

# How CARE Tools Are Being Used to Address Brain Injury and Mental Health Struggles With Survivors of Domestic Violence

Hannah Kemble, BSPH; Ana Sucaldito, MPH; Emily Kulow, BA; Rachel Ramirez, MSW, LISW; Alice Hinton, PhD; Allison Glasser, MPH; Amy Wermert, MPH; Julianna M. Nemeth, PhD

**Introduction:** CARE (Connect, Acknowledge, Respond, and Evaluate) is an advocacy framework developed for domestic violence service organization (DVSO) providers to address and accommodate domestic violence (DV) survivors with brain injury and mental health struggles. The CARE tools were designed for use by advocates and include the *Just Breathe* booklet, the *Head Injury* education card, and the *Invisible Injuries* booklet. **Objective:** The purpose of this study was to report findings on how CARE tools are being used by DVSO providers as well as their impact on DVSO advocacy practice. **Methods:** Post-CARE retrospective process evaluation online surveys ( $n = 60$ ) and focus groups ( $n = 10$  groups; 57 advocates) were conducted with consenting staff at 5 DVSOs in Ohio who partnered with the state coalition to develop and evaluate CARE, overseen by a university research partner. Rigorous, iterative coding qualitative analysis methods, endorsed by the Centers for Disease Control and Prevention, were used (Cohen's  $\kappa = 0.903$  [stage 1] and 0.810 [stage 2]). **Results:** The use of CARE tools has been integral to DVSO providers' implementation of the CARE advocacy framework. DVSO advocates are using CARE tools to **C**onnect with self, survivors, and other systems; to **A**cknowledge that head trauma and mental health struggles are common among survivors and that ongoing education and self-care are necessary for advocates. Advocates have been able to provide a more holistic **R**esponse through accommodation within DVSOs and referral to other providers, often by using the CARE tools, including the *Head Injury* education card. **Conclusion:** CARE tools were designed for lay use to address head trauma, strangulation, and mental health struggles with DV survivors and are free for download at the Center on Partner Inflicted Brain Injury website: <https://www.odvn.org/brain-injury>. More widespread use of these tools by advocates has the potential to improve services for DV survivors and address what have historically been invisible injuries and mental health struggles in the population. **Key words:** advocacy, CARE, domestic violence, education tools, hypoxic-anoxic brain injury, intimate partner violence, mental health, process evaluation, strangulation, traumatic brain injury

THE HEAD, neck, and face are the most common sites of physical attack in domestic violence (DV)—with fist punches and manual strangulation the most

frequently cited mechanisms of assault.<sup>1</sup> Such attacks often occur repeatedly in abusive relationships.<sup>2</sup> Instances of head trauma or oxygen deprivation, followed by altered consciousness, result in traumatic brain injury (TBI) or hypoxic-anoxic brain injury (HAI), respectively. In a study published in 2001 of 62 DV survivors seeking urban health or shelter services, 68% reported having been strangled.<sup>3</sup> In another study, first published in 2001, of 51 DV survivors presenting to metropolitan emergency departments for health concerns and evaluated for a possible secondary mild TBI, 67% reported 1 or more elements of postconcussive syndrome.<sup>4</sup> Despite earlier evidence, only recently have community advocates and academics studying both brain injury or DV and health begun to address the intersection and subsequent sequelae resultant from blunt force head trauma and/or strangulation inflicted during DV attacks and brain injury.<sup>2,5-30</sup>

**Author Affiliations:** College of Public Health, The Ohio State University, Columbus (Mss Kemble, Sucaldito, Hinton, Glasser, and Wermert and Drs Hinton and Nemeth); and Ohio Domestic Violence Network, Columbus (Mss Kulow and Ramirez).

This study was funded by OVC grant 2016-XV-GX-K012.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's website ([www.headtraumarehab.com](http://www.headtraumarehab.com)).

The authors declare no conflicts of interest.

**Corresponding Author:** Julianna M. Nemeth, PhD, College of Public Health, The Ohio State University, 1841 Neil Ave, Columbus, OH 43210 ([nemeth.37@osu.edu](mailto:nemeth.37@osu.edu)).

DOI: 10.1097/HTR.0000000000000745

In 2016, the Ohio Domestic Violence Network (ODVN) secured a 3-year federal grant to raise the capacity of domestic violence service organizations (DVSOs) to serve survivors with brain injury and unmet mental health needs. Needs assessment activities with DVSO providers and survivors accessing services, conducted in 2017, led to our discovery of a discrepancy between providers' perception of the potential impact of brain injury on survivors' ability to access advocacy services and the pervasive exposure to incidents of head trauma, including strangulation, that can cause brain injury and comorbid mental health concerns among the population.<sup>2,31</sup> Providers acknowledged having limited knowledge about TBI and HAI or little known experience working with survivors with TBI or HAI, although expressed a growing realization that brain injury was likely present among DV survivors, with its impact on survivors' service access, recovery, and healing going unrecognized. Providers, including executive leaders, case managers, and resident, and court-based and community advocates, were willing to address head injury and strangulation with survivors; however, they realized they needed materials that could be used in advocacy practice to explain the connections between DV, head trauma, strangulation, brain injury, and mental health to survivors, including symptoms and warning signs, in lay language.

Needs assessment findings were used to develop CARE (**C**onnect, **A**cknowledge, **R**espond, **E**valuate), an enhanced trauma-informed advocacy framework that encourages DVSO providers to **C**onnect with survivors; **A**cknowledge that head trauma and mental health challenges are common among survivors, along with physical, cognitive, and emotional consequences; **R**espond by accommodating needs related to TBI, strangulation, and mental health challenges in DVSO services and provide effective, accessible referrals and advocacy for individuals who need additional care; and **E**valuate accommodations and referrals regularly. Initially, 3 CARE tools were developed in response to provider needs and to facilitate connection, acknowledgment, and response: *Just Breathe: A Guide to Wellness*, the *Has Your Head Been Hurt* card (aka the *Head Injury* education card), and the *Invisible Injuries* booklet.<sup>32</sup> A description of each tool can be found in Table 1, and tools are free for download at <https://www.odvn.org/brain-injury>. In mid-2018, once the CARE framework and tools were created, the 5 community of practice DVSOs that participated in the needs assessment received a 2-day training from ODVN on the CARE framework; education regarding brain functions, TBI, strangulation, symptoms of brain injury, anxiety, depression, and psychosis; and integration of CARE into advocacy practice, including providing accommodations for brain injury and promoting mental wellness in program services. Then DVSO providers were encouraged to use CARE

in advocacy practice, given flexibility to apply CARE to the varied work and processes of their organizations, and were provided printed CARE tools to use throughout the project duration. Once DVSO providers used CARE for at least 1 year, process evaluation was conducted to determine how CARE was being used in advocacy practice. The purpose of this study was to report process evaluation findings on how CARE tools are being used by staff of DVSOs as well as their impact on advocacy practice and survivors' experiences with services.

## METHODS

### Sampling frame

Process evaluation data on the use of CARE tools were collected in April through June 2019 using 2 methods following standard practice for program evaluation: (1) online survey and (2) focus groups with providers at the 5 community of practice DVSOs in Ohio participating in the CARE project post-CARE implementation.<sup>33</sup> DVSOs were geographically dispersed, including 2 in the Appalachian region (1 each in a rural community and small town) and 3 in the non-Appalachian region (1 each in a rural community, small town, and urban center). Participating DVSOs provided varying services—all provided advocacy, community support, and education, while some provided emergency shelter and transitional housing.

### Procedures

All participating CARE DVSOs agreed to implement CARE agencywide as part of their paid participation in the federally funded capacity-building grant secured by ODVN (2016-XVGX-K012); however, all research activities involving DVSO staff and volunteers were voluntary. All study procedures were overseen by the university research partner (Nemeth) and approved by the Ohio State University (OSU) Institutional Review Board (IRB). All ODVN staff members working on grant implementation were CITI trained and completed conflict of interest disclosures in order to be placed on the OSU IRB; however, consideration was always given to the use of IRB-approved ODVN research staff when collecting data from staff members at local DVSOs in order to prevent desirability bias.

### Online survey

#### Participants

All agency administrators, staff, and volunteers of the 5 CARE DVSOs at the time of the post-CARE implementation follow-up survey were invited to participate, regardless of time with the agency. All providers were afforded an hour, during regularly scheduled work, to

**TABLE 1** CARE tools: Description and findings regarding overall impression

Tool	Languages available	Description	Findings: Overall impressions
<i>Just Breathe: A Guide to Wellness</i>	English	The <i>Just Breathe: A Guide to Wellness</i> booklet is a 24-page interactive guide to wellness with coping strategies, affirmations, self-care and wellness planning, goal setting, and more resources. Survivors can check off daily tasks, such as eating meals, sleeping, deep breathing, and accomplishing personal goals. The <i>Be Well Plan</i> asks survivors to journal what they are doing to stay well, their confidence in staying well, coping skills they are willing to try, what their red flags, or triggers, are and how they react to them, and how they can be supported by others. <i>Just Breathe</i> also covers the following coping strategies: feeling safe, coping with communal living, coping with triggers, relaxing, asking for help, handling emotions, sleeping, and getting active. With each coping strategy, there are exercises, educational pieces, apps and websites, or tips. <i>Just Breathe</i> features an emotion thermometer that helps survivors analyze how different emotions make them feel, look, and behave and how others can help in those situations.	Advocates used the <i>Just Breathe</i> booklet as a tool for self-care as well as to facilitate conversation and engage with survivors, primarily within advocacy services. It has been described by advocates and survivors as “beautiful and relaxing to look at” and a “different spin on journaling” that “breaks things down really well.” It was important and meaningful to both advocates and survivors that the booklet was simple, pretty, and printed in color on a higher-quality paper—people expressed feeling “valued” because of receiving a booklet this beautiful and tranquil.
<i>Has Your Head Been Hurt</i> (aka the <i>Head Injuries</i> education card)	English, Spanish	The <i>Has Your Head Been Hurt</i> education card is a 2-sided card that asks rhetorical, high-level questions about brain injury with resources and when to see a doctor. It provides examples of some ways DV survivors acquire head injury (ie, being severely shaken, choked, or strangled; hit in the face, neck, or head; or made to do something that resulted in blacking out or having trouble breathing). The card also lists some physical problems (headaches, fatigue, vision changes, dizziness, etc) and cognitive behavioral problems (remembering things, focusing, completing tasks, regulating emotions, feeling motivated, etc) that could be indicative of head injury. On the flip side, there are danger signs indicating immediacy in seeing a doctor (memory loss, slurred speech, repeated vomiting, etc) and instructions on what to tell a doctor. The card also has specific information for survivors who were choked or strangled.	Staff cited widespread use of the <i>CARE Head Injuries</i> education card and reported the card normalized head injury among DV survivors and facilitated conversations about the impact of exposure on functioning. The card was described by DV staff and administrators as concise, understandable, and very helpful. Advocates not only are using this tool within advocacy practice but also have shared and recommend its use in other settings: criminal justice (eg, police, courts, jail), health (eg, EDs, drug or mental health treatment), and service (eg, children and job and family services, schools).

(continues)

**TABLE 1** CARE tools: Description and findings regarding overall impression  
(Continued)

Tool	Languages available	Description	Findings: Overall impressions
<i>Invisible Injuries</i>	English, Spanish	The <i>Invisible Injuries</i> booklet is a 16-page interactive journal that provides basic definitions and facts about head injury, causes (having been hit in the head or face, choked or strangled, shaken severely, etc), what to expect after a head injury (blackout, feel dazed and confused, dizziness, headaches, etc), and warning signs that a survivor may have experienced a head injury (pupil dilation, memory loss, slurred speech, repeated vomiting, trouble swallowing, etc). The booklet separates signs of head injury into physical, emotional, and cognitive signs, with a space for survivors to log their symptom duration, dates and times, severity, and other notes. There is also a safety planning sheet where survivors can document where they feel safe and how they can protect themselves and their children. The second half of the booklet focuses on ways to help cope with head injury, organized by problems survivors might experience. For example, for those facing problems with noise, light, or sound, the booklet suggests using earplugs or sunglasses; seeing an eye doctor for new glasses; or making text bigger on their personal devices. The last part of the <i>Invisible Injuries</i> booklet provides space for survivors to make monthly goals, log dates to remember, write important contacts, and make a daily to-do list, reminders list, and self-care goals.	The <i>Invisible Injuries</i> booklet was used by advocates as a tool to facilitate one-on-one conversations with survivors, when supporting callers on helplines, in support groups, as a self-reference tool for survivors, and when supporting survivors as they are interacting with other systems of care. Staff found the book helpful in giving them direct words to describe the impact of head injury and strangulation on survivor functioning and on providing tips for accommodations and ways support persons can be helpful to survivors living with head injuries.

Abbreviations: DV, domestic violence; ED, emergency department.

complete the self-administered, online survey in a private room at each agency site. Participants consented, online, before beginning. Those who did not consent could stay in the room for the hour to avoid undue coercion to participate without disclosure to their employer. Participants received a \$25 gift card for survey completion provided directly by IRB research staff.

### Instrumentation

The Qualtrics survey contained both process and outcome evaluation close-ended questions designed to elicit quantitative data related to staff knowledge, attitudes, and confidence in delivering services to survivors impacted by mental health struggles, brain injury disability, and comorbid issues. For the CARE tool

process evaluation, questions were asked related to training on and use of the CARE tools. Survey questions related to the CARE tools can be found in Supplemental Digital Content Appendix A (available at: <http://links.lww.com/JHTR/A485>).

### Analysis

To handle missing data, multiple imputation analysis by chained equations was used to generate 5 imputed data sets upon which summary statistics were generated (see Supplemental Digital Content Table 1, available at: <http://links.lww.com/JHTR/A490>). Statistical analyses were conducted in R version 3.5.2 (Vienna, Austria) and SAS version 9.4 (SAS institute, Cary, North Carolina).

## Focus groups

### Participants

All agency administrators, staff, and volunteers of the 5 CARE DVSOs at the time of predetermined focus groups were invited by OSU research staff to participate. Work schedules were accommodated to enroll all volunteers. Staff and administrator focus groups were held separately at each organization to encourage candid dialogue and diminish desirability bias. The administration focus groups comprised the agency director and/or managers who oversee staff. The staff focus groups included a cross section of case managers and resident, court-based, and/or community advocates who work directly with DV survivors and their children. At least one volunteer/intern and a mixture of both part-time and full-time staff members, covering all shifts throughout the day/night/week/weekend, participated in the focus groups. IRB-approved OSU research staff consented participants, individually, immediately preceding focus groups, and moderated focus groups, which were audio recorded. All focus group participants were compensated with their hourly wage for participating, while volunteers and interns at the organization received a \$25 gift card. Focus groups lasted about 2 hours, and participants were provided refreshments.

### Facilitator training

The study principal investigator (Nemeth) provided a 2-hour focus group facilitator training to all IRB-approved research study staff members covering topics including consent, confidentiality, facilitator basics, asking lead and follow-up questions using the interview guide, and ensuring equitable voice from a variety of participants.

### Instrumentation

Participants answered questions regarding the following: (1) how CARE impacted DVSO advocacy practice; (2) use of CARE and CARE tools; and (3) working with clients with brain injury, mental health struggles, including substance use, using CARE. Focus group interview guide questions pertaining to the use of CARE tools, specifically, can be found in Supplemental Digital Content Appendix B (available at: <http://links.lww.com/JHTR/A486>).

### Analysis

Focus groups were professionally transcribed and entered into Atlas.ti to facilitate systematic coding and analytic comparisons. An iterative approach to team-based codebook development and coding, endorsed by the Centers for Disease Control and Prevention, was

used to analyze qualitative data.<sup>34</sup> In stage 1, structural codes were applied to the text. Here, 2 members of the research team individually read transcripts and identified stories representing agency's use of CARE and the CARE tools, henceforth referred to as cases (stage 1 interrater reliability: Cohen's  $\kappa = 0.903$ ). In stage 2, in-depth codes were created using emergent themes from the structurally coded text to answer process evaluation questions. A consensus method was used to devise a list of codes related to the use and impact of CARE and the CARE tools on advocacy, survivors, organizations, and communities. Two research team members applied codes to identified cases. The research team then met to further refine and group cases by emerging themes (stage 2 interrater reliability: Cohen's  $\kappa = 0.810$ ). At both stages, a third team member adjudicated and resolved coding disagreements. To minimize bias, ODVN staff members were not present at focus groups, nor involved with analysis, and only aggregated data and findings were shared with CARE DVSOs.

## RESULTS

### Online survey sample

In total, 60 staff members participated in the quantitative survey in April-June 2019; sample characteristics are presented in Table 2. All were female and most were non-Hispanic (91.7%) White (88.0%) with a mean age of 38 years. Nearly all were paid employees (97%), and more than half worked at the agency full-time (62%) during the day (63%). Of the 58 staff members who participated in the online survey and disclosed their names, 65.5% ( $n = 38$ ) also participated in focus groups.

### Findings from the online survey: Training and use of CARE tools

The proportion of staff trained to use the CARE tools, along with their frequency of the use in advocacy practice, is reported in Table 3. About two-thirds of staff members reported receiving training on how to use each CARE tool: 61% on the *Just Breathe* booklet, 67% on the *Head Injury* education card, and 65% on the *Invisible Injuries* booklet. There was frequent use of the CARE tools at the DVSO implementing CARE. Seventy-eight percent of advocates reported using the *Just Breathe* booklet, 75% the *Head Injury* education card, and 71% the *Invisible Injuries* booklet with survivors they talk to.

### Focus group sample

In total, 57 staff members participated in 10 focus groups at the 5 CARE DVSOs in May 2019.

**TABLE 2** *Characteristics of the staff who participated in the online survey*

Online post-CARE staff survey	N = 60
Age, mean (SE), y	38.48 (1.84)
Ethnicity, %	
Non-Hispanic	91.67
Hispanic	8.33
Race, %	
White	88.00
Black or African American	3.67
American Indian or Alaskan Native	1.67
Asian or Asian American	0.00
Bi- or multiracial	6.67
Gender, %	
Female	100.00
Paid employee, %	96.67
Time worked for agency, %	
Less than a year	33.33
1-3 y	30.33
3-5 y	12.33
5-10 y	13.33
>10 y	10.67
Hours normally worked, %	
Full-time	61.67
Part-time	36.33
As needed	2.00
When normally work, %	
Daytime	63.33
Evening	15.00
Overnight	9.67
Weekends	12.00
Highest level of education, %	
High school diploma/GED	8.33
Some college	15.33
Associate's degree	28.33
Bachelor's degree	33.00
Graduate or professional degree	15.00

**TABLE 3** *Proportion of staff trained to use CARE tools and frequency of use*

Post-CARE staff	N = 60
<b>Just Breathe: A Guide to Wellness booklet</b>	
Received training to use	
No	39.33
Yes	60.67
Frequency of use	
I use it with all survivors I talk to	17.67
I use it with most survivors I talk to	24.67
I use it with some survivors I talk to	26.67
I use it with a few survivors I talk to	8.67
I do not use it with survivors I talk to	22.33
<b>Has Your Head Been Hurt education card (aka Head Injuries education card)</b>	
Received training to use	
No	32.67
Yes	67.33
Frequency of use	
I use it with all survivors I talk to	22.67
I use it with most survivors I talk to	21.33
I use it with some survivors I talk to	22.33
I use it with a few survivors I talk to	8.67
I do not use it with survivors I talk to	25.00
<b>Invisible Injuries booklet</b>	
Received training to use	
No	34.67
Yes	65.33
Frequency of use	
I use it with all survivors I talk to	24.67
I use it with most survivors I talk to	15.00
I use it with some survivors I talk to	17.33
I use it with a few survivors I talk to	14.33
I do not use it with survivors I talk to	28.67

### Focus group findings: How CARE tools are being used by DVSO providers

#### Overall impression of the CARE tools

Overall, DVSO providers found the CARE tools to be accessible and appropriate for use in advocacy practice. Many were thankful to have access to professionally printed materials, rather than photocopies, which when given away conveyed to the survivor that they were valuable and worthy and legitimized the information contained within. Impressions of each CARE tool are presented in Table 1.

#### Primary finding

The use of CARE tools has been an integral part of the way in which DVSO providers have implemented the CARE framework.

The process evaluation has revealed that DVSO advocates are using CARE tools to **C**onnect with self, survivors, and other systems; and to **A**cknowledge that

not only are head trauma and mental health struggles common among survivors but also ongoing education and self-care are necessary for advocates. Through this acknowledgment, advocates have been able to provide a more holistic **R**esponse through accommodation within DVSOs and referral to other systems of response and care, often by directly using the CARE tools.

#### How advocates were directly impacted by CARE Tools

Findings and textual support regarding the primary ways advocates are personally using and have been impacted by the CARE tools are presented in Supplemental Digital Content Table 2 (available at: <http://links.lww.com/JHTR/A487>) and include the following:

1. Advocates used the *Head Injury* education card and the *Invisible Injuries* booklet as brain injury self-education guides: CARE tools were a **C**onnection to the topics of brain injury, strangulation, and mental health and how to address these issues with DV survivors. One

advocate shared, “It’s easier to talk . . . now that I . . . understand . . . her symptoms from brain injury are normal.”

2. **A**cknowledging that secondary trauma is common among providers, administrators encouraged the use of the *Just Breathe* booklet for self-care and to prevent staff burnout. One administrator shared,

I’ve used this for myself. And I’ve encouraged staff . . . to use this [for] self-care . . . because there is such high turnover and . . . burnout. Even though I’m a capable, educated woman . . . [Holding up page from *Just Breathe* and *said with emphasis.*] I need to see *this—I am enough*. I just love the simple messages.

3. Finally, CARE tools helped advocates integrate knowledge about brain injury, mental health, substance use, and trauma, thereby allowing providers to **R**espond holistically, offer accommodations, and **r**etain survivors in services. One advocate stated, “When I start to see things on these lists (*referencing the CARE tools*) . . . I consider head injury . . . I have more options in my head of what might be going on. My view is not so narrow anymore.”

#### *How advocates used CARE tools with DV survivors within DVSOs*

Findings and textual support regarding the primary ways advocates are using CARE tools in advocacy practice with survivors through DVSOs are presented in Supplemental Digital Content Table 3 (available at: <http://links.lww.com/JHTR/A488>). DVSO providers are using the CARE tools to:

1. **C**onnect with survivors regarding mental health and brain injury. One staff shared:

I had a yearlong relationship with the survivor, but she hadn’t mentioned being hit in the head . . . I was able to . . . take the tools and . . . say, “Hey, you’ve mentioned feeling . . . confused or unable to sleep or just anxious and not really sure why. Let’s talk a little bit about it . . .” And then she felt more relief when she realized, “maybe it’s not me, maybe it’s still a result of a wound healing.” That opened up the dialogue . . .

2. **A**cknowledge that brain injury and mental health struggles are common among DV survivors—thereby normalizing survivors’ experiences, validating survivors’ feelings, and helping survivors feel less alone. The *Head Injury* education card and the *Invisible Injuries* booklet helped survivors “feel like they aren’t losing their minds,” as one advocate noted, but rather experiencing symptoms of unaddressed brain injury inflicted by their abuser. One staff shared, “I’ve worked with one lady . . . who had the ringing [in] her ears and

vertigo . . . she would’ve never linked that to . . . strangulation if she wouldn’t have had that information.”

3. **R**espond to help survivors with executive dysregulation, organization, and tasks of daily living.

#### *How CARE tools have been used beyond DVSOs*

Findings and textual support regarding the primary ways CARE tools have impacted survivors’ ability to connect to other system services are presented in Supplemental Digital Content Table 4 (available at: <http://links.lww.com/JHTR/A488>) and include the following:

1. The *Head Injury* education card is being used by criminal justice and health professionals in other service systems to **C**onnect with DV survivors about brain injury, even when DVSO providers are not present. One advocate noted: “We have more strangulation cases being charged. Because the police officers . . . they have this tool . . . they’re using with the victim on the scene.”
2. The CARE tools empowered survivors to **A**cknowledge the impact that brain injury from DV has had on their life and advocate for their needs—in social, health, and criminal justice settings. An administrator relayed how critical the *Head Injury* education card was for one survivor during a victim impact statement at sentencing:

I had a client whose . . . trauma was . . . huge, and she was under enormous pressure . . . [at] . . . pre-trial . . . But, she was determined to testify. She was a person who really needed information . . . So I gave her [the *Head Injury* education card] with a very quick explanation, knowing that might be something she could use on her own time . . . At the sentencing . . . she told the judge she had anoxia and explained [what that was].

3. The *Head Injury* education card facilitated healthcare workers’ ability to **R**espond to brain injury from DV in healthcare settings and helped advocates refer survivors to specialty care for brain injury treatment. One administrator noted, “The doctor in the ER called me and said he was very impressed with it because he . . . didn’t think he would look for those signs had she not taken that card with her.”

Although CARE was designed for use within DVSOs and advocacy practice, advocates believed the tools have wider applicability.

#### **CONCLUSION**

In addition to our needs assessment findings leading to the development of CARE and the CARE tools,<sup>2,31,32</sup> others have noted that providers serving DV survivors, and survivors themselves, may not know the signs and

[www.headtraumarehab.com](http://www.headtraumarehab.com)

symptoms of brain injury caused by head trauma or strangulation or know to inquire about brain injury's impact on health, service access, and functioning of survivors. Limited access to training and tools to address TBI and strangulation is one cause of the lack of awareness.<sup>10,26,35</sup>

Before CARE and the development of the CARE tools, few tools were available to educate DV survivors and facilitate dialogue between advocates and survivors about brain injury and mental health. According to the June 2020 US Government Accountability Office's (GAO's) Report to the Congress on DV and brain injury, there are only "12 nonfederal initiatives that provide education, screen for, or treat brain injuries resulting from intimate partner violence," one of which was CARE. All 12 initiatives provide education; 6, including CARE, use screening tools; and 2 include treatment components. Three of the 6 initiatives that provide both education and screening use the HELPS Brain Injury Screening Tool to train advocates and public service workers who regularly interact with DV survivors. One initiative in the GAO Report educated police officers on TBI and provided them a tool to measure near point of convergence, a physiological indicator of concussion. The other uniquely developed tool mentioned was a concussion screening tool for shelter staff or legal advocates to use with DV survivors.<sup>36</sup> However, both HELPS and the other 2 tools are intended to be used by trained professionals, not survivors themselves, and are geared toward TBI rather than HAI caused by strangulation.

Across the literature, many researchers have recommended the development of educational tools to raise awareness of the connection between brain injury, mental health, and DV. Some researchers have responded to this need. Canadian researchers developed an online tool kit on the intersection of DV and TBI consisting of a series of articles catered to either frontline workers or survivors and their friends and families.<sup>37</sup> The Danger Assessment (DA) and the Danger Assessment for Immigrant (DA-I) women tools are DV risk assessments used between survivors and advocates to predict violence, educate, and intervene. These tools have recently been modified to include multiple strangulation and loss of consciousness due to strangulation.<sup>38</sup> It is our understanding that while the

screening and education tools mentioned are certainly useful in getting DV survivors the help they need, CARE tools are the first to address both TBI and HAI, resultant from strangulation and other violence that impedes breathing, and to be readily available and accessible for both survivor and advocate usage.

Despite this, our study is not without limitations. Although the CARE tools show potential for use outside of traditional DVSO advocacy practice, CARE has only been evaluated at the 5 DVSOs that partnered in its development. Therefore, further evaluation is needed to understand the applicability of the use of CARE tools in other DV advocacy settings, with a larger sample, and in other systems of care currently using the CARE tools.

CARE tools are being used in DV shelters and agencies to improve advocacy practices—to make genuine connections with survivors; to acknowledge that brain injury from both blunt force head trauma and strangulation, and resultant symptoms, along with mental health struggles, are prevalent among survivors seeking advocacy services; and to respond to survivors' needs by using the tools to educate, accommodate, and refer survivors. In addition to the use of the CARE tools with survivors, DVSO providers have found the CARE tools helpful as self-education guides to provide a more comprehensive view of behaviors survivors may present to services with and as self-care tools. Finally, both criminal justice and healthcare providers requested direct access to the *Head Injury* education card, in particular, to use with survivors directly—and have commented on how important this tool has been for their identification of brain injury among DV survivors seeking their services. CARE tools were designed for lay use to meet the needs of both survivors and advocates who ally with them and are free for download at the Center on Partner Inflicted Brain Injury website: <https://www.odvn.org/brain-injury>, a new program of ODVN. Despite this, there is a need to recognize brain injury from DV as a public health concern and for DVSOs to be intentionally trained in the use of the CARE framework and tools by technical assistance service providers who understand the intersection of DV, trauma, mental health, and brain injury. More widespread use of these tools by advocates has the potential to improve services for DV survivors and address what have historically been invisible injuries in the population.

## REFERENCES

1. Sheridan DJ, Nash KR. Acute injury patterns of intimate partner violence victims. *Trauma Violence Abuse*. 2007;8(3):281–289. doi:10.1177/1524838007303504
2. Nemeth JM, Mengo C, Kulow E, Brown A, Ramirez R. Provider perceptions and domestic violence (DV) survivor experiences of traumatic and anoxic-hypoxic brain injury: implications for DV advocacy service provision. *J Aggress Maltreat Trauma*. 2019;28(6):744–763. doi:10.1080/10926771.2019.1591562
3. Wilbur L, Higley M, Hatfield J, et al. Survey results of women who have been strangled while in an abusive relationship. *J Emerg Med*. 2001;21(3):297–302. doi:10.1016/s0736-4679(01)00398-5
4. Corrigan JD, Wolfe M, Mysiw WJ, Jackson RD, Bogner JA. Early

- identification of mild traumatic brain injury in female victims of domestic violence. *Am J Obstet Gynecol.* 2003;188(5):S71–S76. doi:10.1067/mob.2003.404
5. Ayton D, Pritchard E, Tsindos T. Acquired brain injury in the context of family violence: a systematic scoping review of incidence, prevalence, and contributing factors. *Trauma Violence Abuse.* 2021; 22(1):3–17. doi:10.1177/1524838018821951
  6. Baxter K, Hellewell SC. Traumatic brain injury within domestic relationships: complications, consequences and contributing factors. *J Aggress Maltreat Trauma.* 2019;28(6):660–676. doi:10.1080/10926771.2019.1602089
  7. Bichard H, Byrne C, Saville CWN, Coetzer R. The neuropsychological outcomes of non-fatal strangulation in domestic and sexual violence: a systematic review. *Neuropsychol Rehabil.* Published online January 12, 2021. doi:10.1080/09602011.2020.1868537
  8. Campbell JC, Anderson JC, McFadgion A, et al. The effects of intimate partner violence and probable traumatic brain injury on central nervous system symptoms. *J Womens Health (Larchmt).* 2018;27(6):761–767. doi:10.1089/jwh.2016.6311
  9. Gagnon KL, DePrince AP. Head injury screening and intimate partner violence: a brief report. *J Trauma Dissociation.* 2017;18(4): 635–644. doi:10.1080/15299732.2016.1252001
  10. Haag HL, Sokoloff S, MacGregor N, Broekstra S, Cullen N, Colantonio A. Battered and brain injured: assessing knowledge of traumatic brain injury among intimate partner violence service providers. *J Womens Health (Larchmt).* 2019;28(7):990–996. doi: 10.1089/jwh.2018.7299
  11. Hunnicutt G, Murray CE, Lundgren K, Crowe A, Olson L. Exploring correlates of probable traumatic brain injury among intimate partner violence survivors. *J Aggress Maltreat Trauma.* 2019;28(6): 677–694. doi:10.1080/10926771.2019.1587656
  12. Iverson KM, Dardis CM, Grillo AR, Galovski TE, Pogoda TK. Associations between traumatic brain injury from intimate partner violence and future psychosocial health risks in women. *Compr Psychiatry.* 2019;92:13–21. doi:10.1016/j.comppsy.2019. 05.001
  13. Lifshitz J, Grabtree-Nelson S, Kozlowski DA. Traumatic brain injury in victims of domestic violence. *J Aggress Maltreat Trauma.* 2019;28(6):655–659. doi:10.1080/10926771.2019.1644693
  14. Liu LY, Bush WS, Koyuturk M, Karakurt G. Interplay between traumatic brain injury and intimate partner violence: data driven analysis utilizing electronic health records. *BMC Womens Health.* 2020;20(1):269. doi:10.1186/s12905-020-01104-4
  15. Maldonado-Rodriguez N, Crocker CV, Taylor E, et al. Characterization of cognitive-motor function in women who have experienced intimate partner violence-related brain injury. *J Neurotrauma.* Published online June 15, 2021. doi:10.1089/ neu.2021.0042
  16. Monahan K. Intimate partner violence, traumatic brain injury, and social work: moving forward. *Soc Work.* 2018;63(2):179–181. doi:10.1093/sw/swy005
  17. Monahan K. Intimate partner violence (IPV) and neurological outcomes: a review for practitioners. *J Aggress Maltreat Trauma.* 2019;28(7):807–825. doi:10.1080/10926771.2019. 1628154
  18. Monahan K, Bannon S, Dams-O'Connor K. Nonfatal strangulation (NFS) and intimate partner violence: a brief overview. *J Fam Violence.* Published online October 13, 2020. doi:10.1007/s10896- 020-00208-7
  19. Patch M, Anderson JC, Campbell JC. Injuries of women surviving intimate partner strangulation and subsequent emergency health care seeking: an integrative evidence review. *J Emerg Nurs.* 2018; 44(4):384–393. doi:10.1016/j.jen.2017.12.001
  20. Pritchard AJ, Reckdenwald A, Nordham C. Nonfatal strangulation as part of domestic violence: a review of research. *Trauma Violence Abuse.* 2017;18(4):407–424. doi:10.1177/1524838015622439
  21. Pritchard E, Tsindos T, Ayton D. Practitioner perspectives on the nexus between acquired brain injury and family violence. *Health Soc Care Community.* 2019;27(5):1283–1294. doi:10.1111/hsc.12770
  22. Rajaram SS, Reisher P, Garlinghouse M, et al. Intimate partner violence and brain injury screening. *Violence Against Women.* 2021; 27(10):1548–1565. doi:10.1177/1077801220947164
  23. Ralston B, Rable J, Larson T, Handmaker H, Lifshitz J. Forensic nursing examination to screen for traumatic brain injury following intimate partner violence. *J Aggress Maltreat Trauma.* 2019;28(6): 732–743. doi:10.1080/10926771.2019.1637988
  24. Smirl JD, Jones KE, Copeland P, Khatra O, Taylor EH, Van Donkelaar P. Characterizing symptoms of traumatic brain injury in survivors of intimate partner violence. *Brain Inj.* 2019;33(12): 1529–1538. doi:10.1080/02699052.2019.1658129
  25. St Ivany A, Schminkey D. Rethinking traumatic brain injury from intimate partner violence: a theoretical model of the cycle of transmission. *J Aggress Maltreat Trauma.* 2019;28(7):785–806. doi:10.1080/10926771.2019.1632400
  26. St Ivany A, Schminkey DL, Munro-Kramer ML. Acquired brain injuries and intimate partner violence: a situational analysis of help seeking barriers in rural northern New England. *Glob Qual Nurs Res.* 2021;8:1–11. doi:10.1177/23333936211008163
  27. Valera E, Campbell J, Gill J, Iverson KM. Correlates of brain injuries in women subjected to intimate partner violence: identifying the dangers and raising awareness. *J Aggress Maltreat Trauma.* 2019; 28(6):695–713. doi:10.1080/10926771.2019.1581864
  28. Valera E, Kucyi A. Brain injury in women experiencing intimate partner-violence: neural mechanistic evidence of an “invisible” trauma. *Brain Imaging Behav.* 2017;11(6):1664–1677. doi:10.1007/s11682-016-9643-1
  29. Valera EM. Increasing our understanding of an overlooked public health epidemic: traumatic brain injuries in women subjected to intimate partner violence. *J Womens Health (Larchmt).* 2018;27(6): 735–736. doi:10.1089/jwh.2017.6838
  30. Valera EM, Cao A, Pasternak O, et al. White matter correlates of mild traumatic brain injuries in women subjected to intimate-partner violence: a preliminary study. *J Neurotrauma.* 2019;36(5): 661–668. doi:10.1089/neu.2018.5734
  31. Mengo C, Beaujolais B, Kulow E, Ramirez R, Brown A, Nemeth J. Knowledge and perspectives of domestic violence service providers about survivors with mental health disability. *J Fam Violence.* 2020;35(2):181–190.
  32. Kulow E, Ramirez R. *Working With Brain Injuries and Mental Health in Domestic Violence Programs: Project Evaluation.* Ohio Domestic Violence Network (ODVN); 2020.
  33. Taylor-Powell E, Henert E. *Developing a Logic Model: Teaching and Training Guide.* University of Wisconsin-Extension, Cooperative Extension, Program Development and Evaluation; 2008.
  34. MacQueen K, McLellan E, Kay K, Milstein B. Codebook development for team-based qualitative analysis. *Field Methods.* 1998; 10(2):31–36. doi:10.1177/1525822X980100020301
  35. Crowe A, Murray CE, Mullen PR, Lundgren K, Hunnicutt G, Olson L. Help-seeking behaviors and intimate partner violence-related traumatic brain injury. *Violence Gender.* 2019;6(1):64–71. doi:10.1089/vio.2018.0003
  36. US Government Accountability Office. *Domestic Violence: Improved Data Needed to Identify the Prevalence of Brain Injuries Among Victims.* US GAO; 2020.
  37. Colantonio A. Beyond football: intimate partner violence and concussion/brain injury. *Can Psychol.* 2020;61(2):163–166. doi:10.1037/cap0000208
  38. Messing JT, Campbell J, AbiNader MA, Bolyard R. Accounting for multiple nonfatal strangulation in intimate partner violence risk assessment. *J Interpers Violence.* Published online December 5, 2020. doi:10.1177/0886260520975854