Evidence-Based Training in the Era of Evidence-Based Practice:
Challenges and Opportunities for Training of PTSD Providers

Raymond C. Rosen¹, Josef I. Ruzek,² Bradley E. Karlin^{3,4}

Abstract

There is a pressing global need for trained and competent mental health clinicians to deliver evidence-based psychological therapies to millions of trauma survivors in need of care. Three model, large-scale training programs were initiated a decade ago, one in the United Kingdom (U.K.), and two in the United States (U.S.), to disseminate high-quality, evidence-based psychological care to traumatized children and adults in need of assistance. Milestone contributions to implementation science have been made by each of these training programs, although limitations and challenges remain to be considered. In contrast, culturally adapted and simplified PTSD interventions and therapy training programs have also been developed and tested during the past decade, three of which show particular promise for broader implementation. These simplified but evidence-based interventions have been developed for use by lay counsellors or health technicians with minimal or no prior mental health training. Finally, a growing range of technology-based and technology-assisted training models for PTSD providers have also been developed and disseminated in the past decade. This trend is expected to accelerate as more providers become accustomed to acquiring clinical training in this modality or format, although significant barriers to technology-based training will need to be overcome.

KEYWORDS: Post traumatic stress disorder, evidence-based training, therapist competence, prolonged exposure, cognitive therapy.

“The daunting task is how to train all those therapists who require training – not just those who work in a particular organization, state or country, but worldwide. The current method of training is not suited to this task”

(Fairburn & Wilson, 2013, pp. 517-518)

Posttraumatic stress disorder (PTSD) in military and civilian populations is an urgent mental health priority and global public health concern (Friedman, Keane, & Resick, 2014; Institute of Medicine, 2013). Whereas results from multiple randomized trials have confirmed the benefits of evidence-based psychotherapies for trauma victims and survivors (Benish, Imel, & Wampold, 2008; Bisson, Roberts, Andrew, Cooper, & Lewis, 2013; Ehlers et al., 2010; Foa, Gillihan, & Bryant, 2013; Resick, Monson, Gutner, & Maslej, 2014), large numbers of clinicians continue to lack basic clinical skills, appropriate practice attitudes, or knowledge necessary to deliver standard-of-care treatments for PTSD and related disorders (Institute of Medicine, 2013). Several factors have been proposed to account for the failure of knowledge diffusion and implementation of best practices in this area, including outmoded training models, institutional/systems barriers, lack of support or incentives for change (Beidas & Kendall, 2010; Herschell, Kolko, Baumann, & Davis, 2010; McHugh & Barlow, 2012b; Ruzek & Rosen, 2009).

Despite these barriers, substantial progress has been made in developing large-scale and cross-system training programs necessary to implement EBTs with trauma survivors in large health systems in the U.S., U.K, and other countries. Key to the implementation of these EBTs has been intensive training of mental health clinicians across different disciplines and service sectors. We review three model, large-scale training programs of this type in the U.S. and U.K., considering their main achievements and limitations, and discussing obstacles and challenges to future growth or maintenance. We consider also recent simplified, culturally adapted trauma psychotherapy protocols, which show significant promise for broader implementation in low resource environments with little availability of clinicians with advanced mental health training or other mental health resources. Finally, we consider in depth the rapidly evolving role of

technology-assisted training and Internet support for PTSD providers delivering evidence-based psychotherapies, and comment on the promise and limitations of these innovations. While our primary objective is to provide a “state of the art” review of current EBT training models for PTSD providers, we will consider, where relevant, broader developments in the field of CBT training and implementation related to this topic (see for example, Fairburn & Cooper, 2011; McHugh & Barlow, 2012a; Rakovshik & McManus, 2010; Weisz, Ng, & Bearman, 2013).

Overarching Challenges and Opportunities in EBT Training

Competence and Training Effectiveness: How should PTSD provider competence be defined and measured?

In 2014, an APA consensus conference defined therapist competence in evidence-based trauma psychotherapy (Cook & Newman, 2014). Five core competences were identified, including: (i) the scientific basis of trauma therapy; (ii) evidence-based assessment practices for case evaluation; (iii) evidence-based treatment practices; (iv) professional standards, ethics and responsibilities; (v) system and relationship skills and awareness. Nine additional cross-cutting competences were identified, including understanding of lifecycle and cultural factors and determinants, professional collaboration and necessary role of other professionals in case management, therapist self-assessment and self-care, and other foundational competences (See Figure 1). Unfortunately, these well-defined guidelines from the APA consensus conference did not address the measurement of therapist competency specifically, or the minimal competence or skill level that must be attained before a clinician can be judged to be adequately trained, or that a training program has achieved its goal. Instead, the guidelines define the set of competencies as an “aspirational” guide to training, not certification (Cook & Newman, 2014).

Figure 1 About Here

Competency evaluation is both a theoretical problem and a practical concern for program administrators and training directors. One review noted the challenging problems

that competency assessment may involve for the assessor: “Assessing competency outcomes has been particularly challenging. Outcomes may include both skill in administering the treatment and adherence to the treatment model. Skill in treatment administration can be difficult to operationalize and it is unclear what methods of evaluation (e.g., chart review, clinician, supervisor, or independent observer report) are valid and reliable markers of competency” (McHugh & Barlow, 2012; p. 52). Competency assessment measures include self-assessments by providers of their competency or willingness to deliver the practice or EBT protocol; unfortunately, these are unreliable and may overestimate skill or competency, unlike objective or observable measures, such as independent observer ratings using the Revised Cognitive Therapy Scale (Walfish et al., 2012; Blackburn et al., 2001).

Other assessment methods include standardized patient (SP), or structured role playing assessment (Erby, Roter, & Biesecker, 2011; Fairburn & Cooper, 2011; Ruzek et al., 2014; Swartz & Colliver, 1996; Wallace, 2007), in addition to self-report surveys of practice (Becker, Zayfert, & Anderson, 2004; Rosen et al., 2004; Wilk et al., 2013) or knowledge-based assessments (Cooper et al., 2015; Ruzek et al., 2014). EBT adoption attitudes (Aarons, 2004), and therapist compassion scales or burnout measures (Garcia et al., 2016; Stamm, 2010) also have been used in some studies to assess these additional components of therapist competence or effectiveness (Westbrook, McManus, Clark, & Bennett-Levy, 2012). The validity or relevance of these indirect measures remains to be established.

Role of the Supervisor/Consultant: How necessary is this component of therapist training?

Each of the large-scale training initiatives in evidence-based psychotherapy for PTSD includes a major component of clinical supervision or case consultation. However, the specific functions served vary considerably from one training program to another, including different combinations of case review, active coaching of therapy skills (Ebert, Amaya-Jackson, Markiewicz, Kiesel, & Fairbank, 2012; Foa et al., 2013; Ruzek & Landes, 2014), role playing and script rehearsal (Ebert et al., 2012; McManus, Westbrook, Vazquez-Montes, Fennell, & Kennerley, 2010), problem-solving adherence difficulties (Ruzek & Landes, 2014), clinical decision-making, and professional or ethical considerations (Ebert et al., 2012; Kaysen et al.,

2013; Murray et al., 2014; Stewart et al., 2014). Clinical supervisors sometimes have access to transcripts or session recordings or other sources of patient or session data (Clark, 2012; Ehlers et al., 2013).

Despite these training model variations, it is noteworthy that clinical supervision or consultation is viewed as an essential training ingredient in each of these programs. Equally noteworthy is the variability in EBT supervision models (e.g., “apprenticeship” vs. “consultee” models), modalities of clinical supervision (group vs. individual, case-based vs. non-case based, in-person vs. remote, etc), frequency and duration of supervisory contacts, qualifications and training of supervisors, and arrangements for post-training supervision. *To date, none of these variations have been systematically evaluated, nor is there compelling evidence in support of one supervision model versus another.* A recent study of CBT training for lay therapists in India treating depression and harmful drinking (Singla et al., 2014) showed that peer supervisors could be trained to be as effective as expert clinicians in rating the quality of therapy given by another lay therapist, thus suggesting wider use of peer supervision models as a potential means of improving scalability of clinical supervision (Singla et al., 2014).

Implementation and Scalability of the Training Model

Another broad topic for consideration is the scalability of current therapist training models in evidence-based PTSD treatments. Clinician training models are resource-intensive to varying degrees, requiring access to a committed and adequately trained pool of clinician-experts to conduct didactic training and follow-up consultation or supervision, as needed. Sustainability or scalability can also depend on support and involvement of referral sources and clinic administrators, and, frequently, government, health system or foundation funding to support start-up and maintenance costs of training. Two experimental new approaches to enhancing scalability and implementation of EBT training for providers have been proposed: (1) greater use of internet-based training and/or consultation methods (Rakovshik & McManus, 2010; Ruzek & Landes, 2012); (2) incorporation of transdiagnostic concepts or common therapeutic elements in EBT training (McHugh & Barlow, 2012; Weiss et al, 2015; Institute of Medicine Report, 2015). Despite potential benefits and arguments in favor of these recent

innovations, effectiveness and acceptability of these approaches compared to traditional training methods remains to be demonstrated.

Innovations in PTSD Training Research: Has Evidence-Based Training Come of Age?

A fourth over-arching theme of this review concerns innovation in the way training research is conceptualized and conducted. New approaches to evaluating outcomes of training have employed a mixture of qualitative and quantitative methods, resulting in a broader and more comprehensive evaluation of training outcomes (see for example: Branson, Shafran, & Myles, 2015; Ehlers et al., 2013; Garcia et al., 2016; Hanson et al., 2014; Karlin et al., 2012). Findings from these studies provides broad support for EBT training, although important limitations and gaps in training research have also been identified. In particular, better understanding is needed of the relationship between therapist competence, or defined components of therapist competence, and actual clinical outcomes. The role and functions of clinical supervision have also not been systematically evaluated to date.

Randomized, controlled trials (RCT's) of alternative training methods add a new element of scientific rigor for prospective studies of EBT training in a controlled experimental setting (Rakovshik, McManus, Vazquez-Montes, Muse, & Ougrin, 2016; Rakovshik et al., 2013; Weingardt et al., 2009). Recently, two of the authors (JR, RR) completed an RCT of internet-based training for PTSD providers in the VA (Ruzek et al., 2014). Alternative, internet-based training models (web-based training alone, web-based training and telephone supervision) were evaluated in a randomized training trial along with a waiting list control. Unique features of the online training were the focus on generic or foundational EBT skills (e.g., motivational interviewing, behavioral task assignment, therapy goal setting), objective measurement of competence in each domain using standardized patient (SP) methodology, and random assignment of post-training telephone consultation to one third of the group. Of a total of 168 clinicians randomized to one of the three training conditions, almost 85% completed the training. Results favored the telephone consultation plus web training condition on two of three skills measures. Medium effect sizes (0.50-0.75) were observed for skills improvement in the online plus consultation condition, with more modest effects for the online only condition

(0.40-0.50) (Ruzek et al., 2014). An earlier randomized trial of internet-based CBT training for substance abuse counselors in the VA reported that training which emphasizes flexibility in the application of evidence-based therapy was associated with similar gains in knowledge and skill, but less evidence of occupational stress or burnout, compared to less flexible training (Weingardt et al., 2009).

Registries of patients are increasingly used for assessing patient outcomes in “real world” clinical settings and for conducting comparative effectiveness studies (Dreyer & Garner, 2009; 2010; Rosen et al., 2012). Provider registries may serve a similar function for conducting comparative effectiveness outcomes research in EBT training among clinicians. The two senior authors have been funded by the Department of Defense (Grant #: # W81XWH-14-2-0139) to design and implement a new research registry of clinicians involved in EBT delivery for military and non-military populations with PTSD. This novel clinician registry is being used to evaluate prospectively with a randomized design included, the EBT use patterns and outcomes associated with on-line training of 600 clinicians across major service sectors and settings (Wilkinson et al).

Large-Scale Training in EBTs

In the past decade, three extraordinarily ambitious initiatives in evidence-based psychotherapy training have been developed and implemented across multiple clinical settings, and which provide substantial “real world” outcomes data on EBT training for mental health clinicians managing psychological aspects of trauma. In the U.S., the Veterans Health Administration (VHA) dissemination and training program in evidence-based treatments for mental health disorders (Ruzek, Karlin, & Zeiss, 2012) and National Child Traumatic Stress Network (NCTSN) (Ebert et al., 2012), have been well established for more than a decade. Similarly, the Improving Access to Psychological Therapies (IAPT) (Clark, 2011; Clark, 2012) program for UK clinicians has successfully trained thousands of clinicians providing EBT for PTSD and other serious mental health problems to a broad spectrum of adults and children in the U.K. Major achievements and ongoing challenges for each of these model programs are

considered in detail in our review, and consequence and implications for EBT training generally are considered.

Veterans Health Administration EBT Training Program

In 2005, the U.S. Department of Veterans Affairs (VA) embarked on a major effort to nationally disseminate and implement evidence-based practices (EBTs) throughout the VA health care system. For this initiative, VA focused its training efforts on implementing 2 EBTs targeting PTSD (Prolonged Exposure and Cognitive Processing Therapy) and 14 EBTs focusing on related mental health and behavioral conditions (Karlin & Cross, 2014a; U.S. Department of Veterans Affairs, 2008, 2012). To date, more than 10,000 VA clinicians have received training in one or more evidence-based psychotherapies. PTSD providers represent more than half of all clinical staff who have received EBT training in the VA, including many clinicians assigned to PTSD specialty settings and general mental health clinics.

The VA EBT training model places strong emphasis on individualization and flexibility of EBTs, aiming to optimize patient engagement and improve outcomes. Clinicians are trained to use a case conceptualization model to guide clinicians in choice of EBTs for individual clients (Karlin et al., 2012; Karlin & Cross, 2014a; Ruzek et al., 2012). In practice, the VA EBT training model has two major components, including intensive, 3-4 day training workshops and subsequent case consultation. Workshops include demonstration of clinical procedures, review of videotapes of client interactions, and role-play of problem solving approaches.

Following the initial workshop, VA clinicians are typically assigned to group-based case consultation. While training workshops have been shown to improve knowledge and attitudes towards EBTs, clinical competency according to the training model, depends on ongoing review of practice, and feedback on clinical application of new knowledge and skills. This has been a broader theme in psychotherapy implementation research (Herschell et al., 2010; Stirman et al., 2010) and has been systematically incorporated into the VA training model (Karlin & Cross, 2014a; Ruzek et al., 2012). Case supervision is provided via 60-90 minute telephone consultation sessions, typically in a small group format, over a 4-8 month period, with an expert clinician and several trainees in each group. The goals of the consultation process are: i) to

promote clinical skills mastery, and ii) to facilitate local implementation of EBTs. Much of the initial time in the consultation groups is devoted to review and problem-solving of local implementation issues or treatment barriers. VA clinicians are also required to submit audio recordings of their therapy sessions for review and ongoing case consultation.

Across VA EBT training programs, the rate of successful completion of training has generally been in the 85-90 percent or above range (Karlin et al., 2012; Stewart et al., 2015; Trockel, Karlin, Taylor, & Manber, 2014; Walser, Karlin, Trockel, Mazina, & Barr Taylor, 2013). To assess the impact of training in EBTs on therapists and patients, and to promote continuous quality improvement, summative and formative program evaluation procedures were incorporated into each of the separate EBT training programs (Eftekhar et al., 2013; Karlin et al., 2012; Stewart et al., 2015; Trockel, Karlin, Taylor, Brown, & Manber, 2015; Walser et al., 2013). Although EBTs for PTSD have been shown to be efficacious in controlled research settings, there have been open questions as to whether these treatments would be as effective with “real world” patients who often present with complex medical and mental health comorbidities and social or occupational adjustment problems. Additionally, there is little empirical evidence that clinicians with large workloads and professional commitments could be trained to deliver EBTs with adequate competency and fidelity.

Overall, the bulk of evidence supports the conclusion that EBT training for PTSD providers in VA has resulted in substantial, consistent improvements in therapist competencies across relevant skills domains, along with improved clinical outcomes (Eftekhar et al., 2013; Karlin et al., 2012; Stewart et al., 2015; Stewart et al., 2014; Trockel et al., 2015; Trockel et al., 2014; Walser et al., 2013). Favorable changes have been reported in clinician attitudes towards EBT's, and self-reported EBT adoption following training (Karlin et al., 2012; Karlin et al., 2013; Ruzek et al., 2014, 2016). System-wide evaluations support clinically meaningful improvements in symptoms of PTSD or depression in patients who receive PE or CPT from EBT-trained clinicians. One study showed an average reduction of approximately 20 points on the PTSD Checklist (PCL) in a sample of 381 PE and 93 CPT treatment completers (Karlin et al., 2010), a greater reduction than that observed in usual VA PTSD care (Kearney, McDermott, Malte, Martinez, & Simpson, 2013; McFall et al., 2010; Ulmer, Edinger, & Calhoun, 2011). Eftekhar et al. (2013) reported

post-training outcomes in 1,931 male and female Veterans treated with PE by trained clinicians. Large changes of approximately 15-18 points in PCL scores of patients were recorded when treated by these VA clinicians with advanced EBT training. Depression outcomes were also impressive in this study; approximately half of those receiving PE had improvement of 1/3 or more in Beck Depression Inventory (BDI) scores (Eftekhari et al., 2013).

In a similar VA program evaluation of 374 Veterans who completed Cognitive Processing Therapy (CPT) for PTSD, PCL scores decreased by almost 20 points on average (Chard, Ricksecker, Healy, Karlin, & Resick, 2012). BDI scores also showed clinically significant reductions following CPT treatment. Other studies have reported that Veterans who receive treatment with multiple interventions for PTSD and other trauma-related problems showed significant reductions in suicidal ideation, in addition to other benefits of treatment (Brown et al., 2016; Trockel et al., 2015; Walser et al., 2015). At the system level, VA researchers have documented mental health service and other cost offsets in the range of 30-40 percent associated with the delivery of EBTs for PTSD by trained therapists (Meyers et al., 2013; Tuerk et al., 2013).

In summary, epochal changes have occurred in both the practice philosophy and mental health care delivery system of the VA in the past decade. An early survey of practice patterns in the VA immediately prior to the current initiative (Rosen et al., 2004), found that the majority of clinicians were relatively uninformed about evidence-based psychotherapy for PTSD, and rarely used Prolonged Exposure or other CBT-based therapies. In contrast, most VA clinicians nowadays are well versed in EBTs for PTSD, and have incorporated these into routine clinical practice. VA-wide monitoring systems have recently been introduced to track the continued uptake and implementation of EBTs and to incentivize clinicians to apply these skills in routine care of Veterans with PTSD.

A key challenge however for all large-scale EBT training programs, including the current VA initiative, is sustainability of the program. The high costs of expert clinician-trainers and the design costs and implementation of system evaluation and process improvement systems are considerable. The consultation component is an essential component of to the current VA training model, although it requires very costly commitment of time and resources on a system-

wide basis. Alternatives such as on-line training or blended models of on-line training plus live supervision are being actively investigated (Ruzek et al., 2014).

An additional challenge is the long-term maintenance of provider skills, which requires ongoing monitoring of therapist practices to ensure continued fidelity to protocols and competent delivery of psychological care, as opposed to “therapist drift” (Waller & Turner, 2016). Alternative mechanisms for tracking clinical practices are being tested currently in the VA, including the use of novel progress note templates to capture within-session practice data from clinicians. The documentation templates allow for tracking the delivery of specific EBTs, as well as other patient outcomes, and is intended also to serve as a heuristic tool for users to become familiar with and eventually implement a recommended new practice. Monitoring systems of this type are being widely implemented in the VA. For increasing sustainability of practice changes, establishment of local communities of practice and learning collaboratives have also been shown to be effective in fostering EBT use and adherence in clinicians (Ebert et al., 2014). Additionally, Centers of Excellence and Quality Enhancement Research Initiative Centers have been established throughout the VA in order to further enhance dissemination and implementation of EBTs for PTSD care.

The National Child Traumatic Stress Network (NCTSN) Learning Collaborative Model.

A national network of evidence-based treatment centers for children and adolescents with traumatic stress or PTSD was set in motion by special legislation of the US Congress in 2000, and funded subsequently by the Substance Abuse and Mental Health Services Administration (SAMHSA). The NCTSN was designed as a large-scale collaboration between academia and community-based organizations to bring evidence-based treatment to children or adolescents with trauma histories and PTSD (Cohen, Mannarino, & Deblinger, 2006; Ebert et al., 2012). A specific CBT treatment protocol, Trauma-Focused Cognitive Behavioral Therapy (TF-CBT)(Cohen et al., 2006) was adopted for dissemination and training across the network, along with other CBT-based group treatments for traumatized children or adolescents (Cloitre, Koenen, & Cohen, 2006; Ford & Russo, 2006). A comprehensive training curriculum (NCTSN Core Curriculum on Childhood Trauma) was developed and implemented in approximately 60 network sites

throughout the US. The NCTSN therapist training model includes a year of intensive clinical and didactic training, with highly structured and organized workshop and supervisory components. The goal is to “promote clinical competence in the delivery of child trauma EBT’s” (Ebert et al., 2012).

The NCTSN program has four defining features: (i) a systemic approach and coordinated, multi-level methodology for implementation, which was developed from the outset to involve policy makers, supervisory staff and clinic coordinators. This has resulted in relatively high rates of agency adoption and continuation of 60+ network centers to date; (ii) a heavy emphasis on the role of clinical supervision in therapist training. Trainees are coached actively and frequently in the implementation of the CBT practices in their day-to-day work with traumatized children or adults. Supervisors also participate actively in a monthly consultant supervisory group, a “train the trainer” function for ongoing improvement of skills for consultants (Ebert et al., 2012). (iii) An active website, which is used by tens of thousands of clinicians globally and is a highly valued resource for worldwide dissemination of evidence-based psychotherapy for traumatized children and adolescents. This is one of the major achievements of the program. (iv) Long-term sustainability is another defining feature. Network centers are engaged actively in dissemination of the model to neighboring health centers and clinicians in the community. (Ebert et al., 2012).

To date, NCTSN therapist training programs have been implemented in approximately 60 service centers throughout the U.S. and more than 300,000 traumatized children and adolescents received NCTSN therapy between 2002 and 2009. Several hundred thousand additional cases have been treated since. In addition to training of direct service providers and therapists in each network site, the NCTSN has an active on-line training program and dedicated website that registers approximately 10,000 trainees per year. The program has successfully disseminated CBT-based treatments for traumatized youth to more than a million providers worldwide (NCTSN Website).

Unfortunately, there are few published outcome data from this widely-disseminated program despite the strong emphasis on evaluation of outcomes. Fidelity ratings showed strong support for the training model in one unpublished study, which also predicted outcomes in a

pilot sample (Ebert et al., 2012). On the other hand, the program has been associated with a relatively high drop-out rate for children and adolescents receiving NCTSN treatment (Murphy et al., 2014). In this study of 928 cases followed at 56 NCTSN sites between 2004 and 2010, the overall drop out or non-completion rate was 56.7% (Murphy et al., 2014). The main predictor of treatment discontinuation was the presence of PTSD-related avoidance symptoms, which are common in many of the children and adolescents receiving treatment. Therapist background and the type of abuse (i.e., physical abuse, sexual abuse) were not predictive of treatment discontinuation.

The NCTSM model and training curriculum has been promoted as a major achievement in large-scale dissemination and training of clinicians in EBT's for traumatized children and adolescents. Unfortunately, lack of systematic outcome data on the level of clinical skill or competency achieved as a result of the training, or other markers of training effectiveness, limit generalizations about scalability or cost-effectiveness. Moreover, the reliance on intensive, in-person, clinical supervision is a major limitation for sustainability or scalability of this approach.

The “Improving Access to Psychological Treatment” (IAPT) Initiative

The Improving Access to Psychological Treatment (IAPT) initiative was launched in the U.K. in 2007 (Clark, 2011; Clark, 2012; Rachman & Wilson, 2008). Based on National Institute for Clinical Excellence (NICE) guidelines for treatment of depression and anxiety, which emphasized benefits of evidence-based psychological treatments, large-scale funding was provided by the U.K. government to establish a national network of IAPT services. The program was justified on the basis of both economic (Layard, Clark, Knapp, & Mayraz, 2007) and health benefit arguments (Clark et al., 2009). A stepped care model of intervention was developed for the IAPT program, which included progression from “low intensity” interventions delivered by a Psychological Well-Being Practitioner (PWP), such as support and guidance in the use of a self-help program, to “high-intensity” EBT's for PTSD or major depression, delivered by highly trained CBT therapists (Clark, 2012).

Initial successes of the program included introduction of IAPT services in 95% of NHS primary care centers in England, intensive training of 3600 therapists in the first three years, and services provided to about 300,000 patients per year in the first three years, with plans to increase this number to approximately 900,000 per year (Clark, 2011).

Branson, Shafran, and Myles (2015) reported training outcomes and CBT competency assessments in 43 therapists at an IAPT center in Reading, England. In addition to providing data on therapist competence, the authors reported, in one of the first studies of this type, patient outcome data on 1247 patients receiving care from these therapists during the same study period. CBT competency before and after training was assessed by therapy session ratings with the Cognitive Therapy Scale Revised (CTS-R) (Blackburn et al., 2001) and patient treatment outcomes by validated questionnaires, including the PHQ-9 (Kroenke, Spitzer & Williams, 2001) and the GAD-7 (Spitzer, Kroenke, Williams, & Lowe, 2006). Despite comprehensive training of clinicians, including up to 300 hours of curriculum time and 35 hours of clinical supervision, clinician competence was only loosely associated with patient outcomes in this study. Trends were observed towards deterioration in symptoms and less sustained progress in patients receiving treatment from less competent therapists. For the bulk of therapists, there was no relationship.

How effective are IAPT clinicians in treating U.K. veterans with symptoms of PTSD? Giebel, Clarkson, & Challis (2014) studied UK veterans seeking treatment in an IAPT center in the northwest of England between 2011-2013. Among 395 veterans who participated actively in the IAPT treatment, clinically significant changes in anxiety and depression and other positive clinical outcomes were observed. Unfortunately, training and therapist variables were not systematically monitored or other outcomes reported in this study.

While questions remain about long-term outcomes and sustainability of the IAPT program, the U.K. initiative has achieved major successes in important areas of implementation: a) increased access to high quality, evidence-based mental health care for more than a million patients, with clinically meaningful improvement in symptoms in approximately 2/3 of those treated, and full recovery for about 45% (Clark, 2011; 2012) b) intensive training and certification of a large cohort of approximately 5000 clinicians in

evidence-based therapies for anxiety and depression (Gyani, Shafran, Layard & Clark, 2012; Hepgul et al., 2016; c) implementation of a system of monitoring of treatment outcomes and therapist performance across settings and patients (Ehlers et al., 2013); d) development of strong linkages with academic psychology training programs in the U.K. (Clark, 2012; Ehlers et al., 2013; Gyani, Shafran, Layard & Clark, 2013 and e) achievement of an unprecedented level of government commitment and support to the IAPT initiative, at least for the first decade of development (Clark, 2011, 2012). Sustained research productivity and a highly effective training infrastructure are major achievements of the IAPT initiative. It remains to be seen whether current political changes in the U.K. will influence the sustainability of IAPT, given its prior dependence on government funding for support.

Scalable, Culturally-Adapted Training for Clinicians in Limited Resource Settings.

An important trend from a global public health perspective is the development of simplified, culturally-adapted EBTs for trauma survivors, particularly in war zones or other austere environments. Globally, only 2% of trauma survivors receive formal mental health care (Patel et al., 2013; Thornicroft, 2007). Increasing efforts have been made to develop scalable EBT's and associated training models that might be applicable in war zones or low resource environments (Bass et al., 2013; Ertl, Pfeiffer, Schauer, Elbert, & Neuner, 2011; Kaysen et al., 2013; Neuner et al., 2008). Training models that focus on non-traditional para-professional provider groups, including "task shifting" and "task sharing" models, have been developed, implemented, and field tested in a growing number of studies (Bass et al., 2013; Kaysen et al., 2013; Murray et al., 2011; Murray et al., 2014; Neuner et al., 2008). These studies provide confirmation of the feasibility and short-term effectiveness of these model therapies and therapist training approaches for clinicians treating PTSD in more remote or austere settings.

Three representative models of CBT-adapted PTSD treatment and training protocols are worth considering. All have been successfully implemented in highly challenging clinical settings, with limited access to specialized mental health services, in Africa, Asia, and the Middle East: Narrative Exposure Therapy (NET) (Ertl et al., 2011; Neuner et al., 2008), culturally-adapted CPT (Bass et al., 2013; Kaysen et al., 2013). and a Common Elements Treatment

Approach (CETA) (Murray et al., 2014; Weiss et al., 2015). The three models have in common: a) selection and training of lay health workers with limited or no psychological expertise or background, but the ability to form rapport and provide support and encouragement to clients. b) availability and active involvement of trained clinical supervisors and/or consultants; and c) availability of few other professional, mental health resources for the clinical populations being served by these programs.

Narrative Exposure Therapy (NET)

Neuner and colleagues (Adenauer et al., 2011; Hensel-Dittmann et al., 2011; Jacob, Neuner, Maedl, Schaal, & Elbert, 2014; Neuner et al., 2008) have developed and manualized “Narrative Exposure Therapy” (NET), a culturally-adapted version of exposure therapy, in which local therapists are trained to assist trauma victims to develop a written record in the form of a “life story” of their traumatic experiences. The therapist provides emotional support and encouragement to complete the “life story” narrative, although no additional interventions are provided. In their first randomized trial of NET in Ugandan refugees, Neuner et al. (2008) demonstrated superiority of manualized NET treatment administered by lay therapists, compared to either unstructured lay therapist-led group discussion or a no-treatment control. Of note, therapists (“counselors”) in the first trial were 9 refugees from the same refugee camp as the treated individuals, who received training in NET and limited counseling skills. No additional training was provided.

Evidence for the effectiveness of NET comes from randomized controlled treatment trials focusing on the treatment of genocide survivors in Africa (Jacob et al., 2014; Neuner et al., 2008), in addition to studies of NET in a large group of traumatized refugees in Germany (Adenauer et al., 2011; Hensel-Dittmann et al., 2011) and a recent feasibility study in China (Zang, Hunt, & Cox, 2014). It appears to be a sustainable, cost-effective, and transportable treatment, with fewer training requirements than most trauma psychotherapy programs for professionally trained clinicians or paraprofessionals. Moreover, large effect sizes (1.1-1.7) have been reported across studies for the NET intervention compared to waiting list controls (Jacob et al., 2014; Hensel-Dittmann et al., 2011). The competence level achieved by therapists

following training in the NET model has not been reported, and might be evaluated in relation to treatment outcomes in future studies.

Culturally-Adapted Cognitive Processing Therapy (CPT)

Simplified, culturally modified versions of CPT have been shown to be effective in treating traumatic stress in Bosnian refugees and torture victims (Schulz, Huber, & Resick, 2006), Congolese survivors of sexual violence (Bass et al., 2013), and torture victims in Kurdistan, Iraq (Kaysen et al., 2013). In the study by Bass et al., (2013), female rape victims in 16 villages in the Democratic Republic of Congo were randomly assigned to receive either a culturally adapted, group-based form of CPT or individual support. Therapists for this study were community-based “psychosocial assistants” who received two weeks of intensive training and ongoing supervision in a “multi-tiered supervision system”, including both locally-based Congolese supervisors and remote supervision from US experts on the study team. Fidelity was assessed by means of both checklists of treatment elements completed by therapists, and by direct observation of therapy sessions by local supervisors. Large effect sizes (1.1-1.8) were reported for comparisons of PTSD-related outcomes following the CPT-based intervention compared to individual support, with clinically meaningful changes in PTSD-specific symptoms and broader measures of anxiety and depression. A low rate of symptom recurrence (9%) was reported in the CPT group compared to 42% in the control condition at 6-month follow up (Bass et al., 2013).

Kaysen et al. (2013) conducted qualitative interviews with torture victims in Kurdistan, Iraq, and with community mental health workers from the same region of Iraq, to develop a similar, culturally adapted version of CPT for use in this population. Following development and translation of the adapted CPT treatment manual, 12 nurse practitioners and physician assistants with a minimum level of mental health training served as therapists in a trial of the program. Training consisted of a one-week didactic and workshop curriculum, followed by frequent structured supervision contacts. The authors did not provide data on the total number of patients treated with their model, but cite a relatively low dropout rate (24%), despite the

very high levels of trauma in their population. Moderate treatment effectiveness of this scalable CPT adaptation was shown in a recent randomized trial (see below, Weiss et al., 2015).

Common Elements Treatment Approach (CETA)

Modeled on earlier transdiagnostic or “common protocol” treatments for anxiety disorders in children (Borntrager et al., 2009; Chorpita, Daleiden, & Weisz, 2005) or adults (Boisseau, Farchione, Fairholme, Ellard, & Barlow, 2010; Wilamowska et al., 2010), a transdiagnostic, common elements-based treatment model (“CETA”) has been adapted for providing trauma psychotherapy in low- or middle- resource countries (Murray et al., 2011; Murray et al., 2015). The treatment model has been successfully implemented with excellent treatment compliance and fidelity, and has been shown to be effective in controlled intervention trials with trauma survivors in Burma, Thailand, Zambia (Murray et al., 2014) and Southern Iraq (Weiss et al., 2015). Elements of cognitive therapy and exposure to trauma memories are included in the treatment model, in addition to elements of activation therapy for victims with a component of depression. Lay counselors are trained to serve as therapists, but with intensive supervision during the treatment process from an experienced supervisor. The role of the supervisor is acknowledged to be of key importance by the developers (Murray et al., 2014; Weiss et al., 2015).

The CETA intervention was shown to be highly effective compared to both a waiting list control and active (CPT-based) intervention in a recent, field-based, randomized trial of psychotherapy for a large group of traumatized Iraqi victims of torture or militant attacks (Weiss et al., 2015). Completion rates with CETA were excellent, as 98% (97/99) of patients assigned to the CETA arm of the study completed the treatment, compared to 80% of those assigned to CPT (also a high completion rate). Very large effect sizes (0.87-1.56) were observed for PTSD symptom changes following CETA, compared to moderate effect sizes (0.40-0.42) for CPT-based treatment.

Therapists were local community health workers who received a 10-day didactic training in CETA, followed by group and individual supervision, based on an “Apprenticeship Model” (Murray et al., 2011), including occasional skype calls with overseas supervisors. The burden of

supervision in this model is a major negative scalability factor, as noted by the authors: “supervision structures could be critical to effectiveness and generalizability” (Murray et al., 2011, p. 13). With this caveat in mind, this program may serve as a model of “task sharing” between provider and supervisor for disseminating EBTs in low- and middle-income countries.

Role of Technology in Evidence-Based Training and Implementation

Another key area of innovation in EBT training and implementation is the development of new web-based and mobile health technologies. These technologies promise to increase scalability and our ability to train larger numbers of mental health providers in the necessary knowledge and skills for effective EBT delivery in trauma care (Ruzek, 2010; Ruzek & Landes, 2014). Ideal resources might include comprehensive online training in EBTs, in addition to post-training consultation and support for clinicians, as needed (Rakovshik et al., 2016). Training time and associated costs are major barriers to traditional face-to-face training in EBTs, which on-line training potentially avoids (Stewart, Chambless, & Baron, 2012). Additionally, trauma clinicians often report limited access to EBT training, especially those in remote geographic locations (Bennett-Levy & Perry, 2009) and developing economies (Rakovshik et al., 2013).

Despite potential advantages in scalability and access, inconsistent findings have been reported to date on clinician’s actual use or acceptance of online training. Some clinicians report preferences for online training in comparison to face-to-face alternatives (Hubley, Woodcock, Dimeff, & Dimidjian, 2015), or training formats that impact less on work or personal time (Curran et al., 2015; Herschell, Lindhiem, Kogan, Celedonia, & Stein, 2014). Some PTSD-oriented, online training programs have had wide circulation and dissemination, particularly: Trauma-Focused Cognitive-Behavioral Therapy for Children and Youth (TF-CBT), Cognitive Processing Therapy (CPT), and Prolonged Exposure (PE). Heck, Saunders and Smith (2015) reported very high uptake rates for the TF-CBT program, with more than 100,000 users worldwide. Some studies have reported a high level of user satisfaction with online training experiences in EBT practices in other areas (Harned et al., 2014; Kobak, Craske, Rose, & Wolitsky-Taylor, 2013), although users report lower satisfaction in some studies compared to traditional face-to-face training formats (McDonough & Marks, 2002).

Controlled studies of on-line training outcomes are a recent innovation. In some studies, on-line training has led to increased knowledge compared to a no-training condition (Ruzek et al., 2014), or to result in comparable knowledge gains compared to exposure to a training manual (Dimeff et al., 2015; Dimeff et al., 2009; Dimeff, Woodcock, Harned, & Beadnell, 2011; Sholomskas & Carroll, 2006; Sholomskas et al., 2005; Weingardt, Villafranca, & Levin, 2006) or face-to-face training (Dimeff et al., 2015; Dimeff et al., 2011; Gega, Norman, & Marks, 2007; McDonough & Marks, 2002). Research also supports the effectiveness of online training for enhanced self-efficacy of clinicians in administering EBTs (Harned et al., 2014; Ruzek et al., 2014). The effectiveness of online training in modifying actual clinical practice of PTSD providers remains to be shown. In the senior authors' randomized trial of online training for PTSD providers (Ruzek et al., 2014), self-reported implementation increased to a similar degree across all training conditions, whereas specific effects of on-line training with adjunctive consultation were observed on an objective measure of standardized patient (SP) performance in the study (Ruzek et al., 2012; Sears et al., 2016, in press).

Blended Models of Online Training with Adjunctive Consultation

Arguments can be made in favor of a “blended” model of on-line training in conjunction with structured consultation or supervision from a clinician expert, non-expert, or other trainee (Weingardt et al., 2009; Ruzek & Landes, 2012). Limited evidence supports the superiority of a blended training model over online training alone (Rakovshik et al., 2016; Ruzek et al., 2014). In our randomized trial of online training for PTSD providers, blended online training plus consultation led to improved skills acquisition, although benefits were not consistent across training modules (Ruzek et al., 2014). Harned et al. (2014) found that online training increased observer-rated clinical proficiency in delivering exposure therapy for anxiety disorders, but that adding both a computerized motivational enhancement intervention and exposure to a web-based learning community added substantially to the effectiveness of training compared to online training alone in increasing CBT skills. This blended or multi-component approach was found to be associated with increased adoption of EBT's and improved observer-rated proficiency in anxiety reduction or exposure therapy (Harned et al., 2014).

Important questions remain concerning optimization of the consultation component in a blended model, including identification of active elements and determination of the minimum dose or duration of consultation sessions for different skills sets. Kobak et al. (2013) proposed a two-phase model of blended, web-based training consisting of 1) didactic training, followed by 2) applied training using web-based videoconferencing. This included live remote observation of trainees providing CBT skills for treatment of anxiety disorders, with immediate feedback during therapy implementation (Kobak et al., 2013). Other investigators have reported on the use of online platforms for group consultation and training (Beidas et al., 2012; Weingardt et al., 2009).

The Role of Mobile Technology in Clinician Training and EBT Implementation

If online training programs can be used to train and support clinicians, smartphone applications are likely to be used with increasing frequency for this purpose. Scant data are available, however, regarding the acceptance among clinicians or effectiveness of these new tools or applications. Rather, the focus of activity has been on development and dissemination of new mhealth applications (apps) designed to facilitate delivery of EBT's for PTSD and related disorders. These include two widely disseminated EBT's for PTSD, Prolonged Exposure (Kuhn et al., 2015; Kuhn et al., 2014; Reger et al., 2013) and Cognitive Processing Therapy (*CPT Coach*), in addition to EBP apps for common PTSD-related symptoms, such as insomnia (Koffel et al.; Kuhn et al., 2016), depression (Acceptance and Commitment Therapy: *ACT Coach* and problem-solving: *Moving Forward*), and smoking cessation (*Stay Quit Coach*). Kuhn and colleagues (2015) evaluated adjunctive use of the *PE Coach* patient-facing smartphone app by 271 mental health clinicians trained in use of PE. Clinicians in this study reported frequent use of the *PE Coach app* as a means to deliver CBT more effectively, with 94% of users reporting their adoption of the app in routine clinical work. Similarly, *CBT-I Coach*, has been widely adopted by VA clinicians trained in EBT's for insomnia (Kuhn et al., 2016). Although intended as adjunctive resources for clinicians delivering EBTs, these innovations point to potential future applications of technology in both training and clinical implementation of EBT's for PTSD. Controlled studies are urgently needed of the cost-effectiveness and utility of these new technologies.

Conclusion: Priorities for Future Research

Approximately 10,000 VA clinicians have been trained in EBT's over the past decade. During the same time period, the NCCTS program has successfully trained thousands of community-based practitioners to provide EBTs to traumatized children, adolescents, and their families. Similarly, intensive training in EBT's for PTSD have been implemented in IAPT centers throughout the U.K. Large numbers of therapists have been successfully trained in these model programs and are now providing evidence-based psychotherapies to increasing numbers of adults and children with PTSD in the U.S. and U.K. Despite these achievements, we have noted ongoing challenges involved in training increasing large numbers of clinicians and in providing adequate clinical consultation and supervision. The scaling and sustainability of clinical supervision is especially challenging in light of system capacity requirements. Training supervisors need to possess generic consultation skills, have the required training and orientation for the role, and possess sufficient flexibility and availability in their schedule. Cost may be a significant factor. In essence, more scalable supervision models with proven effectiveness are urgently needed (Fairburn & Wilson, 2013; Rakovshik et al., 2016).

Other key challenges to large-scale training of PTSD providers are the sustainability of training programs, maintenance of provider skills, and ongoing monitoring and quality assurance of provider performance. The VA is planning a more decentralized model for training, given that centralized processes and capacity for training are likely not sustainable over the long-term. In addition to finding ways to support continued training of the changing mental health workforce, the skills maintenance of those who have been trained presents another challenge. This is important in light of evidence that some trained clinicians fail to deliver evidence-based treatments, or do so with reduced fidelity over time, a phenomenon typically referred to as "therapist drift" (Waller & Turner, 2016; Weisz et al., 2013). The establishment of local communities of practice and learning collaboratives to continue to champion the delivery of evidence-based treatments and to provide continued support to clinicians is one strategy being employed to limit therapist drift (Ebert et al., 2014). Other approaches for addressing this concern need to be developed and implemented.

Another important topic for future research is the utility and potential effectiveness of

a “common elements” or transdiagnostic approach to training. As noted, the CETA model developed by Murray and colleagues (Murray et al., 2014; Weiss et al., 2015) is a successful model of a common elements approach in the area of trauma care for underserved populations. The promising findings from these investigators warrant further replication, however, in other treatment settings. Noting the theoretical and practical arguments in favor of a “common elements” approach, further research on the topic has been strongly recommended by McHugh and Barlow (2012) and the recent Institute of Medicine Report (IOM, 2015).

Technology-assisted or technology-based training has advanced rapidly, as evidenced by the proliferation of “mhealth” applications in recent years. Few of these apps have been systematically evaluated in controlled settings, although promising initial results have been reported. Undoubtedly, this area of innovation will undergo significant growth and expansion in coming years and may lead eventually to entirely new clinical training and supervision models. In contrast, little attention has been paid recently to cost-effectiveness and reach of traditional university-based or professional school training models for clinicians. The Institute of Medicine Report (2015) noted this also as a significant unmet need and strongly recommended renewed attention to improving EBT training in academically-based or professional training programs (IOM, 2015). This is another important priority for future training in EBT’s for clinicians.

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