PTSD Trials Standardized Data Repository (PTSD-Repository): How we did it, what the data tell us, and how you can use it

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Project Overview

Jessica L. Hamblen, PhD
Deputy for Education, National Center for PTSD
Associate Professor, Geisel School of Medicine at Dartmouth
Phase 1:
Create a comprehensive database containing detailed information on RCTs of PTSD interventions
(completed)

Phase 2:
Make the database publicly accessible via an online data repository maintained by NCPTSD
(in progress)
• PTSD Consultation Program
  – “How many patients complete trauma-focused psychotherapy?”
  – “Are there any RCTs on Reiki for PTSD?”
• VA Central Office Requests/Policymakers
  – “What is the evidence for Stellate Ganglion Block for PTSD”
• Media Requests
  – “What percentage of patients benefit from Hyperbaric Oxygen Therapy?”
What is your primary role?

1. Primarily clinical
2. Primarily policy/administration
3. Primarily research
4. Mixed
Clinicians, researchers, and administrators can access the data to:

- Enhance patient education
- Identify key gaps in the literature
- Conduct systematic reviews
- Inform PTSD policy
EXISTING REVIEWS

• Numerous small reviews
• Large Reviews
  – AHRQ Comparative Effectiveness Review
  – VA/DoD Clinical Practice Guideline
LIMITATIONS OF PRIOR REVIEWS

Limitations of prior reviews

- No rapid updates
- Narrow in scope
- Limited Variables
- Reliance on systematic reviews
- Inaccessible/not user friendly

PTSD-Repository

- Annual updates
- Broad inclusion
- > 74 data elements
- Abstracted study level data
- Publicly available/user friendly
How we did it

Maya O’Neil, PhD
Neuropsychologist, RR&D CDA-II, Portland VA
Associate Professor, Oregon Health & Science University
• What **pharmacologic** interventions have been studied for the treatment of PTSD since 1980?

• What **nonpharmacologic** interventions have been studied for the treatment of PTSD since 1980?
• **Input from:**
  – Partners
    • AHRQ, NCPTSD, Pacific Northwest EPC
  – Multidisciplinary Expert Panel
    • 9 PTSD experts with broad clinical and research expertise
    • Reviewed draft protocol and advised on:
      – A priori inclusion criteria
      – Variable selection
      – Key studies to include
<table>
<thead>
<tr>
<th>Category</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>Adults (less than or 18 years old) with a PTSD diagnosis diagnosed by a clinician or through the administration of a validated clinician-administered or patient-reported assessment tool</td>
<td>Children (less than 18 years old) Diagnosis of acute stress disorder Studies that do not specify criteria used to diagnose PTSD Sample population less than 80% of participants diagnosed with PTSD</td>
</tr>
<tr>
<td>Interventions</td>
<td>Pharmacologic treatments Nonpharmacologic treatments</td>
<td>Interventions designed to simultaneously treat PTSD and comorbid conditions if they cannot be standalone PTSD interventions Interventions designed to prevent PTSD</td>
</tr>
<tr>
<td>Comparators</td>
<td>No limitations applied</td>
<td>None</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Any overall PTSD outcome</td>
<td>Studies reporting only individual symptoms or symptom clusters without overall PTSD outcome</td>
</tr>
<tr>
<td>Timing</td>
<td>Any study duration and length of follow-up</td>
<td>None</td>
</tr>
<tr>
<td>Study Design</td>
<td>Randomized controlled trials</td>
<td>Studies that do not have a randomized controlled trial design</td>
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</table>
We searched for RCTs in databases and reference lists

- PTSDpubs (formerly PILOTS)
- Ovid® MEDLINE®
- Cochrane CENTRAL
- PsycINFO®
- Embase®
- CINAHL®
- Scopus®
- Reference lists in systematic reviews and clinical practice guidelines
• Duplicate studies were removed
• Abstracts and full-text articles were reviewed for inclusion
• When studies met inclusion criteria, data were abstracted:
  – Two evidence tables were constructed according to the Guiding Questions (pharmacologic and nonpharmacologic treatments)
  – NCPTSD, AHRQ, and EPC reviewed updates and changes to tables during weekly meetings
• Abstracted data (337 variables)
  – Study and population characteristics
  – PTSD assessment
  – Intervention descriptives for each study arm
  – PTSD outcomes
  – Assessments for each intervention (i.e., baseline, end of treatment, less than 6 months, 6 to 11 months, 12 months or longer)
  – Secondary outcomes (i.e., depression, anxiety, substance use, sleep, anger, quality of life, functioning, harms)
• Dual review by a senior team member for accuracy and completeness
• A record of excluded studies and reasons for exclusion was maintained
• Risk of bias, or quality assessment, was not conducted
Records identified through database searching (n = 17,028)

Additional records identified through other sources (n = 444)

Records after duplicates removed (n = 7,842)

Records screened (n = 7,842)

Records excluded (n = 6,742)

Full-text articles assessed for eligibility (n = 1,101)

Studies included (n studies = 318\(^a\) in 406 publications)

Companion\(^b\) with additional outcomes, n = 17

Full-text articles excluded, with reasons (n studies = 668 in 695 publications)

Ineligible population, n = 256
Ineligible intervention, n = 82
Ineligible comparison, n = 2
Ineligible outcome, n = 110
Ineligible study design, n = 111
Ineligible publication type, n = 100
Non-English language, n = 6
Companion to excluded study, n = 28

\(^a\)Badura-Brack, 2015 is a single publication that includes 2 studies
The 318 included RCTs were published from 1988 through 2018.
POPULATION TYPE – NUMBER OF STUDIES

- Community: 181
- Veteran: 92
- Mixed: 23
- Active duty military: 10
- Unknown: 12
What are you most interested in having added to the PTSD-Repository?

1. RCTs on SUD comorbidity
2. RCTs treating PTSD in children
3. Details about suicide-related variables
4. Details about TBI
5. Other
What the data can tell us:

What can we answer?
What are the gaps?

Sonya B Norman, PhD
Director PTSD Consultation Program, National Center for PTSD
Professor, University of California School of Medicine
What the data can tell us:

Who are we studying?

(N up to 24,700)
COMORBIDITIES

- Depression:
  - Yes: 35%
  - No: 5%
  - Not Reported: 60%

- SUD:
  - Yes: 18%
  - No: 46%
  - Not Reported: 36%

- TBI:
  - Yes: 2%
  - No: 8%
  - Not Reported: 90%
COMORBIDITIES IN PHARMACOLOGIC VS NONPHARMACOLOGIC STUDIES

Depression

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<thead>
<tr>
<th></th>
<th>Pharmacologic studies</th>
<th>Nonpharmacologic studies</th>
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<tbody>
<tr>
<td>Yes</td>
<td>47%</td>
<td>29%</td>
</tr>
<tr>
<td>No</td>
<td>11%</td>
<td>1%</td>
</tr>
<tr>
<td>Not Reported</td>
<td>42%</td>
<td>70%</td>
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SUD

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<thead>
<tr>
<th></th>
<th>Pharmacologic studies</th>
<th>Nonpharmacologic studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>15%</td>
<td>19%</td>
</tr>
<tr>
<td>No</td>
<td>66%</td>
<td>36%</td>
</tr>
<tr>
<td>Not Reported</td>
<td>45%</td>
<td>19%</td>
</tr>
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</table>
What the data can tell us:

What are we studying and how?
INTERVENTION CLASS – NUMBER OF STUDIES

- Psychotherapeutic: 164 studies
- Pharmacologic: 84 studies
- CIH: 22 studies
- Nonpharmacologic biological: 10 studies
- Pharmacologic & Psychotherapeutic: 20 studies
- Psychotherapeutic & CIH: 11 studies
- CIH & Nonpharmacologic biological: 4 studies
- Psychotherapy & Nonpharmacologic biological: 2 studies
- Pharmacologic & CIH: 1 study
What the data can tell us:

What are the gaps?
PARTICIPANT CHARACTERISTICS: WHAT ARE STUDIES NOT REPORTING

- Sex: 18
- Race: 143
- Ethnicity: 231
- Sexual orientation: 317
- Military/Community population: 7
- Duration of PTSD symptoms: 193
- % Treatment-naive: 251
- Trauma type: 38
- # of Traumatic events experienced: 271
- # of Trauma types experienced: 297
OUTCOMES: WHAT ARE WE NOT REPORTING?

- Analysis method (ITT, completer): 28
- Within-group effect size or p-value: 163
- Between-group score difference from baseline: 271
- Definition of PTSD diagnostic change: 211
- Definition of clinically meaningful response: 174
- Serious adverse events: 226
- Withdrawals due to adverse event: 177
OUTCOMES: WHAT ARE WE NOT REPORTING?

- PTSD Diagnostic Change: 84%
- Clinically Meaningful Response: 58%
- Withdrawal Due to Adverse Events: 74%
- SAE: 78%

Legend:
- Pharmacologic studies (n=106)
- Nonpharmacologic studies (n=212)
• Less than half of the studies reported on loss of PTSD diagnosis, clinically meaningful response, or remission of symptoms.
• Reporting was incomplete for many data elements.
This birds eye view of the repository gives a sense of the state of the field, e.g.,

• Much of what we know is about treating predominantly white patients in the U.S.
  – We need more information about trauma among different countries, cultures, races, and ethnic groups
  – We need more information about comorbidities

• We know some treatments are effective
  – We have few direct treatment comparisons, especially across treatment classes
  – More consistency in analyses and outcome reporting would allow for more nuanced comparisons across treatments
How you can use it
PTSD Trials Standardized Data Repository
(PTSD-Repository)

Users will be able to:

• Download the data (xls, csv, RDF, RSS, TSV)
• Manipulate the data: Search, sort, filter, reorder, etc.
• View and export pre-made graphical displays
• Link to each trial’s record in PTSDpubs
• Access supporting documents (user guide, methods, glossary of key terms, etc.)
• Share “data stories”
<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Question</th>
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<tbody>
<tr>
<td>Clinician</td>
<td>“I work with older Veterans. What PTSD treatments have been tested in this population?”</td>
</tr>
<tr>
<td>Patient</td>
<td>“My friend recommended acupuncture for PTSD. Have any studies looked at this?”</td>
</tr>
<tr>
<td>Researcher</td>
<td>“What is the average effect size of Transcranial Magnetic Stimulation for PTSD?”</td>
</tr>
</tbody>
</table>
• Assist funding agencies with identifying gaps and determining priorities
• Serve as a data source for students, trainees
• Augment existing educational tools, such as PTSDpubs and mobile apps
• Inform best practices for PTSD trial reporting
DATA UPDATES

• NCPTSD will commission an annual update

• 2019 update:
  – Newly published RCTs
  – Risk of bias ratings for included studies
  – New variables:
    – RCTs of concurrent PTSD/SUD treatment

• Future Updates
  – Add newly published studies
  – Expand inclusion criteria
  – Abstract additional variables
How might you use the PTSD-Repository?

1. Look at a graphic or written data summary
2. Pull data from the PTSD-Repository to answer a question for yourself or a patient
3. Manipulate data from the PTSD-Repository to conduct research (e.g., for a systematic review)
4. I’m not sure that I would ever use it
QUESTIONS

• Can I use these data to publish a paper?
  – Yes! And we’d love to hear how you used the data (NCPTSD@va.gov)

• Can I share the database with providers/students/researchers/patients?
  – Yes!

• Where can I download the data and find out more about the methods?

• How can I cite the data?
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