3) providing counseling and education about PTSD, (4) assessing the presence/severity of PTSD, (5) starting appropriate medications for PTSD, (6) identifying need for social referrals, and (7) identifying need for legal referrals. We created an aggregate scale by summing across items. The scale had good internal consistency (Cronbach’s alpha = 0.87).

We measured perceived barriers with 3 summated scales formed from items scored as the extent of each barrier (no barrier, a minor barrier, or a major barrier) so that a higher score indicates more perceived barriers. One scale combined all 11 items and 2 subscales aggregated across the 5 patient-related barriers (items c, d, e, f, and h in Fig. 1) and 6 clinician or system barriers (items a, b, g, i, j, and k in Fig. 1). Internal consistency was good for the overall (alpha = 0.72) and clinician/system (alpha = 0.75) scales but slightly lower for the patient scale (alpha = 0.60). See Figure 1 for specific item wording.

We measured general PTSD treatment proclivity with 5 items about different treatments for patients suffering from PTSD. Clinicians were asked, “If you think a patient has PTSD, how likely are you to do each of the following:” (1) prescribe medications for PTSD, (2) personally counsel for PTSD, (3) refer to a mental health specialist, (4) refer to other social/legal services, and (5) schedule a follow-up visit without starting treatment (“watch and wait”). Each item is rated on a 5-point likelihood scale. We did not combine these items into a multi-item scale because a one-dimensional treatment approach may not capture true treatment patterns, ie, for example, appropriate management may mean referral to a mental health specialist if specialists are available or prescribing an antidepressant if specialists are not readily available for referral.

We also measured specific proclivity to providing different treatments for patients described as having particular demographic and clinical characteristics for each of 3 different types of trauma experiences (political, community, and interpersonal violence). Thus, all 3 scenarios held the demographic and clinical characteristics constant, but the type of violence varied. For each scenario, the PCC rated 9 items

**TABLE 1.** CHC and Primary Care Clinician (PCC) Characteristics

Type of Characteristic*	N	Mean (SD) or %
CHC (from Medical Director survey: N = 44)		
Level of mental health integration, %		
Autonomous	4	9.1
Independent	3	6.8
Referral	18	40.9
Consultation	14	31.8
Integrated team	5	11.4
Level of community linkage or support, %		
Limited support	8	18.2
Basic support	10	22.7
Good support	20	45.4
Fully developed support	6	13.6
Primary care clinician (from PCC survey: N = 130)		
Female, %	68	52.7
Age, years, Mean (SD)	125	42.9 (9.4)
Non-white, %	63	50.4
Clinician specialty, %		
Internal medicine	51	39.8
General/family practice	39	30.5
Obstetrics/gynecology	10	7.8
Other (pediatrics, adolescent medicine, and emergency medicine)	28	21.9
Board certified, %	92	72.4
Years at health center, Mean (SD)	126	6.1 (6.2)
Fluent in another language, % (Spanish for 40%)	74	58.3
Visits with adult patients per week, Mean (SD)	127	113.2 (201.8)
Visits with adult who have mental health problems per week, Mean (SD)	126	26.0 (83.0)
Visits with adult immigrant patients per week, Mean (SD)	126	35.4 (40.1)

\*Standard deviations in parentheses for continuous variables only.

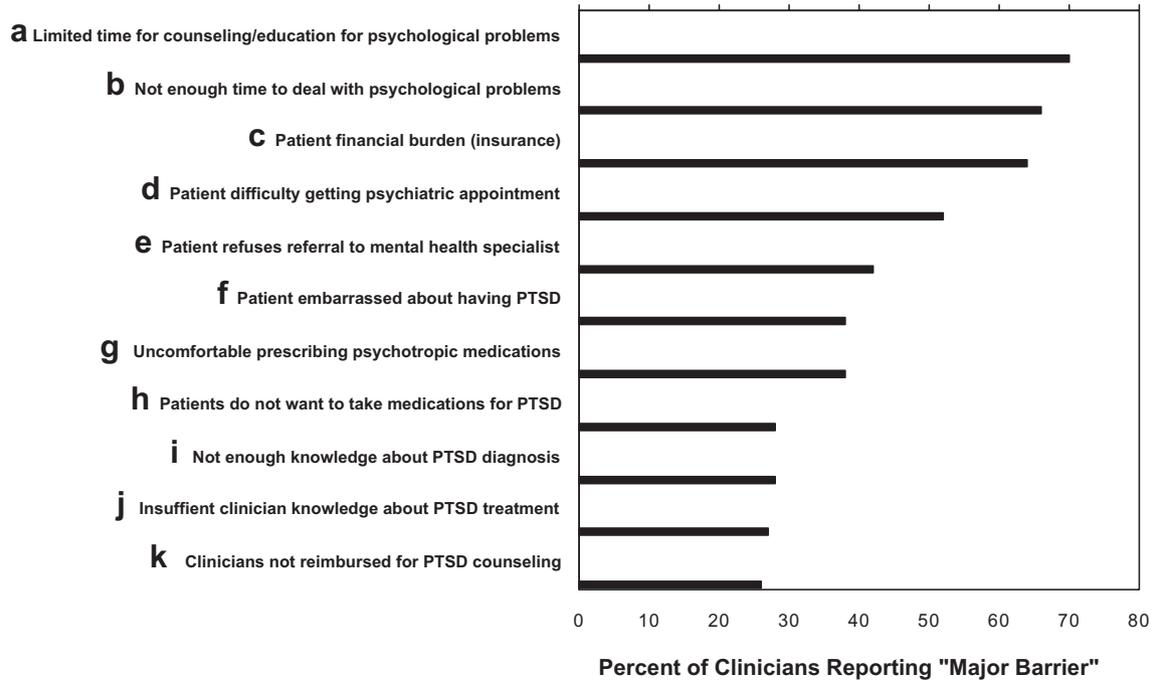


FIGURE 1. PCC barriers to PTSD care.

TABLE 2. Specific Scenarios for Assessing Treatment of Patients Who Experienced Different Types of Violence

Political violence scenario

An English speaking Latina woman in her 20s without insurance comes into your office reporting that she has been feeling nervous for more than a year with disturbed sleep. She reports being in good health before last year when she experienced torture when she was tortured in prison for leading a political rally in Chiapas, Mexico. Her symptoms began after that event. Review of systems find that she has recurring nightmares about the torture she experienced. She denies any persistent sad mood or anhedonia. Except for scars from her torture, her physical examination is normal.

Community violence scenario

An English speaking Latina woman in her 20s, without insurance, comes into your office reporting that she has been feeling nervous for more than a year with disturbed sleep. She reports being in good health before last year when she sustained a femur fracture from a gunshot wound from a drive-by shooting. Her symptoms began after that event. Review of systems find that she has recurring nightmares about the shooting she experienced. She denies any persistent sad mood or anhedonia. Except for her one leg in a surgical brace with pins stabilizing her femur fracture, her physical examination is otherwise normal.

Interpersonal violence scenario

An English speaking Latina woman in her 20s, without insurance, comes into your office reporting that she had been feeling nervous for more than a year with disturbed sleep. She reports being in good health before last year, when she was treated for tuberculosis from exposure at a women's shelter where she had to move to because her boyfriend began beating her. Her symptoms began after that event. Review of systems finds that she has recurring nightmares about the domestic violence she experienced. She denies any persistent sad mood or anhedonia. Except for her PPD-positive status, for which she was treated, her physical examination is otherwise normal.

about different assessment (for PTSD, suicide, substance abuse, and depression), referral (for relevant social and legal services), and treatment options (prescribe psychotropic medication for relieving symptoms, prescribing other nonpsychotropic medication, or providing psycho-education about possible PTSD). The verbatim scenarios are shown in Table 2. These items scaled well (alpha = 0.77, 0.81, and 0.77 for political, community, and interpersonal violence, respectively).

Statistical Analysis

We first describe the sample response rates and present the CHC system and individual clinician characteristics. We also show the unadjusted patterns of individual barriers, confidence items, and proclivities for different treatments.

We then use multivariate analyses to evaluate the association between system factors and each of the PCC-reported attitudes, perceptions, and practices. Data analysis was performed using the clinician as the unit of analysis and CHC director variables at a second-level linked to clinicians. To describe clinician self-efficacy, barriers, and practices as a function of system factors, we fit a 2-level CHC effects model with the PCC as the level-1 unit and the CHC as the level-2 unit (both specified as random effects), using SAS PROC MIXED for the continuous PCC measures. Models controlled for PCC demographic (gender and ethnicity) and professional characteristics (specialty, years at the CHC, and number of outpatient visits with adults per week).

## RESULTS

### Response Rates

Of the 58 medical directors eligible to take the survey, 47 completed one for a response rate of 81%. These CHCs are 72% of all 65 FQHCs in the states of New York and New Jersey (see Kaiser <http://www.statehealthfacts.org>). Among the 180 adult medicine clinicians who were sent a survey, a total of 154 PCCs (2–4 PCCs in most CHCs) completed surveys for a response rate of 86%. One hundred thirty or 84% of the PCC surveys could be linked to a completed medical director survey.

### System and PCC Characteristics

Eighty percent (of the 44 CHCs with data on these characteristics) had mental health integration that fell somewhere in the middle (independent, referral, or consultation model). Only 11% of CHCs had fully integrated teams. Nine percent of the CHCs provided care for mental health, with no involvement or consultation by a mental health specialist (autonomous). In terms of community linkages, 18% of directors reported having only limited support, most of the directors described their CHCs as having basic or good support, and only 14% reported having fully developed support.

Slightly over half of the PCCs were women (52.7%) and nonwhite (50.4%). They were 43 years of age on average and worked at the CHC for an average of 6 years. Most were board certified (72.4%), which is above the national average of approximately 50%. PCCs were mostly internists (39.8%) and general or family practitioners (30.5%). Eight percent were obstetricians/gynecologists, and the remainder was pediatricians or other types of providers. Nearly two-thirds (58%) were fluent in another language, with 40% fluent in Spanish. These PCCs averaged 113 patient visits per week,

with about 26 patients who have mental health problems and 35 patients who are immigrants.

### PCC Confidence, Barriers, and Proclivity

PCCs were most confident in their ability to identify need for social service referrals (88% reported being somewhat or very confident) followed by recognizing PTSD (72%), and to identify need for legal service referrals (58%) (data not shown). They were least confident in their ability to diagnose PTSD severity (34%), start appropriate medications (40%), and counsel their patients about PTSD (43%). Figure 1 shows the percent of clinicians who rated that each of these issues was a major barrier for them. Barriers are ordered by importance. The 3 barriers rated as being significant by most clinicians include limited time for clinicians to counsel/educate (70%), not enough time for clinicians to deal with psychologic problems (66%), and patient financial burden (64%).

We also assessed proclivity with 3 scenarios depicting patients surviving different types of violence (political, community, and interpersonal). Overall, assessment proclivities were high but direct treatment proclivities were low (Fig. 2). Within each type of violence, the most common reported actions for a patient described as having experienced political violence (PV) included referral for social services (93.2%), assessment for depression (95.2%), and assessment for suicide (93.2%). For CV, the most common actions were assessment for depression (94.6%), assessment for substance abuse (88.4%), and assessment for suicide (85.7%). For interpersonal violence,<sup>30</sup> the most common actions were referral for relevant social services (95.3%), assessment for depression (95.3). Assessment for suicide was common for all 3 types of violence (93.2%, 85.7%, and 93.2% for PV, CV, and IV, respectively). Regardless of violence type, few

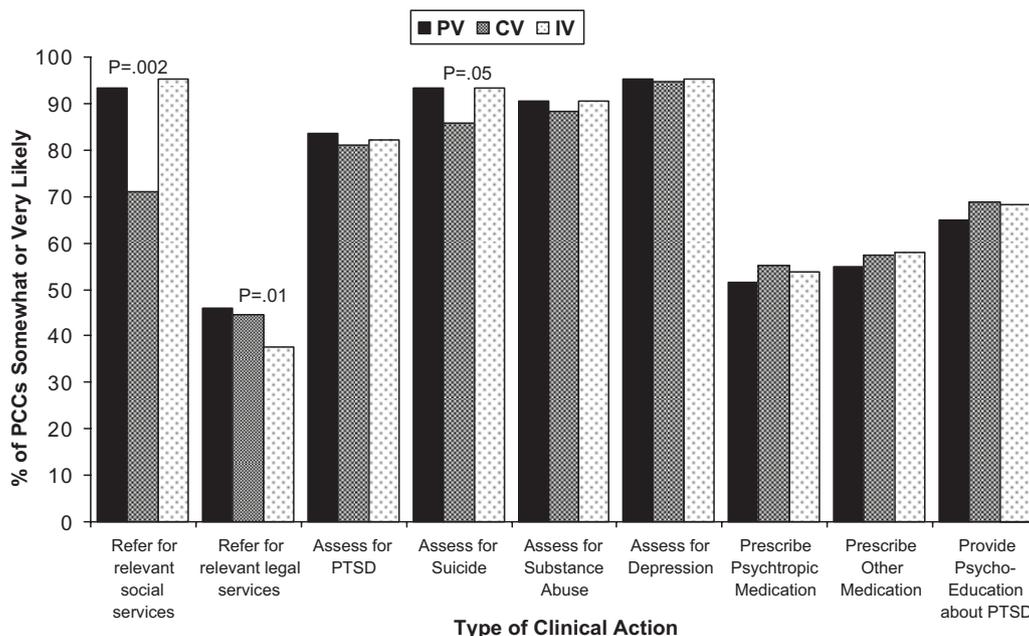


FIGURE 2. PCC treatment patterns by trauma scenario.

**TABLE 3.** Multivariate Associations Between System Factors and Clinician Reports of PTSD Recognition and Management

Independent Variable	Dependent Variable (Scale Range)											
	Perceived Barriers					General Treatment Proclivity					Specific Proclivity	
	Confidence (7-28)	Overall (11-32)	Patient (5-15)	Clinician/System (6-18)	Prescribe Medication (1-5)	Personally Counsel (1-5)	Refer to MH Specialist (1-5)	Refer to Social or Legal (1-5)	Schedule Follow-Up Visit (1-5)	PV (13-45)	CV (9-45)	IV (9-45)
Mental health integration	2.56*	1.54	0.20	2.90*	1.06	0.37	.80	1.09	1.63	.32	2.56*	.61
Community linkages	2.38	3.21*	1.50	2.60	1.90	1.68	3.42*	1.11	2.99*	2.20	4.68†	.77

Entries in boldface are the Omnibus Type 3 F-Tests (degrees of freedom 4, 67 for Mental health integration, and 3, 67 for Community linkages) for the overall fixed effects with significance denoted as \* $P < 0.05$  or † $P < 0.01$ . Models adjusted for clustering and controlled for each center-level independent variable, clinician gender, ethnicity, specialty, years at the center, and patient volume. Independent variables are specified as categorical variables. Autonomous MH integration and limited community linkages are the reference categories.

PCCs reported a proclivity to refer for relevant legal services (37.6%–45.9%).

There were some differences by type of violence scenario. PCCs had a lower proclivity to refer patients described as victims of CV for social services or assessed for suicide compared with political or interpersonal violence ( $P = 0.002$  and  $0.05$ , respectively). PCCs were also less likely to refer patients for legal services if described as interpersonal violence survivors relative to political and CV survivors ( $P = 0.01$ ).

### Associations Between System Factors and PCC Confidence, Barriers, and Proclivity

Table 3 shows the multivariate associations between each of the system factors (MH integration and community linkages specified as categorical variables) and PCC-reported recognition and management of PTSD. For confidence, the overall effect of mental health integration was significant ( $F$  test,  $P < 0.05$ ). For perceived barriers, stronger mental health integration was significantly associated with fewer clinician/system barriers (overall  $F$  test,  $P < 0.05$ ). Two general treatment proclivity measures (scored on 1–5 likelihood response scales) were influenced by community linkages but none by mental health integration. PCCs reported a lower proclivity to refer to mental health specialty or schedule a follow-up visit (both overall  $F$  tests,  $P < 0.05$ ).

In terms of specific proclivity, stronger mental health integration and stronger community linkage was associated with a higher proclivity to treat a patient described as a victim of CV (overall  $F$  tests,  $P < 0.05$  and  $P < 0.01$ , respectively), but no association for political or interpersonal violence.

To provide a more concrete context for these results, we illustrate the magnitude of selected effects. With respect to perceived clinician/system barriers, moving from one level of mental health integration to the next (eg, from autonomous to independent or referral to consultation) was associated with barriers scores up to 3 points lower on the 6 to 18 point scale. For general treatment proclivity, moving from one level of linkages to the next (eg, from limited to basic linkages or good to fully developed linkages) was associated with a 1 to 2 point change in likelihood to treat or refer (scored on a 1–5 scale).

None of the other clinician demographic or professional practice characteristics was significantly associated with the attitudinal and practice outcomes with 3 exceptions. Higher patient volume was associated with referral to social or legal services ( $P < 0.05$ ). Specialty was associated with perceived patient barriers ( $P < 0.05$ ), with internists most likely to perceive barriers followed by general/family practitioners relative to other types of clinicians. Finally, more years of practice at the CHC was associated with proclivity to provide services for patients described as having been exposed to PV.

### DISCUSSION

We examined the routine practice patterns for a large representative sample of PCCs from the majority of FQHCs in New York and New Jersey. We found that very few of these CHCs had fully integrated health care teams for addressing PTSD and other mental health problems (only 11%),

and less than a quarter had fully integrated community linkages/support (22%). These numbers are low in light of the increasing proliferation of team-based practice structures.

Our findings highlight the important role that system factors play for PTSD management in primary care settings. Having mental health specialty care available on-site or accessible for routine consultation and practicing in a clinic with established relationships with social and legal services are independently associated with PCCs' reports of their experiences with PTSD in their practice. The key finding that mental health integration is associated with individual clinician-perceived confidence and barriers is consistent with depression studies,<sup>22</sup> showing that reported attitudes and practices may depend on the extent to which mental health resources are accessible. If no mental health resources are available, PCCs report a proclivity toward treating within their primary care setting, whereas those who have access to mental health resources report a proclivity to refer to specialists. This situation is good if it can be assumed that both PCCs and specialists deliver evidence-based care.

Although having established linkages with community services including social and legal assistance for patients with PTSD was significantly associated with several reported clinical actions (referral to mental health and scheduling follow-up visits), mental health integration was not. This stronger association between community linkages and reported practices relative to the association between mental health integration and reported practice was surprising, given the empirical literature that finds that mental health integration with primary care also affects the proclivity to deliver depression care.<sup>26</sup> We found that PCCs who reported stronger ties to community services were less likely to report that they would refer to a mental health specialist or schedule a follow-up visit with those patients. One explanation for this finding is that PCCs may be hesitant to discuss, diagnose, or treat PTSD when working with patients who experience chronic interpersonal violence. This is also an issue in other types of chronic conditions (HIV/AIDs and traumatic brain injury) for the same reasons.

For scenario-specific treatment proclivity, we found that variation in the system factors was not associated with an overall tendency to recognize and/or treat patients described as having experienced political or interpersonal violence. However, variations in system factors were associated with this tendency for the CV scenario. One possible reason for this pattern is the distinctive characteristics of interpersonal and PV compared with CV. Interpersonal violence, such as intimate partner violence and child abuse and PV, such as torture, are frequently prolonged, chronic, and personalized experiences of violence. Both present to PCCs with a recognized web of inter-related mental health, social service, and legal needs.<sup>31,32</sup> The well-documented challenges PCCs face addressing interpersonal violence are likely experienced with patients who experienced PV.<sup>33</sup> For interpersonal violence, reporting abuse, often involving a family member, combined with survivor safety needs are challenging for medical providers. For PV, clinicians have limited time to also deal with concerns about immigration and family problems. In both

cases, PCCs may frequently suspect a complicated array of problems and may prefer to refer out and to involve community resources no matter how integrated these services are with primary care. Indeed, referral for social services was the most common action reported by the PCCs in our study for patients with interpersonal or PV, reported by 93% and 95% of PCCs, respectively. Thus, our study would not detect an association with system factors because PCCs are referring out regardless of the system they are in.

In contrast, PCCs are just beginning to incorporate an understanding of the environmental and contextual issues surrounding CV into their care of these patients.<sup>34</sup> Though studies are needed to explore this hypothesis further, PCCs may be less likely to refer patients exposed to CV because their focus on "one-time" injury neglects to account for contributing factors and psychosocial outcomes.<sup>35</sup> Our results support this explanation as PCCs in our study had a lower proclivity to refer patients described as victims of CV for social services. PCCs who are less aware of the surrounding issues may exercise greater discretion with referrals to social and mental health services. Referrals may be more influenced by the availability and ease of obtaining social and mental health services. Thus, treatment proclivity for CV seems more sensitive to variations in these system factors.

Although the number of clinicians was not large and limited our power to detect associations, our data systematically sampled the majority of FQHCs in New York and New Jersey. In fact, our sample of 58 CHCs in the CDN network represented 89% of all CHCs and 72% of responders making these data broadly generalizable to FQHCs in these 2 states. Given the similar sociodemographic profiles of attendees at these FQHCs, findings may lend themselves to other types of primary care settings in low-income urban communities.<sup>10</sup> In addition, self-reported data often runs the risk of biased responding. However, many of the measures were adapted for PTSD from other studies that have been validated in the literature<sup>22,29</sup> which minimizes potential for measurement error. Further exploration is needed to explain the nonlinear associations between the system measures and some of the dependent measures. Clinicians may have interpreted the descriptions of service integration and community linkages too broadly which could have affected the presumed order of response categories. Additionally, the items on system factors asked about mental health problems generally rather than PTSD specifically, which could limit our ability to find associations if interpretations vary. Finally, we cannot assume that findings would be consistent if we had studied this issue in other types of health care settings or in other regions of the country.

Our study suggests that more integration with mental health increases PCC treatment confidence, reduces some barriers, and increases the likelihood that patients will receive treatment for some patients with PTSD. Although clinician education may strengthen early detection and rapid initiation of treatment for PTSD,<sup>36,37</sup> our data suggest that structural interventions may also address system-level barriers. In addition to the survey data, feedback from the expert panel discussion indicates that to address barriers to care for PTSD,

strategies that restructure service delivery to better integrate primary and mental health care and to better coordinate with other community-based health services are among the most promising. In particular, PCCs would benefit from established relationships with mental health professionals and with agencies that provide complementary services (such as social and legal aid).

However, structural change alone may be insufficient to change clinician behavior unless combined with other important intervention components in a multifaceted approach. Other potential components to improve care may include strong leadership support, patient management and tracking systems, and education for patients and clinicians.<sup>38</sup> In particular, collaborative care interventions<sup>39,40</sup> that include regular interaction between PCCs and mental health professionals are needed to improve care. Moreover, interventions that include components and strategies implemented through a specially trained care manager, such as the chronic care model for depression, ([www.improvingchroniccare.org](http://www.improvingchroniccare.org))<sup>41</sup> may help patients overcome system barriers as well as patient- and clinician-level barriers such as stigma, limited clinician treatment knowledge, clinician time constraints for dealing with psychologic issues, and difficulty finding mental health specialists. Such intervention programs have demonstrated success for improving depression care in medical practices<sup>29,42–48</sup> and are worthy of exploration for improving anxiety<sup>49</sup> and PTSD care.<sup>50</sup> A promising step forward is to adapt some of these successful approaches to improve access to and quality of care for PTSD.

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