Diagnosis and Assessment of PTSD: A Report to the Institute of Medicine

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Definition of Mental Disorder

A clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and that is associated with present distress (e.g. a painful syndrome) or disability (i.e. impairment in one or more areas of functioning) or with a significantly increased risk of suffering, death, pain, disability or an important loss of freedom.

Whatever its cause, it must be currently considered a manifestation of a behavioral, psychological, or biological dysfunction in the individual.

APA DSM-IV-TR
Definition of Mental Disorder

“Disorder” is not an exact term, but it is used here to imply the existence of a clinically recognizable set of symptoms or behaviors associated in most cases with distress or with interference with personal functions.

WHO ICD-10
PTSD Diagnostic Criteria

• Exposure to a traumatic event in which the person:
  – experienced, witnessed, or was confronted by death or serious injury to self or others
  AND
  – responded with intense fear, helplessness, or horror

• Symptoms
  – appear in 3 symptom clusters: re-experiencing, avoidance/numbing, hyperarousal
  – last for > 1 month
  – cause clinically significant distress or impairment in functioning

# PTSD Diagnostic Criteria: A Comparison

<table>
<thead>
<tr>
<th></th>
<th>DSM-IV</th>
<th>ICD-10</th>
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<tbody>
<tr>
<td>Stressor</td>
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<tr>
<td>Subjective</td>
<td>A2</td>
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<tr>
<td>Reexperiencing</td>
<td>1 (B 1-5)</td>
<td>1 B</td>
</tr>
<tr>
<td>Avoidant</td>
<td>0-2 (C 1-2)</td>
<td>1 C</td>
</tr>
<tr>
<td>Amnesia</td>
<td>0-1 (C 3)</td>
<td>1 D* or</td>
</tr>
<tr>
<td>Numbing</td>
<td>0-3 (C 4-6)</td>
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<tr>
<td>Foreshortened Future</td>
<td>0-1 (C 7)</td>
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<tr>
<td>Arousal</td>
<td>2 (D 1-5)</td>
<td>2 (D_{2 a-e})</td>
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<tr>
<td>Onset</td>
<td>&gt; 1 month</td>
<td>&lt; 6 months</td>
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<tr>
<td>Functional Impairment</td>
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Validity of PTSD is Well Established

- PTSD has proven to be a very useful and valid diagnosis after 25 years of clinical use.

- Although there have been minor revisions to the diagnostic criteria the core concept has withstood the test of time.
The PTSD Concept

• Inability to cope with overwhelming stress may be followed by a distinctive pattern of symptoms

• It does not presume that this is the only possible psychiatric outcome
Research supports the PTSD concept

- PTSD and PTSD symptoms rank among the most common new onset post-traumatic clinical problems.
- Before DSM-III, there was no way to identify people so affected.
The PTSD hypothesis made it possible to:

- Predict how affected people react to traumatic reminders
- Differentiate them from non-affected people or those with depression or other anxiety disorders
- Develop unique therapeutic approaches (e.g. CBT & medication) that could not have been envisioned without the PTSD model
PTSD is a disorder of reactivity

- Its alterations are best revealed by responses to psychological or pharmalogical probes

- In contrast, depression is a shift in basal state, alterations are best revealed by measurement of tonic activity
PTSD has a wealth of animal models unequaled in psychiatry

- Traumatic stress can be operationalized as uncontrollable or unpredictable stress
- Laboratory-induced physiological and neurohormonal alterations resemble those seen in PTSD
- Brain systems affected by uncontrollable stress and fear conditioning resemble those affected in PTSD
PTSD has provided a new and powerful tool for translational research

- Translation of important clinical observations into rigorous experimental protocols
- Translation of laboratory findings into testable clinical approaches
Is PTSD the Only Post-Traumatic Outcome?

No

Prospective studies show that people may develop new-onset depression, other anxiety disorders, alcoholism or behavioral alterations without PTSD.

But that is not what we are here to discuss today.
Prevalence of PTSD in the General Population

- Large national probability sample of US adults (Ns > 5000)
  - National Comorbidity Survey (1995)
  - National Comorbidity Survey-Replication (2005)
  - Benchmark for prevalence of mental disorders in US
- Lifetime PTSD prevalence 6.8% (NCS-R)
  - 10% women (NCS)
  - 5% men (NCS)
Combat Exposure in the NCS

- Any combat veterans, lifetime PTSD prevalence = 39%
- Male combat > all other male trauma
  - Lifetime PTSD prevalence
  - Delayed onset
  - Unresolved symptoms
  - Functional impairment (unemployment, being fired, divorce or separation, spousal abuse)
Prevalence of PTSD in Vietnam Veterans (NVVRS)

- Large, nationally-representative community-based sample of Vietnam theater veterans (N >3000)
- Lifetime prevalence NVVRS
  - 31% men, 26% women
- Current prevalence NVVRS
  - 15% men, 8% women
Prevalence of PTSD in Vietnam veteran race/ethnic subgroups

- Current prevalence differed among male race/ethnicity subgroups (NVVRS and MVVP):
  - 27% Hispanic
  - 25% American Indian - Northern Plains
  - 22% American Indian - Southwest
  - 21% African American
  - 14% Caucasian
  - 12% Native Hawaiian
  - 2% Americans of Japanese Ancestry
Prevalence of PTSD from Other Wars

• Gulf War veterans\(^1\):
  - Population sample of over 11,000 Gulf War veterans
  - Current PTSD prevalence = 10%

• Afghanistan\(^2\):
  - Army (N=1962)
  - Current PTSD prevalence = 6-11.5%

• Iraq\(^2\):
  - Army (N=894), current PTSD prevalence = 13-18%
  - Marine (N=815), current PTSD prevalence = 12-20%

\(^1\) Khan, Natelson, Mahan, Kyung, & Frances (2003). Amer. J. of Epidemiology
Revising Diagnoses

A classification is a way of seeing the world at a point in time. There is no doubt that scientific progress and experience with the use of these guidelines will ultimately require their revision and updating.

WHO ICD-10
# Revisions of Depressive Diagnoses

## Affective Disorders:
**DSM I, II, III (III-R) and IV**

<table>
<thead>
<tr>
<th>Disorder</th>
<th>DSM-I</th>
<th>DSM-II</th>
<th>DSM-III/III-R</th>
<th>DSM-IV</th>
</tr>
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<tr>
<td>BAD/Manic-Depression</td>
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<tr>
<td>MDD/Psychotic Depression</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Dysthymia/Depressive Neurosis</td>
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<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>Cyclothymia/Affective Personality</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Involuntary Melancholia</td>
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<td></td>
<td>X</td>
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<tr>
<td>(Other) Mood Disorder NOS</td>
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<td></td>
<td>X</td>
<td></td>
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<tr>
<td>Atypical Bipolar/NOS</td>
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<td>X</td>
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<tr>
<td>Atypical Depressive Disorder/NOS</td>
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<td>X</td>
<td></td>
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<tr>
<td>Adj Disorder - Depressed</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Adj Disorder - Mixed Anx/Dep</td>
<td></td>
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<td>X</td>
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Changes in the PTSD Diagnostic Criteria

- Symptom clusters:
  - Symptoms expanded from DSM-III to III-R and IV:
- Added duration and distress/impairment
- Revised stressor criterion
Stressor Criterion

- DSM-III: recognizable stressor that would evoke significant symptoms in almost everyone.
- DSM-III-R: outside the range of usual human experience that is markedly distressing to everyone.
- DSM-IV:
  - A1: experienced, witnessed, or confronted by trauma
  - A2: Fear, helplessness, and horror
Is A1 Too Broad?

• Current questions about inclusion of traumas such as medical illnesses (e.g. cancer) and events involving learning about the death of a loved one (e.g., finding out a relative has died or been killed).
  – Breslau: 67% PTSD if don’t include learned about vs. 90% PTSD if you do.

• This does not apply to war zone traumas
How is combat exposure assessed?

- Been on combat patrols or dangerous duty?
- Under enemy fire?
- Surrounded by enemy?
- % of men in unit killed, wounded, or MIA
- Fire rounds at the enemy?
- Witnessed someone hit by rounds?
- Times in danger of being injured or killed?

Combat Exposures Scale (Keane et al. 1989)
Does A2 Need Modification?

• A2 was added to serve as a gatekeeper, but does it?
  – A few longitudinal studies found that A2 is mildly predictive of PTSD (i.e. Brewin; Roemer)
  – Others found no differences in PTSD with or without A2 (Breslau; Kilpatrick; Schnurr).

• Some evidence indicates the absence of A2 is predictive of the absence of PTSD.

• A2 is not serving a gatekeeper role.
Documenting Stressors

• The ideal way to document a stressor is through a combination of objective and subjective measures.

• Objective:
  – Sometimes available: military, hospital, police records; witnesses; etc.
  – Sometimes unavailable: clandestine operation, sexual trauma, no witness, no formal report

• Subjective (self report):
  – We now have reliable, valid exposure measures
Cross-Cultural Considerations in PTSD

- PTSD has been documented throughout the world\textsuperscript{1,2}

- Comparable PTSD prevalence in Nairobi embassy and Oklahoma City bombings\textsuperscript{3}
  - Men: 26\% Nairobi, 20\% Oklahoma City
  - Women: 35\% Nairobi, 34\% Oklahoma City

- Although there may be culture-specific idioms of distress, PTSD appears to encompass a pattern of universal post-traumatic distress

\textsuperscript{1} de Jong et al., 2001; \textsuperscript{2} Green et al., 2004; \textsuperscript{3} North et al., 2005
Biological Profile

- The diagnosis has distinguished people with a unique set of biological abnormalities.
- These include:
  - psychophysiological reactivity
  - neurohormonal profiles
  - EKG abnormalities
  - structural and functional brain imaging alternations.
The Stress System

The stress system coordinates the generalized stress response which takes place when a stressor of any kind exceeds a threshold.

The main components are:

- HPA system
- LC/NE system
- Immunological system
Orbitofrontal inhibition of the amygdala mediates extinction.

- Amygdala
- Hippocampus
- Hypothalamus
- CRF
- Pituitary
- ACTH
- Adrenal
- Locus coeruleus
- NE
- Cerebral cortex
Are there structural brain abnormalities associated with PTSD?
HIPPOCAMPAL VOLUME IN PTSD
(% DIFFERENCE BETWEEN PTS AND Controls)

<table>
<thead>
<tr>
<th>Study</th>
<th>Right</th>
<th>Left</th>
</tr>
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<tbody>
<tr>
<td>Schuff 1997</td>
<td>-6</td>
<td>-1%</td>
</tr>
<tr>
<td>Bonne 2001</td>
<td>-3</td>
<td>3%</td>
</tr>
<tr>
<td>De Bellis 2001</td>
<td>7%</td>
<td>-1%</td>
</tr>
<tr>
<td>Bremner 1995</td>
<td>-4%</td>
<td>-1%</td>
</tr>
<tr>
<td>Bremner 1997</td>
<td>-7.9</td>
<td>-4%</td>
</tr>
<tr>
<td>Vythlingam 2001</td>
<td>-12%</td>
<td>-5%</td>
</tr>
<tr>
<td>Vythlingam 2001</td>
<td>-26%</td>
<td>-13%</td>
</tr>
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</table>

Vythlingam 2001 (unpublished)

Factors:
- Combat
- MVA
- Childhood abuse
- Abuse + MDD

?? trauma
Are there functional brain abnormalities associated with PTSD?
**MEDIAL PFC & Ant Cingulate**
- Bremner 99
- Lanius ’00 (scripts)
- Bremner 99
- Shin ’01 (emotional stroop)
- Shin 97
- Shin 99
- Semple ’00

**HIPPOCAMPUS**
- Bremner 99

**OFC**
- Semple 93
- Shin 99
- Rauch 96

**AMYGDALA**
- Rauch 96 (combat scripts)
- Liberzon 99 (combat sounds)
- Shin 97 (CSA scripts)
- Rauch ’00 (masked faces)
- Semple ’00 (auditory CPT)
- Bremner 2001 (unpub, fear conditioning)
- Shin 99 (CSA scripts)
- Bremner 99 (CSA scripts)
- Bremner 99 (combat slides & sounds)
Increased Blood Flow with Fear Acquisition versus Control in Abuse-related PTSD

Yellow areas represent areas of relatively greater increase in blood flow with paired vs. unpaired US-CS in PTSD women alone, $z>3.09$; $p<0.001$
Decreased Blood Flow During Recall Of Emotionally Valenced Words In Abuse-Related PTSD

Retrieval of Word pairs like “blood-stench”

Left hippocampus

Medial prefrontal & Orbitofrontal Cortex

Fusiform, inferior temporal gyrus
The stability of reported trauma exposure

• Questions:
  1. How consistent are reports of trauma exposure over time?
  2. How does consistency relate to PTSD?
How consistent are reports of trauma exposure?

• Overall, reports of exposure are consistent across occasions, e.g., $r = .73^1$; $r = .66^2$

• No evidence of gross changes in exposure reporting

• However, some bidirectional inconsistencies occur; small net increase over time, e.g.,
  - 88% changed trauma reports from 1 m. to 2 yr.$^3$
    out of 19 combat related events, mean increase = $0.69^3$
  - 91% changed from 1 week to to 1.5-2 yrs
    out of 31 combat events, mean increase = $0.89^1$

• Combat is comparable to other traumas

$^1$King et al., 2000; $^2$Roemer et al., 1998; $^3$Southwick et al., 1997
How does consistency relate to PTSD?

- More evidence is needed
- PTSD at Time 2 is related to small increases in reported exposure from Time 1, e.g.,
  - Southwick et al., 1997, $r = .32$
  - King et al., 2000, $r = .26$
- PTSD at Time 1 is related to greater consistency in reported exposure from Time 1, e.g.,
  - Wyshak, 1994, $r = -.48$
  - McFarlane, 1988 (because initially asymptomatic people failed to report initially reported events)
Questions About Service-Connection and PTSD

• How does the receipt of PTSD disability compensation affect treatment participation?
  - OIG report review of 92 cases
  - 39% had decline in MH visits after 100% award

• How does service connection for PTSD relate to treatment outcome?
  - Concern that veterans fail to improve in order to prevent loss of compensation
Compensation Seeking and Treatment Participation

- **Scientific evidence does not support OIG findings**
  - Longitudinal studies show that claim approval is associated with *increased* participation in MH treatment
  - Cross-sectional studies show that service-connected veterans do not differ from non-service-connected veterans in treatment participation
Longitudinal Findings

- Sayer et al., 2002
  - MH visits Sayer et al., 2002
  - MH visits ↑ during and after process in veterans whose claims were awarded

- Sayer et al., 2005
  % using MH services before and after claim:
  - Awarded: 48% → 70%
  - Denied: 46% → 49%

→ Decision is important
Service Connection and Treatment Outcome

- Scientific evidence is inconclusive
  - Program evaluation study¹
    - found worse outcomes in SC inpatients
    - found better outcomes in SC outpatients

¹ Fontana & Rosenheck, 1998
Service Connection and Clinical Trials

• No difference in CSP #420 (N = 360) or any trial that has tested effect of SC
• e.g., Monson et al. (2005) study of Cognitive Processing Therapy for military-related PTSD
  – CPT better than WL
  – Loss of dx in CPT group
    SC: 33% post-tx, 33% 1 m
    Non-SC: 47% post-tx, 27% 1 month
Summary

• The validity of the PTSD diagnosis has been established.
• Despite revisions in specific diagnostic criteria, the PTSD construct has withstood the test of time in both industrialized and traditional cultures.
• The diagnosis has generally distinguished people with a unique set of biological abnormalities.
Summary

- Reports of trauma exposure are generally consistent over time.
- It is unclear whether or how much PTSD influences consistency reports of trauma exposure.
- Service connection is generally associated with increased participation in mental health treatment.
- Service connection is not associated with poorer outcomes in clinical trials.