

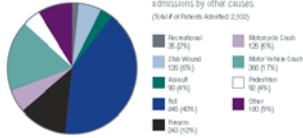
CLINICAL RESEARCH IN PTSD

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DEPARTMENT OF SURGERY
TRAUMA & CRITICAL CARE



FH/MCW Level 1 Trauma Center

Mechanism of Injury

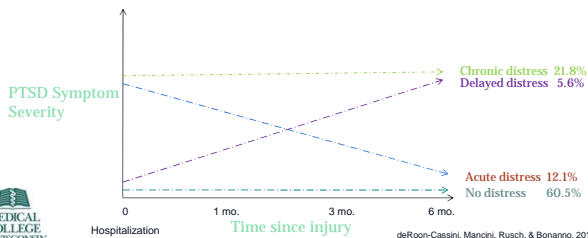


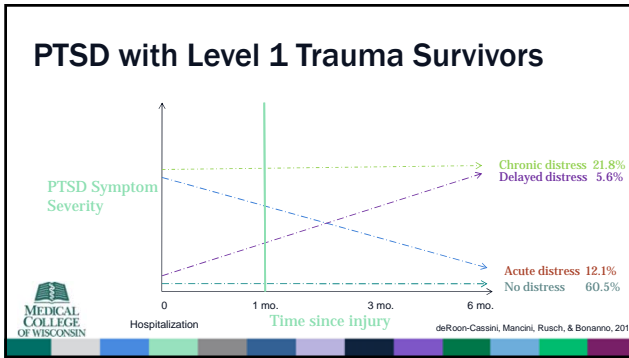
Patent admissions due to falls surpassed admissions by other causes. (Total of Patients Admitted 2,100)

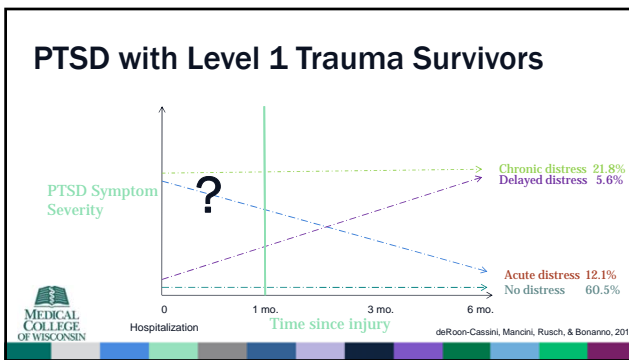
Number of Patients Seen



PTSD with Level 1 Trauma Survivors







Objectives

- Who is at risk for PTSD after trauma
- Treatments for people diagnosed with PTSD
 - Neurologic implications
- Can we prevent PTSD?

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Risk for PTSD

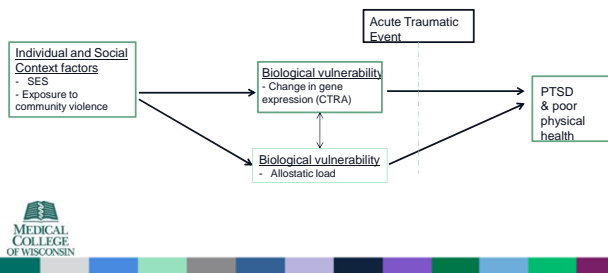
PRE-TRAUMA

- Psychiatric history
- Trauma history and life stress

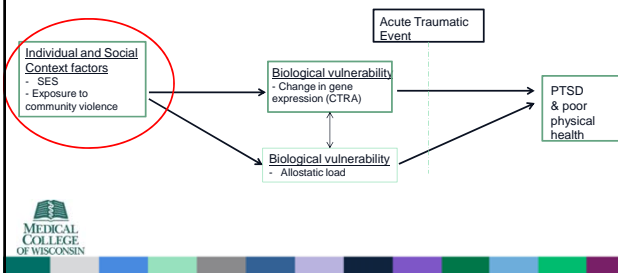


(Suzuki et al., 2011; Hunt et al., 2016)

Psychoneurobiological Model



Psychoneurobiological Model



Risk for PTSD

PRE-TRAUMA

- Psychiatric history
- Trauma history and life stress

PERI-TRAUMA

- Perception
 - Perceived life threat
 - Perceived injury severity



(Bresnahan et al., 2011; Hunt et al., 2016)

Risk for PTSD

PRE-TRAUMA

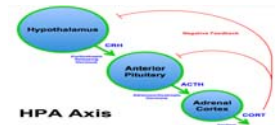
- Psychiatric history
- Trauma history and life stress

PERI-TRAUMA

- Perception
 - Perceived life threat
 - Perceived injury severity
- Biologic response
 - Low cortisol
 - High heart rate



(Bresnahan et al., 2011; Hunt et al., 2016)



(Bresnahan et al., 2011; Hunt et al., 2016)

PERI-TRAUMA


- Perception
 - Perceived life threat
 - Perceived injury severity

- Biologic response
 - High heart rate
 - Low cortisol


Risk for PTSD

POST-TRAUMA

- High emotionality
 - Depression
 - Anxiety




(Hunt et al., 2015)




Risk for PTSD

POST-TRAUMA

- High emotionality
 - Depression
 - Anxiety
- Negative alterations in cognitions
 - World is all of a sudden unsafe



(Hunt et al., 2015)



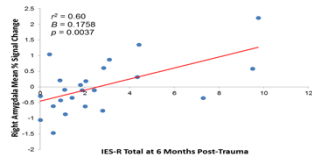
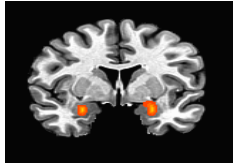
Brain regions implicated in acute responding after trauma



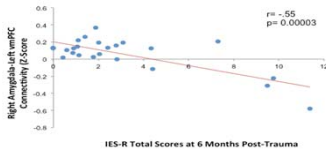
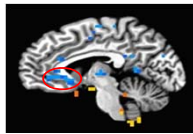
(Hunt et al., 2015)



Increased Amygdala Activation Predicts PTSD Total Scores at 6 Months



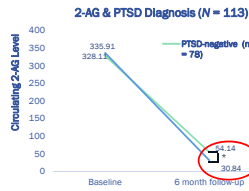
Resting-state Amygdala Connectivity with vmPFC Predicts PTSD Total Scores at 6 Months



What is the role of the endocannabinoid system after traumatic injury?



2-AG significantly lower in those with PTSD 6 months after injury



Treating PTSD

Evidence-based psychological treatments Evidence-based medications

- Cognitive behavioral therapy
 - Prolonged exposure therapy
 - Cognitive processing therapy (CPT)
- SSRIs
- Medications for sleep



Powers, Halpern, Ferenschak, Gillhan, & Foa, 2010; Institute of Medicine (2008) & National Center for PTSD

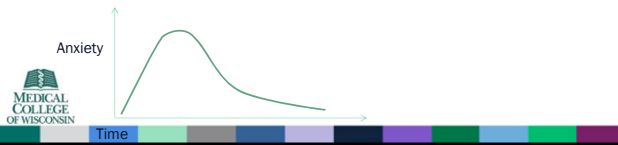
Treating PTSD

- Exposure treatments involve
 - Psychoeducation
 - In vivo exposure to feared but safe trauma related stimuli
 - Imaginal exposure
 - Processing of trauma emotions
- Theoretical basis – fear extinction



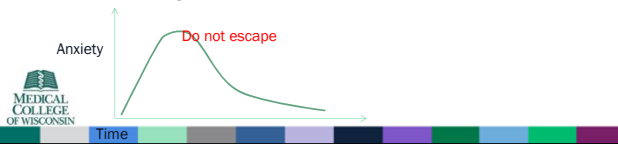
Treating PTSD

- Most important message – DO NOT AVOID (but approach with caution)
 - Overview – treating PTSD through exposure to anxiety producing people, places, situations that reminds one of trauma
 - Treatment is directed at
 - Minimizing excessive escape and avoidance behaviors



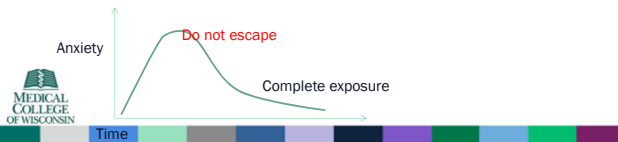
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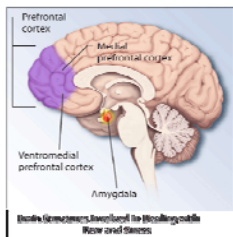


Treating PTSD

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 - Overview – treating PTSD through exposure to anxiety producing people, places, situations that reminds one of trauma
- Treatment is directed at
 - Minimizing excessive escape and avoidance behaviors
 - Increasing sense of control over symptoms
 - Modifying physiological reactions to perceived threat
 - Modifying distorted information processing



PE Treatment Changes Evident in the Brain



Helpmann et al., 2016

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Prevention for PTSD?

- What prevention can look like
 - Interruption in fear conditioned memory consolidation
 - Prevention of strengthening of the fear conditioned response
- Emerging evidence
 - Exposure based intervention in the ED
 - Own trial of early exposure in the hospital
 - Up regulation of endocannabinoid system

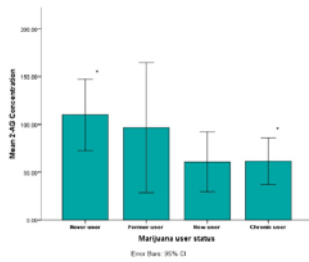


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Can marijuana use prevent chronic PTSD?

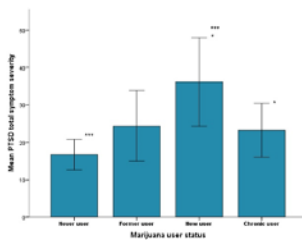


Can Marijuana use treat PTSD?



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Can Marijuana use treat PTSD?



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Summary

- Individual perception along with the sympathetic nervous system and HPA axis response impact risk for PTSD
 - Pretrauma stress may also impact poor recovery
- There are many evidenced based treatments for PTSD
 - Exposure based interventions impact regions of the brain implicated in fear conditioning, safety learning
- A neurobiopsychosocial approach to prevention maybe warranted to have the greatest impact
- While cannabis can provide short-term relief from symptoms, upregulating the ECSS may have more lasting effects



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Acknowledgments

- **Collaborators**
 - Christine Larson, PhD
 - Cecilia Hillard, PhD
 - Josh Hunt, PhD
 - Sadie Larsen, PhD
 - Karen Brasel, MD
- **Research team**
 - Pam Walsh, Mary Gruentzel, Vanessa Simiola, Nicolas Schumann, Felicity Harl, Amber Brandolino, Emily Belleau, Jessica Hanson, Erin Koestner, Rachel Lange, Lauren Taubitz, Tim Geier, Melanie Amini-Hajibashi, Tara Miskovich, Kate Isely, Meredith Halling, Samantha Chesney, Melanie Wambolt
- **Research Funded by:**
 - MCW Injury Research Center, R49/CE001175
 - NIH/NIMH, 1 R21 MH 102838-01 A1
 - NIH/NIMH, R01MH106514
 - MCW Research Affairs Committee Grant