TREATMENT OF POST-TRAUMATIC STRESS DISORDER

PETER B. DYCK, M.D.
Peter B. Dyck, M.D., P.A. and Associates
Raleigh, NC

Learning Objectives

1. Understand PTSD, its symptoms, causation, and prevalence
2. Understand the wounds inflicted by trauma and the healing of these wounds
3. Understand the physiology of PTSD, and role of medication in treatment
4. Recognize balance between apparently conflicting Biblical calls both to remember and to forget
5. Assist people in moving away from a victim or survivor stance to become truly transformed and overcome the past

Post-Traumatic Stress Disorder:
DSM-IV Criteria (Am. Psychiat. Assoc. 1994)

A. Person exposed to traumatic event
   -Serious threat to self, rxn.. of fear/helplessness/horror
B. Persistent re-experiencing of trauma
   -Intrusive memories, dreams, reliving, reacting to cues
C. Persistent avoidance & numbing
   -Avoiding reminders, feelings of detachment
D. Persistent symptoms of increased arousal
   -Insomnia, anger, hypervigilance, exaggerated startle
E. Duration more than one month
F. Causing significant distress or functional impairment

PTSD vs. Acute Stress Disorder:
DSM-IV Criteria (Am. Psychiat. Assoc. 1994)

A. Person exposed to traumatic event
   -Serious threat to self, rxn. of fear/helplessness/horror
B. Dissociative Sx., e.g.. numbing, detachment, amnesia
C. Persistent re-experiencing of trauma
D. Marked avoidance of reminders of trauma
E. Marked Sx. increased arousal
F. Causing significant distress or functional impairment
G. Duration 2 d. to 4 wk., within 4 wk. of trauma
H. Not due to drugs, medication, or medical condition

Community Studies of PTSD: National Comorbidity Study

- Diagnostic interview, national community sample, n=5877, age 15-54
- Lifetime prevalance of PTSD: 7.8%
  -Men: 5.0%. Women: 10.4%
- Most common traumas causing PTSD
  -Men: combat, witn. trauma; women: rape, sexual abuse
- Comorbidity high: example rates of major depression
  -15% among those w/o PTSD vs. 48% w/ PTSD
- Duration of Sx: w/ Tx: 36 mo vs. no Tx: 64 mo
- Persistence >120 mo: 34% (RC Kessler et al., 1995)

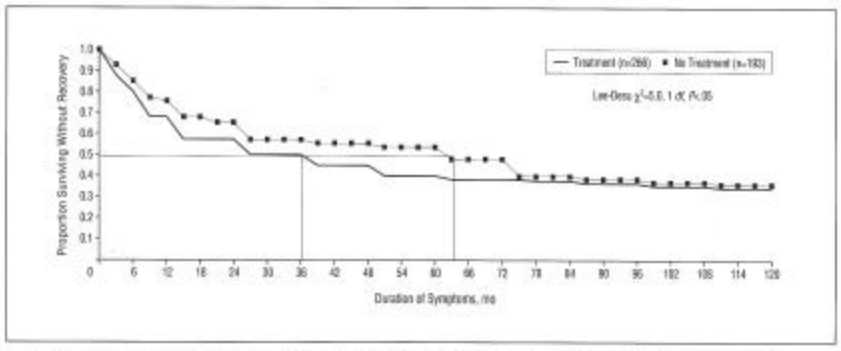


Figure 2. *Survival curves based on duration of symptoms for respondents who did and did not receive treatment for posttraumatic stress disorder.*

ARCH GEN PSYCHIATRY/VOL 52, DEC 1995
1057

Community Studies of PTSD: Detroit Area Survey of Trauma

- Telephone interview, probability sample, Detroit metro area, n=2181, age 18-45
- Provides best estimate of risk of PTSD following specific types of trauma
- Highest risks of causing PTSD:

-Hostage/kidnapping/torture	53.8%
-Rape	49.0
-Badly beaten up	31.9
-Sexual assault	23.7
-Serious accident	16.8
-Sudden unexpected death	14.3
-Child's life threatened	10.4

Community Studies of PTSD: Detroit Area Survey of Trauma

- Causing most cases of PTSD:

-Sudden unexpected death	31.1% of all PTSD cases
-Badly beaten up	13.3
-Rape	09.5
-Serious accident	08.6
-Witnessed killing/serious injury	08.3
-Learned about other's trauma	06.9
-Mugged	06.1
-Other sexual assault	05.0

- Remission varied depending on gender and type of trauma (N Breslau et al., 1998)

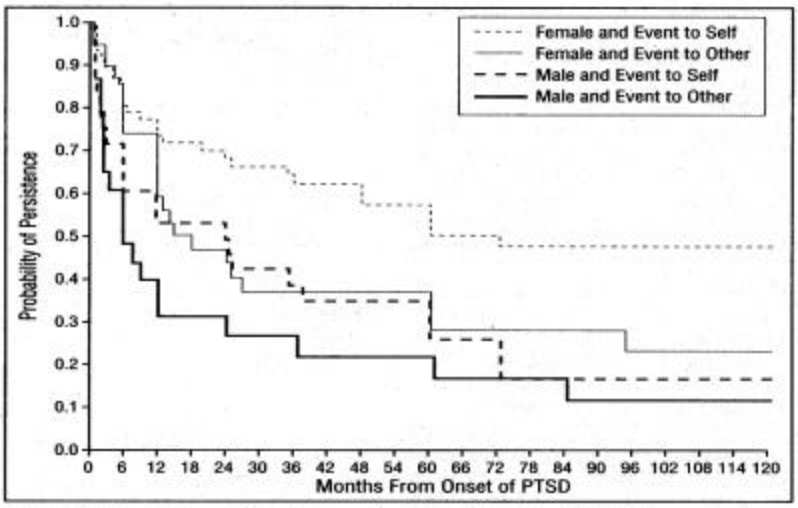
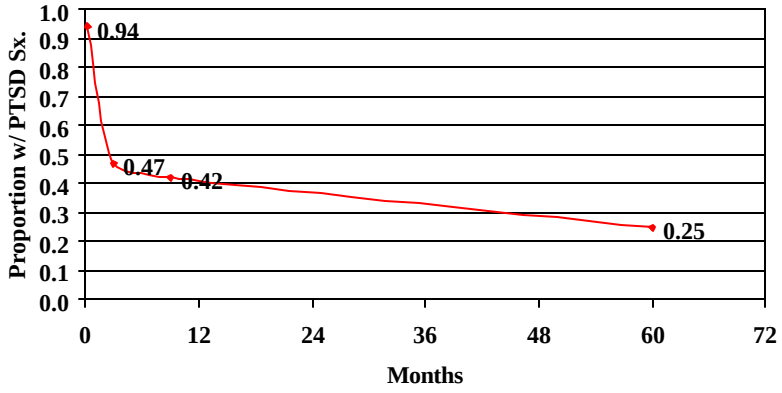


Figure 2. *Remission of posttraumatic stress disorder (PTSD) by sex and trauma type.*

Sep 11, 1999 Copyright © 1999 Peter B Dyck, MD 9

Development of PTSD Symptoms in Rape Victims

(Rothbaum & Foa, 1993)



Sep 11, 1999 Copyright © 1999 Peter B Dyck, MD 10

Traumatic Stress Reactions: Normal stress reactions to PTSD

- Traumatic events
  → Stress reactions
  → Acute stress disorder (2 d. to 4 wk.)
  → Acute post-traumatic stress disorder, acute (1 to 3 mo.)
  → Chronic post-traumatic stress disorder, (beyond 3 mo.)

Understanding Cause of PTSD: Conceptual Changes

- PTSD originally thought of as expected reaction to severe trauma, occurring in most individuals who suffered from the trauma
- Now, PTSD is understood to occur only in a proportion of individuals
  -More severe trauma causes greater risk of PTSD
  -Some more vulnerable to PTSD, and at greater risk
- Also research has increased our understanding of nature of the harm or "wounds" of PTSD

The Harm of PTSD:
Best Understood from Multidimensional Perspective

- Multidimensional perspective:
  -Spiritual (pneuma = spirit): Relationship w/ God & spiritual realm (devil, angels, demons)
  -Relational: Relationship w/ others (family, church, community)
  -Psychological (psuche = soul): Mind, emotions, memory, will
  -Biological (soma = body): Physical body & its function
- God is Lord over all, these merely represent ways to define and categorize our experience

Spiritual Wounds of PTSD

- Distorted perception of attributes of God
  -Love: Mercy, compassion, forgiveness, compassion
  -Truth: Light, word, righteousness, judgment
  -Power: Presence, ability to create & restore, miracles
- Problematic beliefs about (lack of) involvement of God in traumatic situation
- Damaged relationship with God now: Trust, intimacy, submission (yielding our will to His)
- Diminished willingness to follow his instruction
  -Receiving and granting forgiveness

Relational Wounds of PTSD

- Detachment or estrangement from others
- Mistrust
- Bitterness or unforgiveness
- Utilitarian view of relationships
- Altered styles of relating
  -Avoidant, phobic
  -Suspicious
  -Seductive

Psychological Wounds of PTSD: Core Symptoms

- Persistent re-experiencing:
  -Recurrent intrusive memories
  -Recurrent dreams
  -Reliving experiences
  -Intense distress w/ cues that resemble trauma
- Emotional numbing:
  -Avoidance of reminders
  -Diminished recall of trauma
  -Diminished interest & participation
  -Feelings of detachment & estrangement
  -Restricted affect

Psychological Wounds of PTSD: Associated Symptoms

- Cognition:
  -Diminished concentration
  -Impaired, fragmented memory
- Perception:
  -Detachment
  -Derealization
  -Depersonalization
- Emotional states:
  -Anxiety
  -Depression
- Emotion modulation:
  -Reactivity
  -Extremes
- Thought content
- Thought process
  -Obsessional
  -Suspicious
- Behavior
  -Impulsive
  -Compulsive
  -Self-destructive

Psychological Wounds of PTSD: Identity and Meaning

- Identity
  -Defined by the traumatic experience
  -Victim: "At the mercy of the situation," "damaged/dirty/ defective," vulnerable, helpless
  → Survivor: Taking care of self in "cold cruel world," but often self-focused, unforgiving, bitter
  (→ Overcomer): The goal of counseling/healing process
- Meaning of situation: "What really happened?" "Why did this happen to me?"
- Meaning of life: "Was I meant for this?"
- Sense of Future: Foreshortened, tragic, meaningless

Biological Wounds of PTSD: Significance to Christian Counseling

- Many in Christian community argue psychiatric disorders are spiritual problems not medical problems (syndromes not diseases, heterogeneous, diagnosis not based on medical test, mechanism not well understood)
- If medical problem, then medical intervention OK, if not medical problem then no reason for medical intervention
- No doubt these are, at least in part, spiritual problems
- But we must consider the possibility psychiatric disorders such as PTSD are both spiritual and medical – what is the evidence?

Biological Wounds of PTSD: Normal Stress Reactions

- Fight or flight (Cannon, 1914)
  -Acute stress
  →Secretion of adrenalin from adrenal medulla
  →Arousal state:
  Tachycardia, shortness of breath, feelings of fear or anger, sweating , trembling, need to flee
- Later research furthered our understanding of role of adrenalin and implicated other neurochemical systems as well

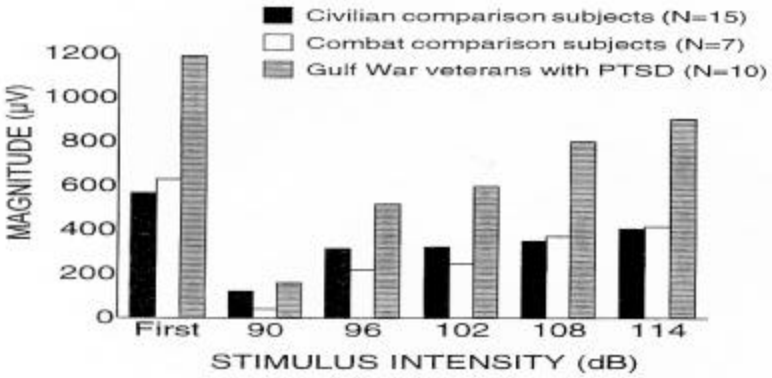
Biological Wounds of PTSD: Catecholamine (Adrenergic) System

- Catecholamines
  -Epinephrine (adrenalin): Hormone secreted by adrenal medulla
  -Norepinephrine (noradrenalin): Neurotransmitter primarily produced by neurons in locus ceruleus
  -Dopamine: Neurotransmitter
- Mediate arousal
  -Increased alertness, increased heart rate, shortness of breath, sweating, trembling, pacing
- Triggered by threat/stress
- Desensitization or sensitization to later threats

Biological Wounds of PTSD: Exaggerated Startle Reflex

- Gulf war veterans with PTSD (n=10), compared with Gulf war veterans (n=7) and civilians without PTSD (n=15)
- Eye-blink component of startle response measured via EMG following exposure to random noise bursts of varying intensity
- Startle response (eye-blink) exaggerated in individuals with PTSD
  (CA Morgan et al., 1996)

FIGURE 1. Amplitude of the Acoustic Startle Reflex in Gulf War Veterans With PTSD, Gulf War Combat Comparison Subjects, and Healthy Civilian Comparison Subjects[a]



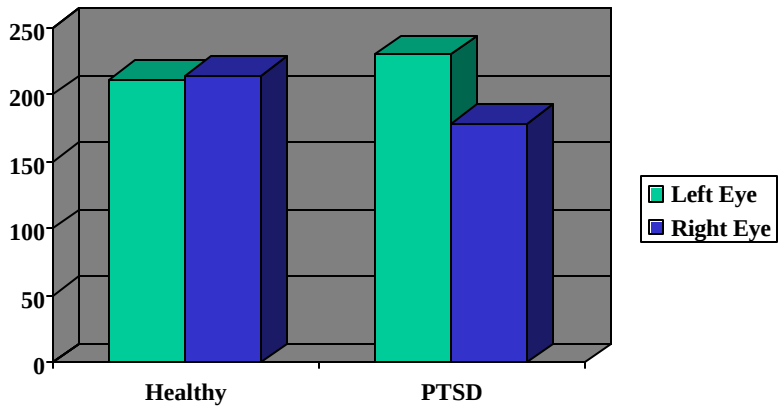
[a]Bars show the amplitude of the first startle response, to 102 dB, as well as the startle response to the subsequent stimuli averaged over blocks of testing.

(90, 96, 102, 108, and 114 dB) as repeated factors. In addition, a

Biological Wounds of PTSD: Abnormal Startle Reflex

- Women patients with sexual-assault related PTSD (n=13) compared with healthy women (n=16)
- Eye-blink component of startle reflex measured via EMG following exposure to random noise bursts of varying intensity
- Startle response (eye-blink) exaggerated in women with PTSD, significantly lateralized to left eye (right side of brain)
  (CA Morgan et al., 1997)

Biological Wounds of PTSD: Abnormal Startle Reflex



Sep 11, 1999 Copyright © 1999 Peter B Dyck, MD 25

Biological Wounds of PTSD: Noradrenergic & Serotonergic Function

- Adult male patients with PTSD (n=26) compared with healthy male volunteers (n=14)
- Administered infusions of (1) yohimbine, (2) m-CPP, and (3) placebo in double-blind randomized manner
- Yohimbine (probe of noradrenergic activity): Triggered flashbacks in 31% of PTSD, vs. 0% controls
- m-CPP (probe of serotonergic activity): Triggered panic in 27% of PTSD, vs. 0% of controls
- Different PTSD pts. triggered (SM Southwick et al., 1997)

Sep 11, 1999 Copyright © 1999 Peter B Dyck, MD 26

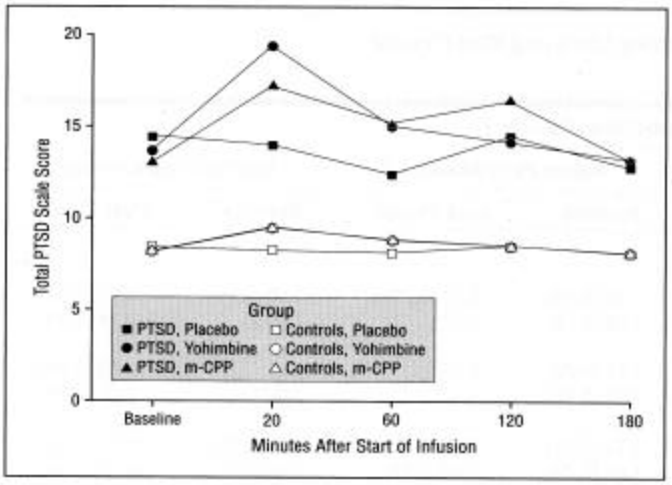


Figure 2. *Effects of yohimbine hydrochloride, meta-chlorophenylpiperazine (m-CPP), and placebo on total Post-Traumatic Stress Disorder (PTSD) scale score in healthy controls and patients with PTSD.*

Biological Wounds of PTSD: HPA Axis

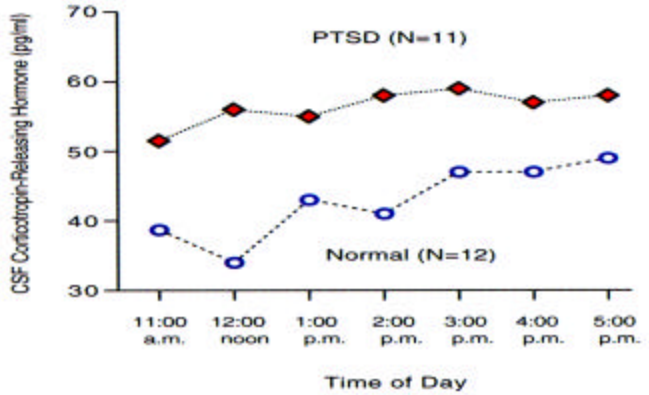
- Hypothalamus → CRF
  → Pituitary → ACTH
  → Adrenal cortex → Cortisol
- Modulates stress reaction: Cortisol functions to balance and/or reinforce effects of catecholamines
- Acute stress: Typically increased CRF, ACTH, and cortisol
- CRF also found in locus ceruleus (arousal states) and amygdala (emotion)

Biological Wounds of PTSD: Differences in CRF Levels (In CSF)

- Combat veterans w/ PTSD (n=11) compared with matched group of volunteers (n=12), avg. age 42
- Given controlled diet, abstinent from cigarettes
- Serial CSF samples obtained over 6 hr period, CRF (corticotropin releasing factor) levels measured
- 24 hr urine free cortisol measured
- Findings: significant difference in CRF, but not cortisol (profile unique to PTSD)
  (DG Baker et al., 1999)

BAKER, WEST, NICHOLSON, ET AL.

FIGURE 1. Serial CSF Concentrations of CRH in Normal Volunteers and Patients With PTSD[a]



[a] Beginning after 15 hours of fasting and 3 hours after subarachnoid catheter placement, CSF was continuously withdrawn and aliquoted at 1-hour intervals from 11:00 a.m. to 5:00 p.m. Each point represents the mean.

Biological Wounds of PTSD: Effect of Previous Trauma on Cortisol

- Adult female rape victims (n=37), interviewed within 51 hr of rape
- Assigned to groups based on severity of rape and prior history of assault
- Cortisol blood levels obtained
- Later assessed for presence of PTSD
- Previous assault correlated with higher risk of PTSD (67% vs. 23%) lower cortisol levels (HS Resnick et al., 1995)

BRIEF REPORTS

FIGURE 1. Plasma Cortisol Levels of Rape Victims as a Function of Time Elapsed Since Rape, History of Previous Assault, and Severity of Index Rape

Biological Wounds of PTSD: Significance of CRF

- CRF neurons in hypothalamus (HPA axis), locus ceruleus (stimulation of noradrenergic system), aymgdala (mediating emotion)
- IV administration of CRF in animals results in:
  -Increased EEG activity; increased firing of LC
  -Increased plasma norepinephrine & epinephrine
  -Increased locomotor activity
  -Behaviors consistent with anxiety & fear: Potentiation of acoustic startle, decreased exploratory activity
  (JD Bremner et al., 1997)

Biological Wounds of PTSD: Effect of Alprazolam on CRF Levels

- Study of CRF (corticotropin-releasing factor) neurons in locus ceruleus (LC) of rat brain
- IV injection of alprazolam (Xanax) lowered CRF levels in LC 0.5 to 3.0 hr following single injection
- Chronic administration of alprazolam over 14 days maintained same effect on CRF in LC
- Stopping alprazolam caused return of CRF to previous levels in 24 hrs (MJ Owens et al., 1993)

Biological Wounds of PTSD: Hippocampal Volume

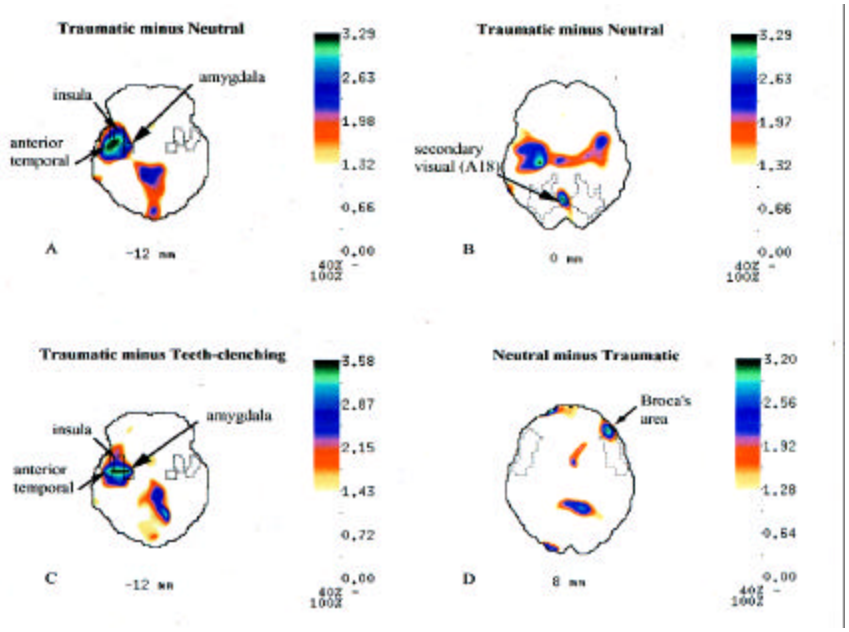
- Patients w/ PTSD: Short-term memory deficits
- Hippocampus involved in short-term memory
- Stress associated with high circulating cortisol
- High cortisol: Neurotoxic effect on hippocampus
- Combat veterans (n=26) compared with match controls (n=22)
- MRI of brain to measure volume of hippocampus
- Statistically significant differences seen (JD Bremner et al, 1995)

TABLE 4. Volume of the Hippocampus in Male Patients With PTSD and in Matched Comparison Subjects

Hippocampal Region	Volume (mm^3)				Analysis of Variance	
	Patients With PTSD (N=26)		Comparison Subjects (N=22)			
	Mean	SD	Mean	SD	F (df=1, 46)	p
Left	1186	138	1233	163	1.20	0.28
Right	1184	142	1286	175	5.02	0.03
Mean	1185	123	1260	160	3.38	0.07

Biological Wounds of PTSD: PET Scan Activation Studies

- Adult patients with PTSD, age 18-65, right handed, medication free >4 weeks
- Heard taped scripts of neutral experience vs. traumatic experience in different sessions
- PET scan measured blood flow in the brain (rCBF) via labeled oxygen immediately after scripts, differences in circulation represented differences in brain activity
- Increases seen in right limbic and paralimbic structures (posterior medial orbitofrontal cortex, anterior and medial temporal cortex, anterior cingulate cortex) and amygdala (SL Rauch et al., 1996)



Biological Wounds of PTSD: Summary of Findings

1. Sensitization: Symptom pattern related to type of trauma
2. Altered HPA system response: Acutely elevated cortisol, which is then blunted, despite persistently elevated CRF, sensitized cortisol receptors
3. Exaggerated catecholamine function
4. Diminished serotonergic function
5. Increased brain activity in right limbic, paralimbic, visual areas (PET scans of rCBF)
6. Lateralization to right side of brain (PET, MRI of hippocampus, startle reflex)

Healing for PTSD: Treatment/Counseling Approaches

- Means of healing (God is Lord over both)
  -Natural: By naturals (scientifically observable) processes
  -Supernatural (miraculous)
- Biblically defined processes:
  -Forgiveness
  -Healing
    -Spirit
    -Soul
    -Body
  -Release from captivity/bondage
  -Circumcision of the heart
  -Overcoming
  -Transformation

Healing for PTSD: Use of Medication

- Does not accomplish healing, but assists or is a component of healing process
- Intended to address underlying physiological abnormalities and specific symptoms
- Specific medication types for specific problems:
  -To increase serotonin effect: antidepressants (SSRIs)
  -To decrease adrenergic: beta-blockers (propranolol/ Inderal), alpha-2 agonists (clonidine/Catapres)
  -To decrease CRF effect: benzodiazepines (alprazolam/Xanax)
  -To stabilize mood: anticonvulsants (valproate/Depakote, Neurontin) lithium

Wound Healing: Basic Principles

- Wounds of the heart are as real as physical wounds (Prov 14:10)
- God is concerned about the heart (I Sam. 6:17)
- Healing must not be superficial (Jer. 6:6-12)
- We must find and deal with roots of problems (Heb. 12:15)
- We look for relief, for ways out, for some way to avoid process, or simply wait for time to take the problem away; but these don't work
- Healing is a process, The Lord uses this process for a purpose; He rarely bypasses it
- Process can be compared to healing of physical wounds

Wound Healing, Step 1: Expose the Wound

- Healing is specific; must find, identify, expose
- Takes time, openness, and the counsel of the Holy Spirit; revelation is partial and progressive
- Signs of unfinished business (point to the problem):
  -Hurt, pain
  -Bitterness, anger, unforgiveness
  -Shame, guilt
- Must resist: Focus on symptom/situation relief, running from problem rather than addressing and overcoming it, looking for "quick fix"

Wound Healing, Step 2: Pierce Wound, Open It

- When facing sensitive matter, must be willing to stay with it, allow Holy Spirit to pierce our heart, and expose what is inside (Acts 2:37)
- The Lord desires to uncover what is hidden (Heb 4:13)
- Memories of traumatic or significant unresolved events, qualitatively different: fragmented; part vivid & intense, part vague or lost to memory
- Must resist: "Flight into health," or avoiding process

Wound Healing, Step 3: Explore Deep Recesses of Wound

- God is concerned for the hidden part (Ps 51:6) and He searches the innermost parts (Prov 20:27)
- Must find hidden roots that poison us (Heb 12:15)
- Possible roots (sources) of problems:
  -Generational influences
  -Rejection, abandonment, emotional neglect
  -Abusive experiences
- Must resist: Natural tendency to get stuck, mired down, or overwhelmed by pain

Wound Healing, Step 4: Cleanse/Wash the Wound

- Washing accomplished by God's power (Titus 3:5) but can't wash wound that has not first been opened up
- Must wash heart to remove iniquity and sin (Ps 51:2), so heart can be made pure again (Ps 51:7)
- We have responsibility to do this (Isa 1:16), and must do this as soon as we are able (Acts 16:33; 22:16)
- Must resist: Believing it is too hard, or that this doesn't need to be done

Wound Healing, Step 5: Cut Away What Doesn't Belong

- It is better to remove what is diseased than let it poison whole person (Matt 5:29:30)
- This is circumcision of the heart (Deut 10:16; Jer 4:4; Rom 2:29)
- Past ways of coping are natural reactions, but still wrong:
  -Old bitterness (Heb 12:15)
  -Refusing to be comforted (Jer 31:15; Matt 2:18)
- We pray for problem to be taken away; He expects us to do our part (Deut 10:16; Judges 6; Jer 4:4)
- Must resist: Holding on to old ways, refusing to be comforted, or expecting Lord to do process for us

Wound Healing, Step 6: Apply Healing Balm

- Wounds must be tended to; healing balm from the Lord is needed (Jer 8:21-22)
- Purpose of healing balm
  -Easing pain (Jer 51:9)
  -Preventing premature closure of wound (Jer 6:12-16)
  -Preventing re-infection (Luke 11:24-28)
  -Aiding healing (Jer 51:8)
- Must resist: Natural tendency to avoid the place of "rest" with God, out of feeling we won't enjoy it, don't belong, or because of unfamiliarity with intimacy with Him

Wound Healing, Step 7: Bind Up Wound, Allow Healing

- The Lord is concerned about the brokenhearted and binds up their wounds (Ps 147:3; Isa 61:1)
- Healing process takes time; but time by itself doesn't heal wounds
- A wound that has been properly tended to, heals more quickly and completely than one that has been ignored and allowed to fester

Wound Healing, Step 8: Learn a New Way (Rehabilitation)

- As the wounds are healing, must focus on learning:
  -Renewing the mind
  -Taking on new attitudes
  -Learning habits/ways
- Those who have been hurt suffer long term effects; despite the pain, struggle, self-preoccupation, it is not acceptable to hurt others in the process (Ezek 34:16)

Issue I: Reconciling Biblical calls to remember and to forget

- Call to forget
  - Forget the past, press on ahead (Phil 3:13-14)
- Call to remember
  -Not remembering is a sin (Isa 44:19)
  -Remember the Lord and what He has done (Deut 15:15)
  -Remember His promises (I Chron 16:11-17)
  -Remember our own suffering (Heb 10:32-33; Lam 3:1-66)
  -Remember our own transgressions and those we have wronged (Isa 46:8-9; Ezek 20:43-44; Matt 5:23-24)

Issue I: Reconciling Biblical calls to remember and to forget

- Need for balance, avoiding extremes:
  -Avoid dealing with problem from past, naively assuming problem will take care of itself, vs.
  -Becoming consumed with or mired down in past, and not overcoming it

Issue II: Moving from Victim to Survivor to Overcomer

- Most individuals with emotional wounds of PTSD are in victim mode: Seeing oneself at the mercy of circumstances, vulnerable, dependent on others, with the mind of a child; defined by the trauma
- The world offers an answer, become a survivor: Hardened, self-protective, bitter, vowing never to let oneself be hurt again: but still defined by the trauma
- Only the Lord offers a better answer, be transformed and overcome the past, the hurt, and the old ways: He makes a way a new way, He is with us, He provides the ability, but we must walk through it

Issue II: Moving from Victim to Survivor to Overcomer

- Overcoming means:
  -Acknowledging the problem and addressing it specifically
  -Persevering through the process the Lord has provided for healing of wounds
  -Giving up old ways
  -Allowing Him to transform us

Treatment of PTSD: Case Examples