

# Posttraumatic Stress Disorder

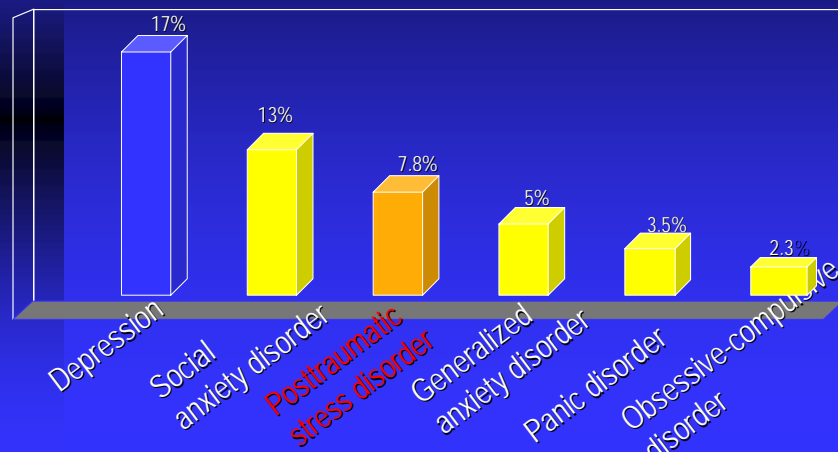
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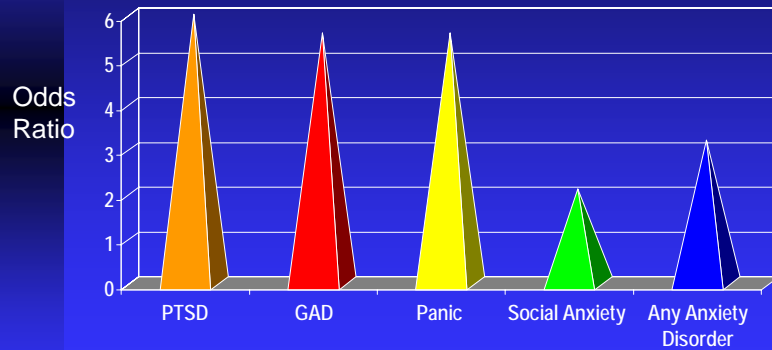
## Depression and Anxiety Disorders: Prevalence (lifetime, of 200M adults in U.S. )



Kessler et al, 1995 Arch Gen Psychiatry: 51: 1048

## Risk of Suicide Attempts for Anxiety Disorders

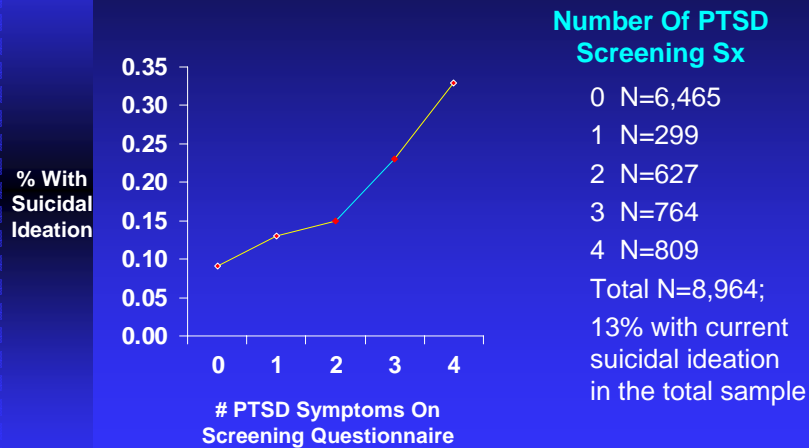
19% of PTSD patients will attempt suicide



*PTSD patients are 6 times more likely to attempt suicide than controls*

Kessler et al. Arch of Gen Psychiatry, 1999, 56: 617

## Suicidal Ideation Among Individuals With Subthreshold PTSD Symptoms



Marshall RD et al. Am J Psychiatry. 2001(Sept);158:1467-1473.

## Normal Responses After Trauma

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- Intensity of response varies with severity of trauma
- Re-experiencing symptoms (thoughts, dreams, images)
- Intense emotional reactions: fear, bewilderment, anger, helplessness and despair
- Increased vigilance and autonomic arousal
- Persistent memory often with vivid imagery
- Gradual adjustment over weeks to months

## PTSD—Definition

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- Traumatic Event: Person experienced or witnessed actual or threatened death or injury to self or others
- Subjective Response of “fear, helplessness, or horror”
- Core symptoms
  - ◆ Intrusive re-experiencing
  - ◆ Avoidance
  - ◆ Numbing
  - ◆ Increased autonomic arousal

## Life events checklist

- Natural disaster
- Fire or explosion
- Transportation accident
- Other serious accident (at home, work or recreational)
- Toxic substance exposure
- Physical assault
- Assault with a weapon
- Sexual assault
- Other unwanted sexual experience

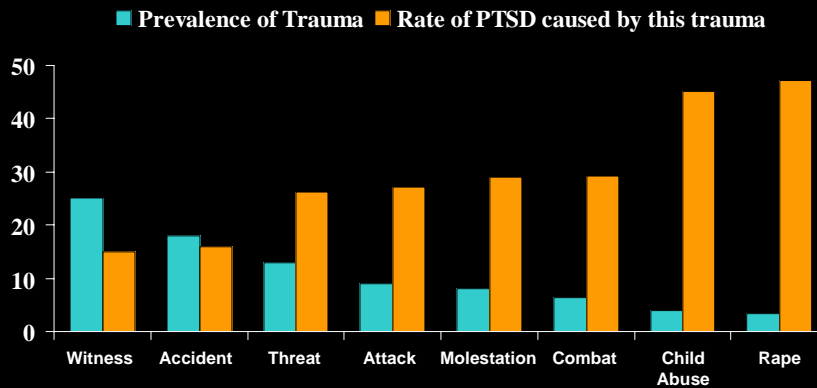
Johnson JH, McCutcheon S 1980

## Life Events Checklist

- War-related (combat or exposure to war zone)
- Captivity
- Life-threatening illness or injury
- Severe suffering of any kind
- Sudden violent death
- Sudden death of someone close
- Serious injury, harm or death caused to someone else
- Any other very stressful event or experience

## Prevalence Of Trauma And PTSD

More Than 60% Experience A Traumatic Event  
More Than 25% Experience Multiple Traumatic Events



Many people develop this disorder (10-18%), but only a proportion of those exposed  
Kessler et al. 1999.

## Re-experiencing Symptoms

At least one required for DX

- Unwanted distressing recollections of the event
- Flashbacks
- Nightmares
- Exaggerated emotional and physical reactions to triggers
- Intense psychological distress when exposed to triggers

## Avoidance Symptoms:

At least three required for DX

- Avoidance of thoughts and feelings about trauma
- Avoidance of activities, places or people related to the trauma
- Inability to recall aspects of the event
- Loss of interest or diminished participation in significant activities
- Feeling detached from others
- Restricted emotions
- Sense of foreshortened future

## Hyperarousal

At least two required for DX

- Difficulty sleeping
- Irritability or outbursts of anger
- Difficulty concentrating
- Hypervigilance
- Exaggerated startle response

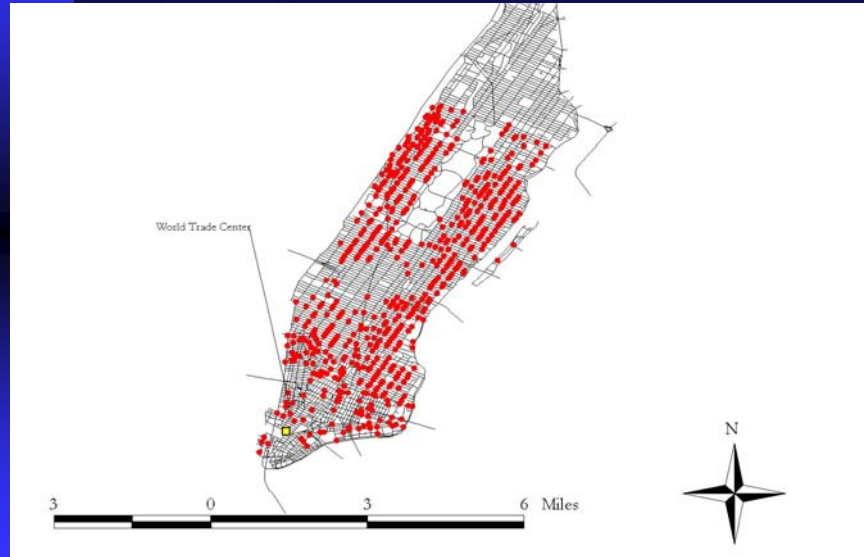
## Types of PTSD

- Acute < 3 months
- Chronic  $\geq$  3 months
- Delayed (rare)
  - ◆ symptom onset  $\geq$  6 months after traumatic event

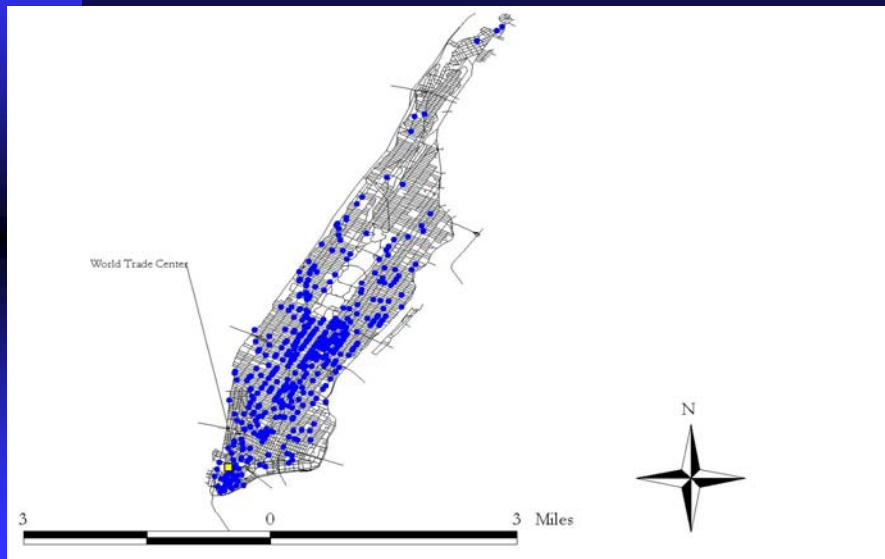
American Psychiatric Association. *DSM-IV*. 1994.



## Survey 1: Respondents' Residences On 9/11



## Survey 1: Respondents' Locations On 9/11



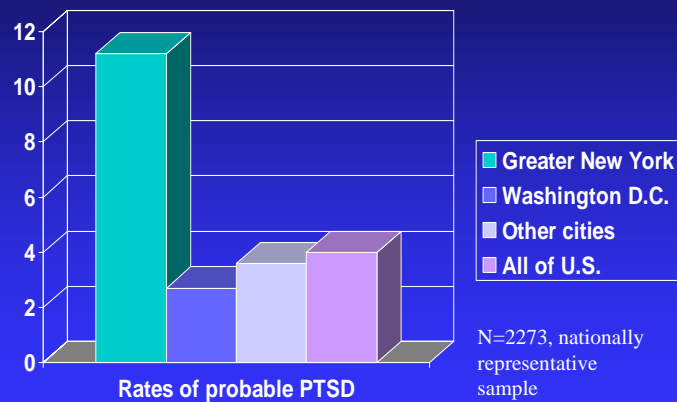
## PTSD and Depression In Manhattan (below 110<sup>th</sup> St) 1-2 Months Post-9/11

	N (Total = 988)	Weighted %	95% Confidence Interval	Population Estimate*
PTSD related to 9/11 attacks	78	7.5	5.7-9.3	67,000
Current depression	99	9.7	11.2-16.0	87,000
Current PTSD or depression	139	13.6	11.2-16.0	128,000

\*Based on US Census Bureau estimates that there were 918,665 residents of New York City in 2000. Rounded to nearest 1000.

## Rates of Probable PTSD Related to 9/11 by Geographic Location (PCL>50) (Schlenger WE et al., JAMA. 2002 Aug 7;288(5):581-8)

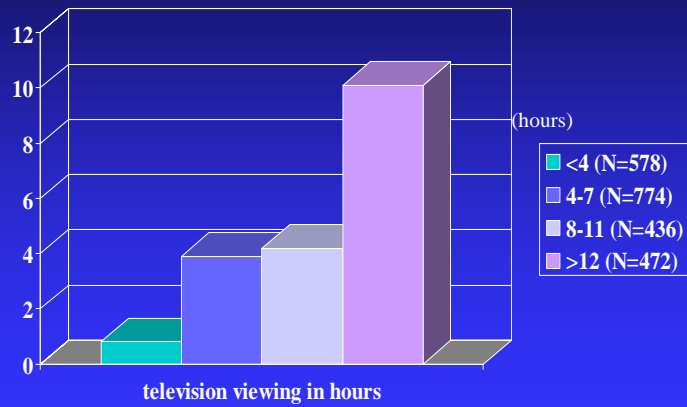
% with probable PTSD 5-8 weeks after the attacks (PCL)



## Television Viewing Per Day in Hours on 9/11 and the First Few Days Afterward (Schlenger et al., 2002)

2002)

% with probable PTSD



## Number of Persons with PTSD related to 9/11 across the U.S., 5-8 weeks after the Attacks

Based on Schlenger et al 2002

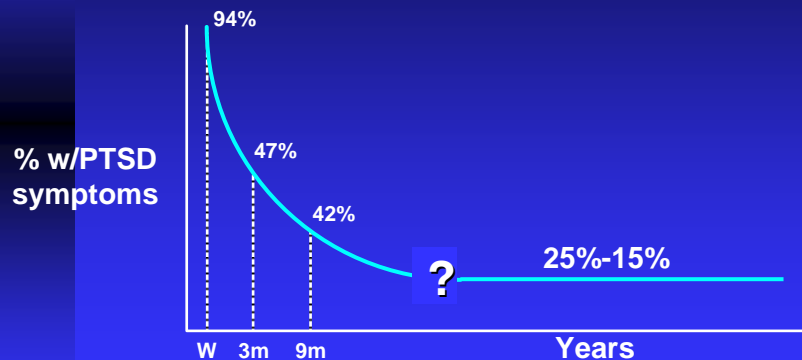
- NY area: 1,072,500 adults with probable PTSD
- U.S. total: 8,640,000 adults with probable PTSD

Based on Galea et al (NY Area) (6% of 13.5M)

- 460,000 (directly affected) + 360,000 (indirectly affected) = 820,000

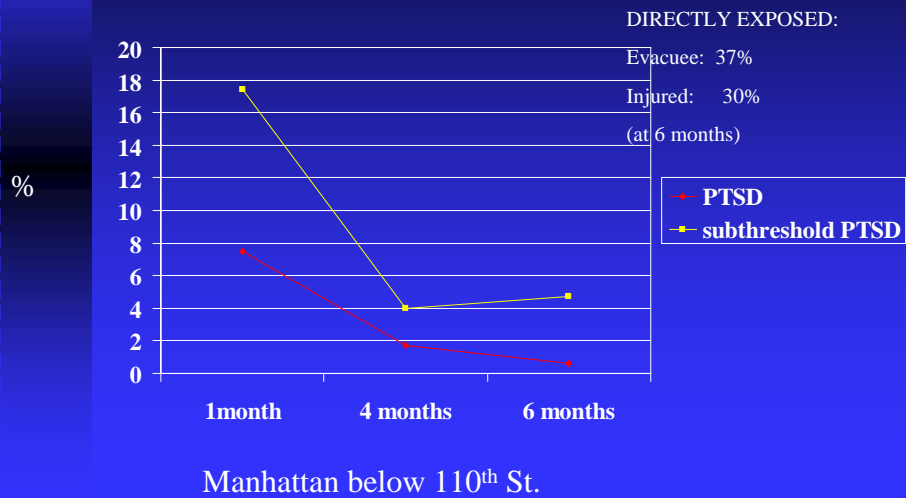
## Longitudinal Course after Trauma

The majority of people who develop PTSD symptoms eventually recover



Shalev & Yehuda, 1999.

## PTSD in Manhattan After September 11 (Galea et al., Am J Epi 158:514-524, 2003)



## PTSD: Risk and Protective Factors

- Severity of trauma
- Genetic Vulnerability
- History of previous trauma
- Preexisting psychiatric disorder
- Family history of psychiatric disorder
- Available support systems
- Exposure to reactivating environmental events

## PTSD: the Biological Perspective

- Etiology: PTSD involves a biological vulnerability, determined by genetic and/or developmental factors, to **dysregulation of stress responses**
- Perceived threat provokes a robust physiologic, systemic response, with increased amygdala and locus ceruleus activity, sympathetic arousal, and cortisol and opioid release
- Intense pain / fear responses are imprinted in cortical and subcortical synapses related to memory, perception, and arousal.

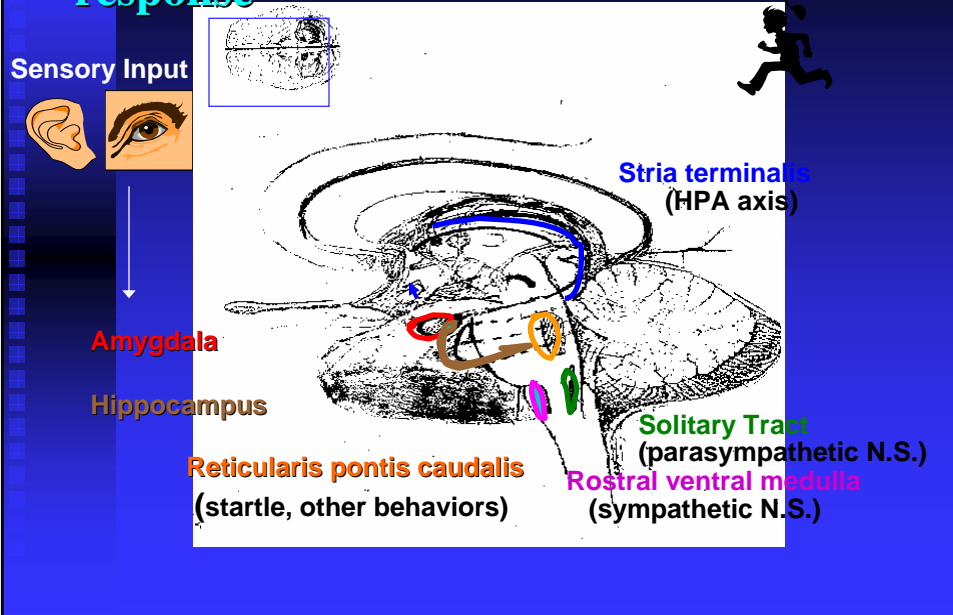
## PTSD: the Biological Perspective

Etiology (continued:)

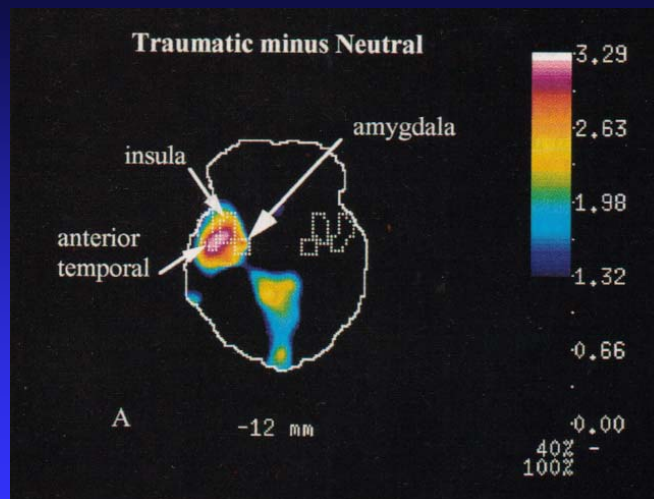
PTSD is associated with alterations of the HPA axis, hippocampus, serotonergic, noradrenergic, glutamatergic and GABAergic systems

Treatment: Pharmacotherapy or psychotherapy to correct dysregulation

# Neurobiology of the acute stress response



## Exposure to Traumatic Imagery in PTSD



Rauch et al. *Arch Gen Psychiatry*. 1996;53:380.

## The Amygdala: Critical In Both *Perception* And *Expression* Of Fear

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- Lesions to the amygdala:
    - ◆ impair recognition of fearful facial expressions
    - ◆ impair fear response (Kluver-Bucy)
  - Electrical stimulation of the amygdala precipitates fearful, panic-like responses
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## PSYCHOTHERAPY FOR PTSD

## Use of new technologies: The computer as therapist



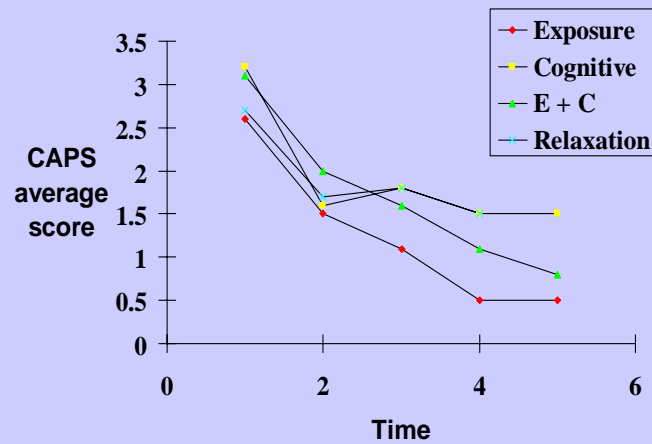
- PSYCHOSOCIAL MODEL OF PTSD
- To what degree is PTSD explained through learning mechanisms
  - ◆ role modeling (including parenting); classical and operant conditioning (trauma); higher order generalization (schema development); higher order schematization (Weltanschauung)
  - ◆ Corollary: Mood and anxiety symptoms and interpersonal problems are secondary to overlearning and its consequences (grim, restricted, and/or erroneous assumptions about the future, others, and the environment)

In other words. . .

■ “One sees what one knows.”

--Goethe

Treatment of PTSD by Exposure and/or Cognitive Restructuring Marks et al., *Arch Gen Psychiatry* 1998)



## Rationale for Prolonged Exposure Therapy

Three main factors prolong post-trauma problems:

- ❖ Avoidance of trauma-related situations
- ❖ Avoidance of trauma related thoughts and images.
- ❖ The presence of maladaptive beliefs since the trauma: “The world is extremely dangerous”; “The victim is extremely incompetent.”

The *avoidance strategies* prevent the client from processing the trauma, both emotionally and cognitively.

The two main procedures for addressing avoidance behaviors:

- ❖ **Telling the Story of the Trauma (Imaginal exposure)** Confronting painful memories promotes processing of these experiences and allows the patient to reflect on frightening, overgeneralized beliefs about the trauma and themselves (“I can’t trust anyone; I am weak”)
- ❖ **Homework to overcome avoidance (In vivo exposure)** Approaching trauma-related situations that are being avoided. It enables the patient to learn experientially that these situations are not dangerous.

## Medication for PTSD



## Controlled trials in PTSD – more effective than placebo

- Venlafaxine, sertraline for PTSD (Davidson in press)
- Paroxetine for civilians and veterans (N= 551, Marshall et al., 2001)
- Sertraline for mostly civilians (Davidson et al., N=208, 2001)
- Sertraline for mostly civilians (N=187, Brady et al, 2000))
- Fluoxetine for civilians (N=53, Connor *et al.*, 1999)
- Fluoxetine for civilians and veterans (N=64, van der Kolk *et al.*, 1994)
- Amitriptyline for veterans (N=46, Davidson *et al.*, 1990)
- Phenelzine for veterans (N=34, Frank *et al.*, 1988; N=60, Kosten *et al.*, 1991)
- Imipramine for veterans (Frank *et al.*, 1988; Kosten *et al.*, 1991)
- Brofaromine for civilians and veterans with PTSD >1 year (N=45, Katz *et al.*, 1995)

## Controlled trials in PTSD – not more effective than placebo

- Lamotrigine veterans (promising in N=15 study)
- Fluoxetine (Nagy *et al.*, unpublished; van der Kolk *et al.*, 1994, veterans subsample)
- Fluoxetine (Hertzberg et al., 2000, N=12 veterans)
- Sertraline (Pfizer, unpublished, 1 veteran site, 1 civilian site)
- Phenelzine for civilians and veterans (N=10, crossover design, 5-week trial, Shestatzky *et al.*, 1988)
- Alprazolam for civilians and veterans (N=10, crossover design, 5-week trial, Braun *et al.*, 1990)
- Desipramine for veterans (N=18, 4-week trial, Reist *et al.*, 1989)
- Inositol for civilians and veterans (N=17, Kaplan *et al.*, 1996)



"I know *something* interesting is sure to happen," she said to herself, "whenever I eat or drink anything: so I'll just see what this bottle does."

--Lewis Carroll, *Alice's Adventures in Wonderland*

## Paroxetine 20mg vs. Paroxetine 40mg vs. placebo

(N=551) (Marshall et al., 2001, *American Journal of Psychiatry*)

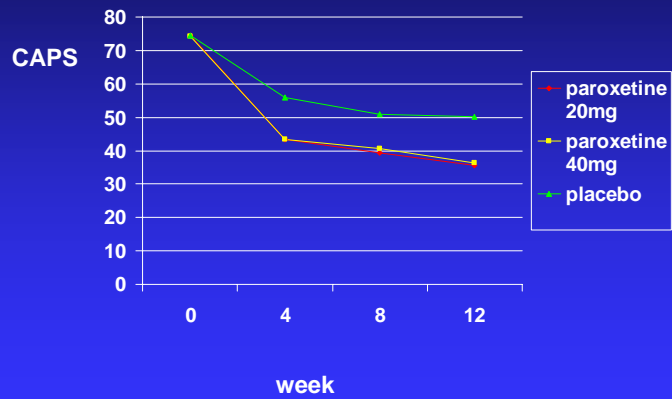
CGI responders:

20mg 63%

40 mg 57%

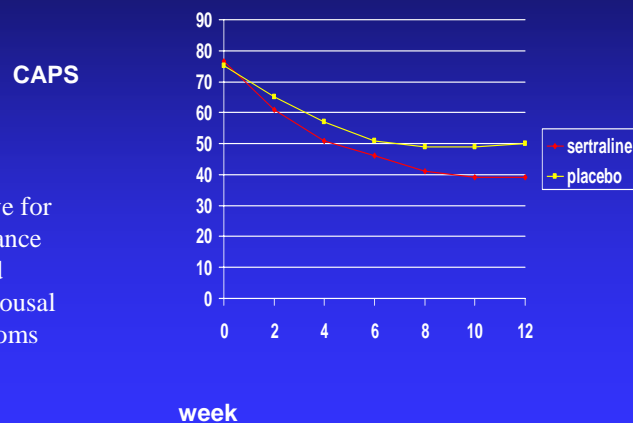
placebo 37%

Equally effective for both men and women and for all three symptom clusters

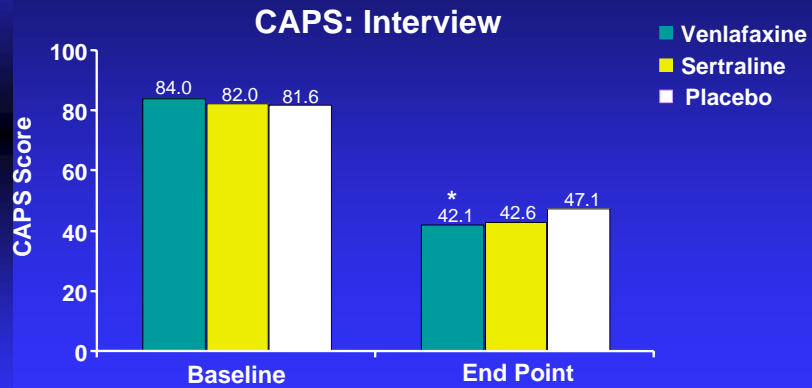


## Sertraline vs. Placebo (N=187, Brady et al. 2000)

Effective for Avoidance and Hyperarousal symptoms



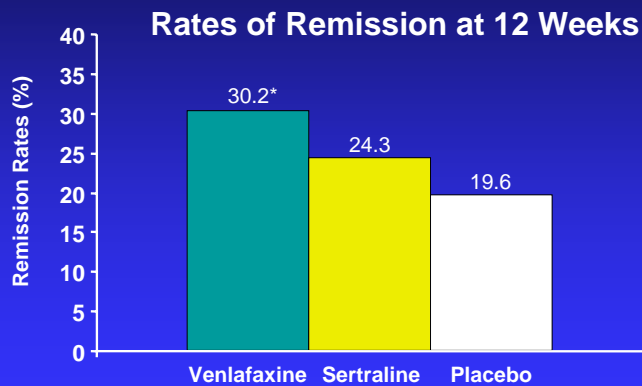
## Venlafaxine XR and Sertraline vs Placebo in PTSD



\* $P=.01$ , Venlafaxine<Placebo  
 $P=.08$ , Sertraline<Placebo

Davidson JR, et al. Unpublished data; 2003.

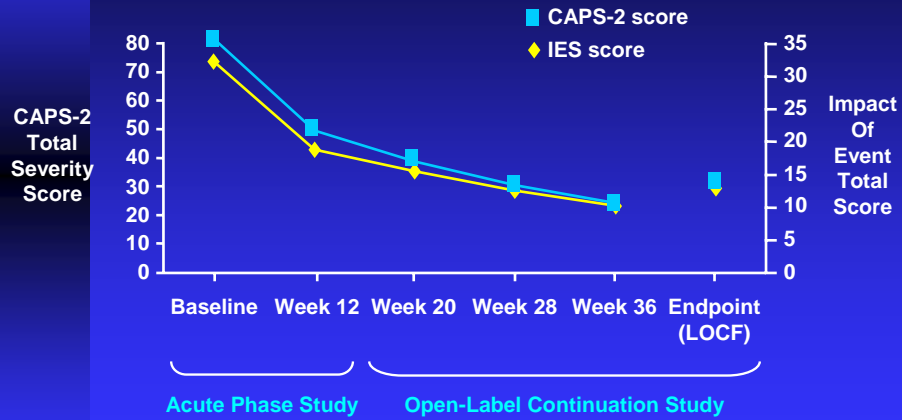
## Remission with Venlafaxine XR and Sertraline in PTSD



\* $P=.05$ , Venlafaxine>Placebo

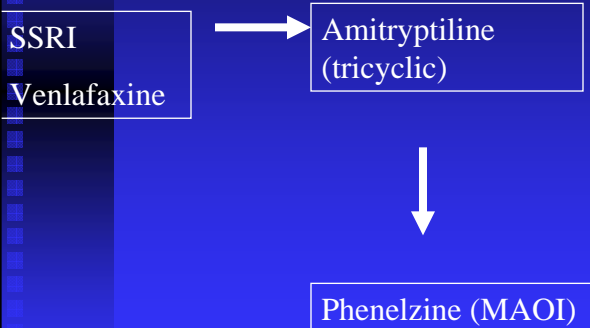
Davidson JR, et al. Unpublished data; 2003.

## The Effect Of Continuation Treatment With Sertraline On Core Symptoms Of PTSD



Londborg et al. *J Clin Psychiatry*. 2001(May);62(5):325-331.

## Evidence-based Medication Algorithm for Monotherapy



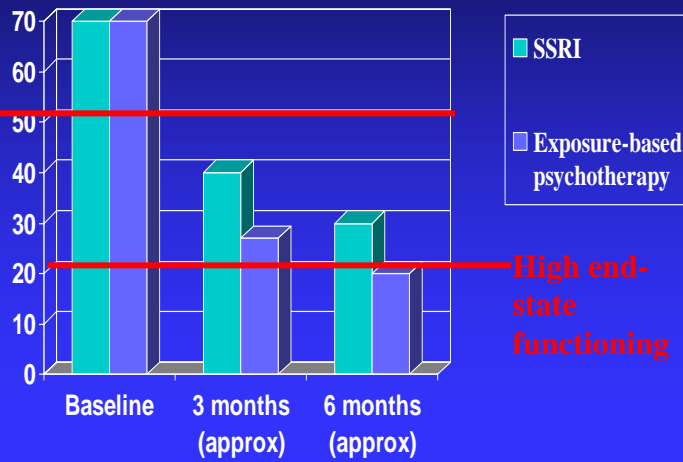
## Evidence-based Medication Algorithm for Augmenting Partial Response



## PTSD Symptoms After Treatment: Schematic

PTSD Symptoms

PTSD Diagnosis



## Treatment Domains in PTSD

### Affect

- anxiety
- fear
- irritability
- depression
- numbing

### Behavior

- avoidance
- aggressive outbursts
- withdrawal

### Cognition/schemas

- re-experiencing
- vigilance for traumatic recurrences
- self-as-fragile
- world-as-dangerous

