

# PBSD

## Post Blast Stress Disorder









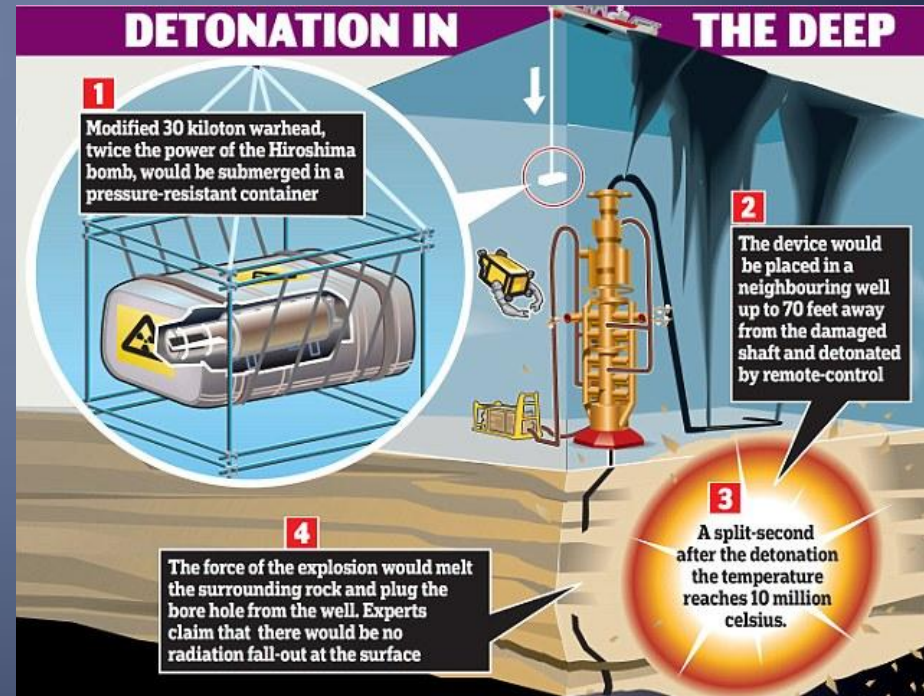






# Detonation

- Instantaneous conversion of solid or liquid into gas.
- Gasses occupy same volume of liquid and or solid.
- Gasses expand-compression of surrounding air.





# Blast Over Pressure

As the gas expands the pressure drops.

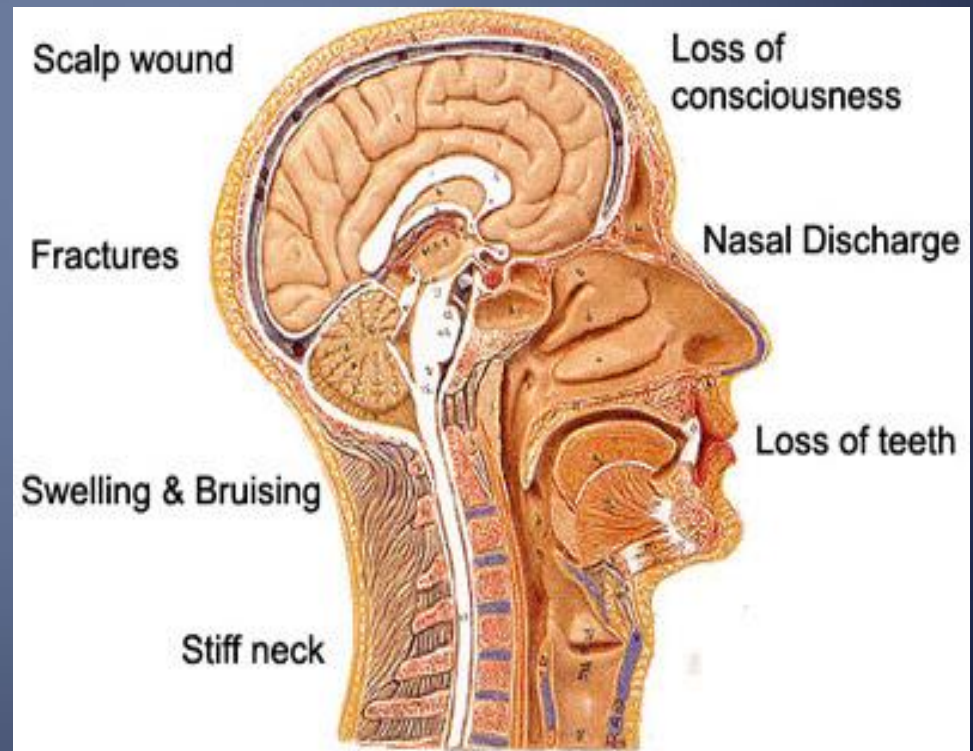
# BLAST UNDER PRESSURE

The combination is blast Baro-trauma and stretching and shearing of the tissues.

None are spared!

# Primary Blast Effect

- Ear- Rupture of temporal membrane.
- Lung- Pulmonary contusion.
- Gas Embolism- brain and spinal cord.
- Colon- small intestines, liver hemorrhage, ischemia, spleen, liver, and or kidney.
- Eye- rupture of globe.
- Brain

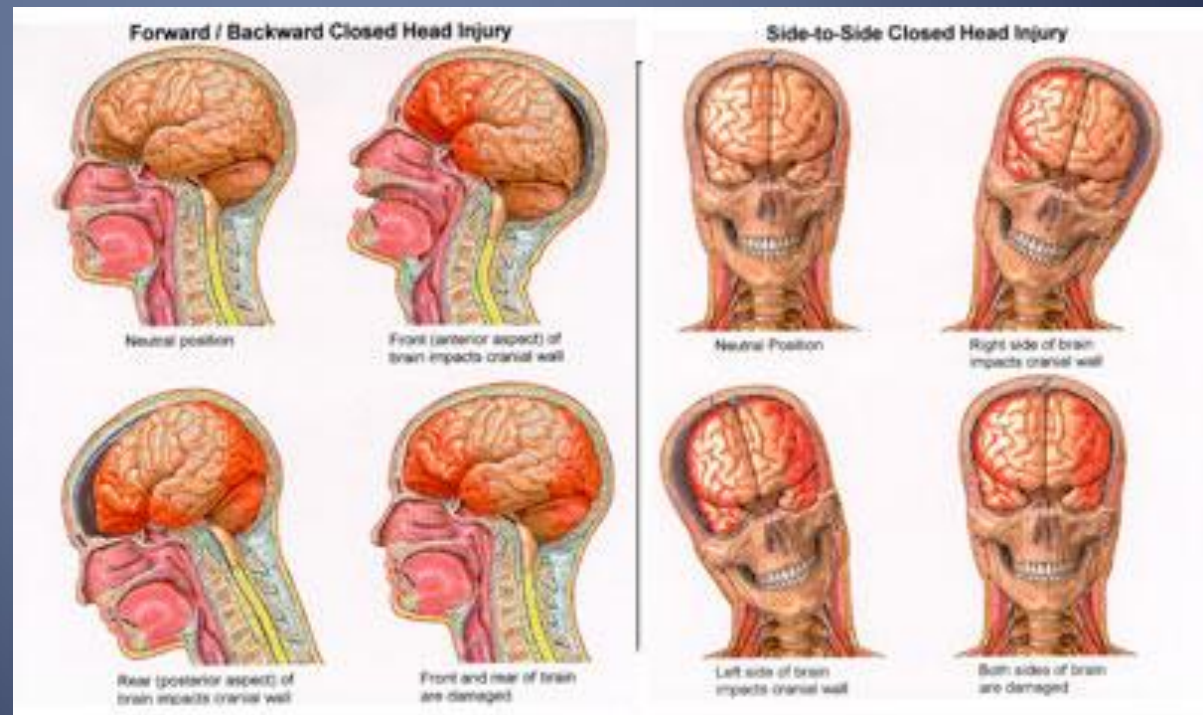


# Secondary

- Brain acceleration/  
deceleration

Brain Over Pressure

And Brain Under Pressure





# Tertiary

- Coup Contra Coup
- Fragments- Buildings
- Shrapnel- Structures
- Compartment Syndrome- 2 degree fractures and swelling pelvis.

# Quaternary

- Toxic Inhalation
- Severe Burns
- CO<sub>2</sub> Asphyxiation

# Changes

1. DAI
2. Increased ICP
3. Shearing
4. Stress
5. Strains
6. Macro- scale Injuries
7. Micro-scale Injuries
8. Toxins, channel disruption, rounds ccc  
clar infarcts, ischemia.

# THE FIVE FRONTAL SUBCORTICAL CIRCUITS

1. Motor Circuit (Origin: Supplementary Motor Area)
  2. Oculomotor Circuit (Origin: Frontal Eye Fields)
- These two circuits are dedicated to motor function in the brain.



# THE FIVE FRONTAL SUBCORTICAL CIRCUITS

3. Dorsolateral Prefrontal Circuit
  4. Lateral Orbitofrontal Circuit
  5. Anterior Cingulate Circuit
- These three circuits are dedicated to executive cognitive functions, social/governed behavior, and motivation.

# THE FIVE FRONTAL SUBCORTICAL CIRCUITS

- “Executive functions originating in the prefrontal cortex include the ability to organize a behavioral response to solve a complex problem, activation of remote memories, self-direction and independence from environmental contingencies, shifting and maintaining behavioral sets appropriately, generating motor programs, and using verbal skills to guide behavior.”

Frontal Lobes and Neuropsychiatric Illness  
(Ed. Stephen P. Salloway, M.D., MS;  
Paul F. Malloy, Ph.D.; and  
James D. Duffy, M.D., Ch.B)

# MILD TRAUMATIC BRAIN INJURY (mTBI) AND POSTTRAUMATIC STRESS DISORDER (PTSD)

- mTBI and PTSD Overlapping Neuroanatomy
- Critical brain regions involved in both disorders –
  - Amygdala
  - HPA
  - Other frontotemporal limbic regions that participate in the induction, expression, and maintenance of these symptoms.

# MILD TRAUMATIC BRAIN INJURY (mTBI) AND POSTTRAUMATIC STRESS DISORDER (PTSD)

- mTBI and PTSD do demonstrate that there are common neurotrophic factors within the brain regions (amygdala, HPA, and other frontotemporal limbic regions), which participate in the induction, expression, and maintenance of symptoms of both mTBI and PTSD.



# MILD TRAUMATIC BRAIN INJURY (mTBI) AND POSTTRAUMATIC STRESS DISORDER (PTSD)

- NEUROPATHOLOGY and PTSD
  - Structural neuroimaging literature reveals a relatively consistent pattern of volumetric reductions in both the hippocampus and the anterior cingulate cortex of adults diagnosed with chronic PTSD.  
(These findings would appear to be consistent with neural models of PTSD positing failures in these regions to provide adequate inhibitory control over the amygdala.)
- Amygdala activity is enhanced in PTSD,

PTSD and Mild  
Traumatic Brain Injury  
(Ed. - Jennifer J.

Vasterling, Richard A. Bryant,

Terence M. Keane )

# TREATMENT OF POSTTRAUMATIC STRESS DISORDER (PTSD)

- Cognitive Behavioral Therapy
  - Psychoeducation
  - Management of Anxiety
  - Cognitive Restructuring
  - Imaginal and In Vivo Exposure (Self-Hypnosis Training, Progressive Relaxation, and EMDR)
  - Relapse Prevention.
- SSRI Antidepressants
- Gabapentin (especially with mTBI)
- Trazadone (if sleep disturbance is significant)

# Risk Factors for AD

1. TBI
2. PTSD
3. TBI/ PTSD
4. Female Gender

# Risk Factors for AD

1. HTN
2. DMT
3. Hyper-lipid
4. Obesity
5. Transplant/ Transference

# Risk Factor Identification

- A. Military- TBI/ Blast/ PTSD
- B. Sports- TBI/ PTSD
- C. Systemic Disease- Transplant/  
Transfusion
- D. Family Members
- E. Gulf Blast Injury Scale

# PBSD Scale

	Points
A. Blast 4	4
B. Blast + TBI	3
C. Blast + Tertiary	2
D. Blast + Quartinary	1

# PBSD Scale

	Points
A. Blast 4	4
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