



Mass General Brigham

BRIGHAM AND  
WOMEN'S HOSPITAL

# Trauma-Informed Care in Women's Health

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Update on Neurology and Psychiatry of Women HMS CME course

May 7, 2026



HARVARD MEDICAL SCHOOL  
TEACHING HOSPITAL

# No Disclosures

# Learning objectives

**Upon completion of this activity, participants will be able to....**

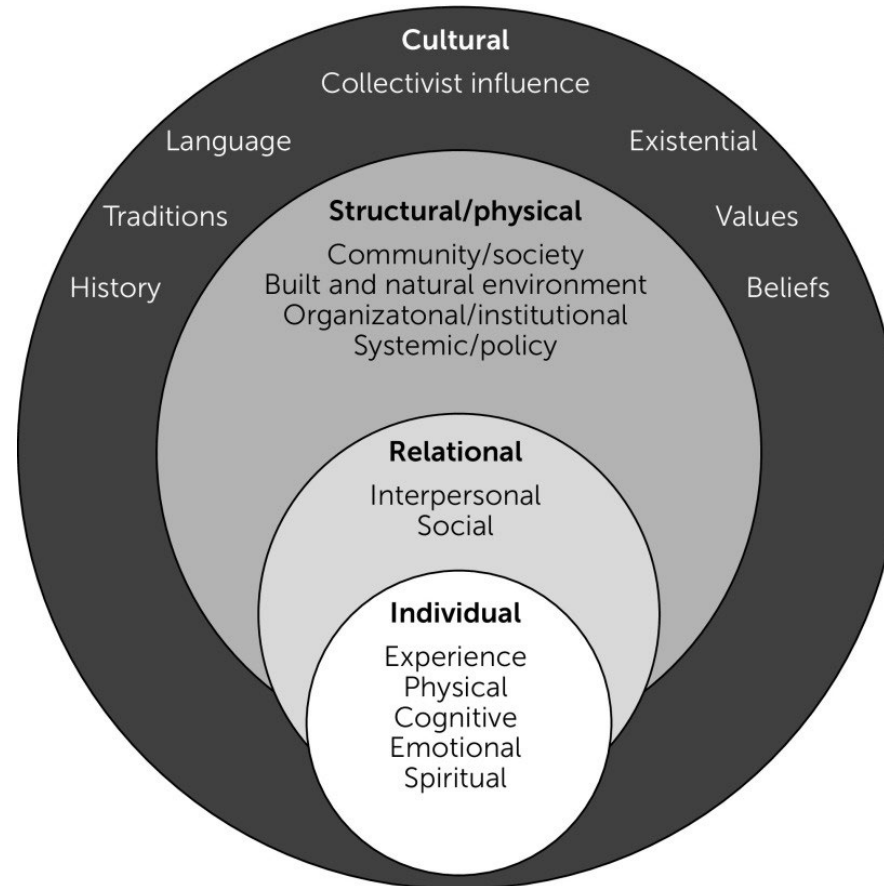
1. Understand the neuropsychiatric basis for trauma-informed care
2. Recognize the difference between trauma-informed and trauma-focused care
3. Discuss strategies for engaging trauma survivors in health care services, including neuropsychiatric settings.

## Case Examples

- *24yo woman presents with dizziness, two days after reported accidental fall at home. Presents as guarded and limited historian.*
- *43yo woman presents in DKA, requiring ICU admission for stabilization. Presents variably as irritable or withdrawn with different clinicians.*
- *60yo non-English speaking woman presents with abdominal pain. Gets agitated when asked to change into hospital gown for exam.*

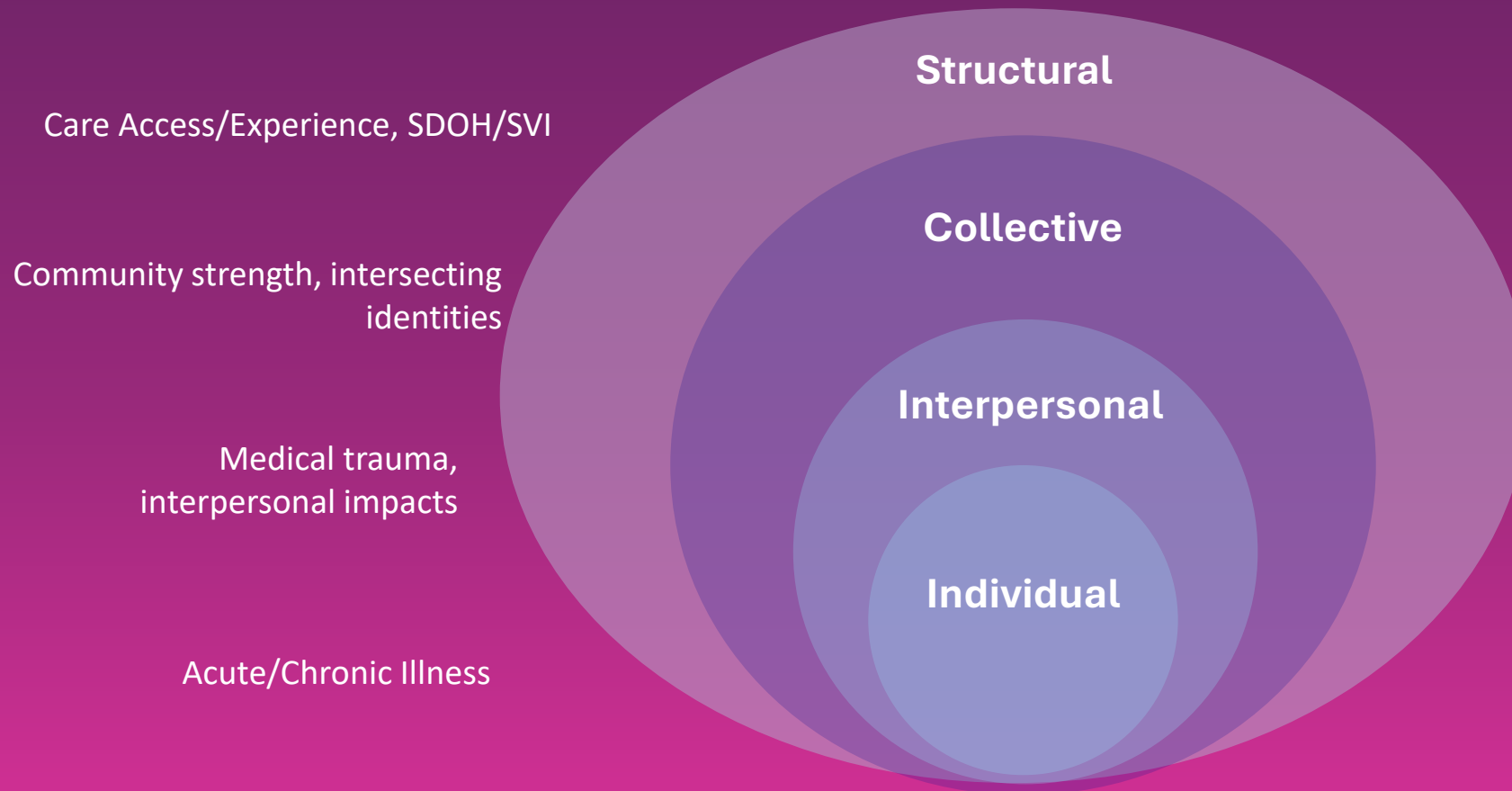
# What is Trauma?

## Consider the Cultural-Ecological Model of Health



*Individual trauma results from an event, series of events, or set of circumstances that is experienced by an individual as physically and emotionally harmful or threatening and that has lasting adverse effects on the individual's physical, social, emotional, or spiritual well-being. (15) - SAMSHA*

# TRAUMA



# Ubiquity of Trauma Exposures

- WHO World Mental Health Survey (2022)
  - N=22 countries (>65K surveyed)
  - Lifetime Trauma exposure – 71%
  - Lifetime substance use disorder more common among those with trauma (14.5% v. 5.1%)
- World Mental Health Survey Consortium (2016)
  - N=27 countries
  - Lifetime trauma exposure >70%; 30.5% >4
  - <https://www.sciencedirect.com/science/article/abs/pii/S0376871622003118>
- Adverse Childhood Experiences (ACE) Study (1998) N=17,377
  - 63% at least one trauma exposure, 20% >3

# IMPACT OF CHILDHOOD TRAUMA



The CDC and Kaiser Permanente surveyed 17,000 of the health plan's members to ask whether they'd had adverse childhood experiences defined as:

## ABUSE

Psychological  
Physical  
Sexual

## NEGLECT

Emotional  
Physical

## HOUSEHOLD CHALLENGES

Family member experiencing:  
Domestic abuse  
Mental illness  
Imprisonment

The landmark study found those with adverse childhood experiences were at higher risk for:



HEART, LUNG, AND LIVER  
DISEASE



OBSESITY



DIABETES



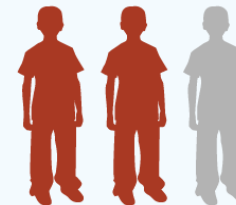
DEPRESSION



SUBSTANCE  
ABUSE

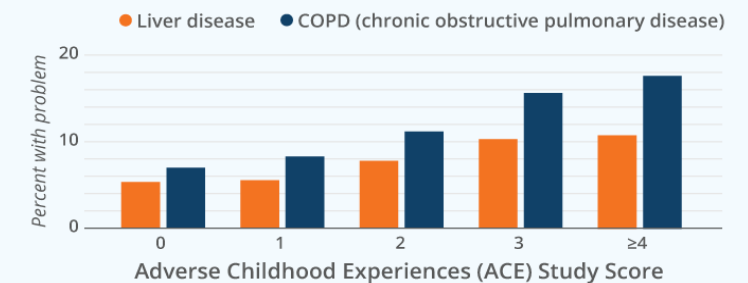
## THE STUDY ALSO FOUND

**NEARLY  
TWO  
THIRDS**



of those surveyed  
experienced at least one event.

The higher the score on ACE survey, the more likely people were to be in poor health:



Sources: CDC ACE Study page <https://www.cdc.gov/violenceprevention/acestudy/> and V. J. Felitti and R. F. Anda, "The Relationship of Adverse Childhood Experiences to Adult Health, Well Being, Social Function, and Health Care," from *The Impact of Early Life Trauma on Health and Disease: The Hidden Epidemic* (Cambridge, England: Cambridge University Press, September 2010).

## Health Impact of ACEs on Adults 2019 MMWR

- 61% report at least 1 ACE
- 16% report 4+ ACEs
  - Women > Men
  - AI/AN, black, and other racial/ethnic groups > whites

BRFSS  
Survey  
2015-2017  
25 US states  
N=63,365

### Adjusted Odds Ratio: 4+ vs 0 ACE exposures

Obesity 1.2

Stroke 2.1

Depression 5.3

Diabetes 1.4

Asthma 2.2

COPD 2.8

CHD 1.8

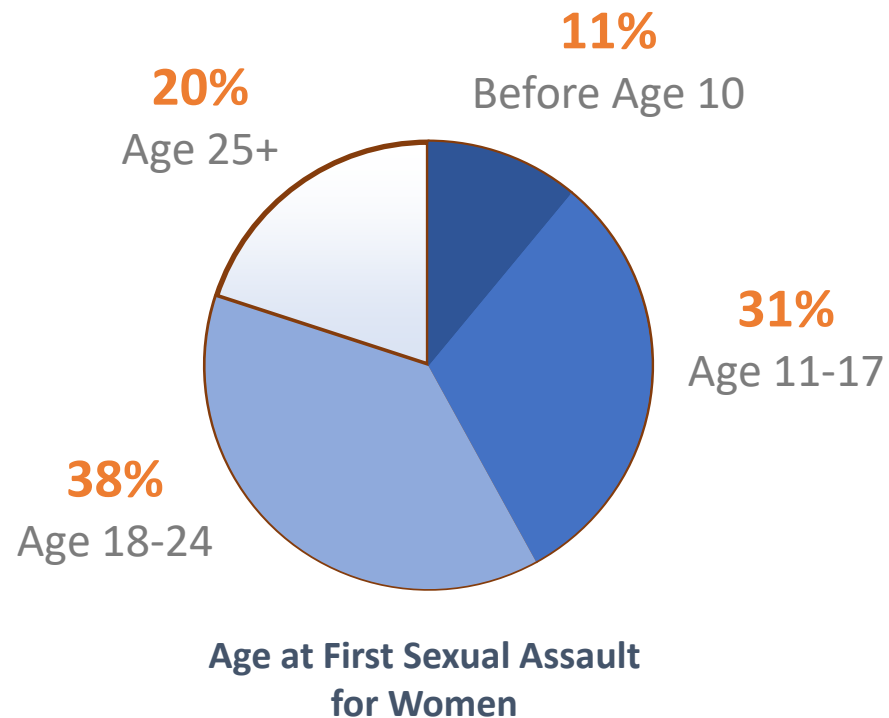
Heavy drinking 1.8

Smoking 3.1

# Trauma in Women

- Exposure to any traumatic event: M>F
  - But lifetime prevalence of PTSD: women 11.7%; men 4.0%
- High impact events and PTSD
  - Sexual abuse, rape (women 49%, men 65%)
  - Physical abuse (women 49%, men 22%)
  - Accident (women 9%, men 6%)
- Exposures and stress-disorders are higher in lower resourced environments
- Women with maltreatment history and PTSD are at risk to be retraumatized or overwhelmed by birth and to dissociate.
  - Impacts bonding following childbirth
  - Intergenerational transmission of trauma(s)
- Increased rates of PTSD in women likely multiply determined – biopsychosocial contributors

## Sexual Violence Often Starts Early



**42%**  
of women who  
have been raped  
were first raped  
before age 18

**80%**  
before age 25

## Intimate Partner Violence: Incidence and Prevalence

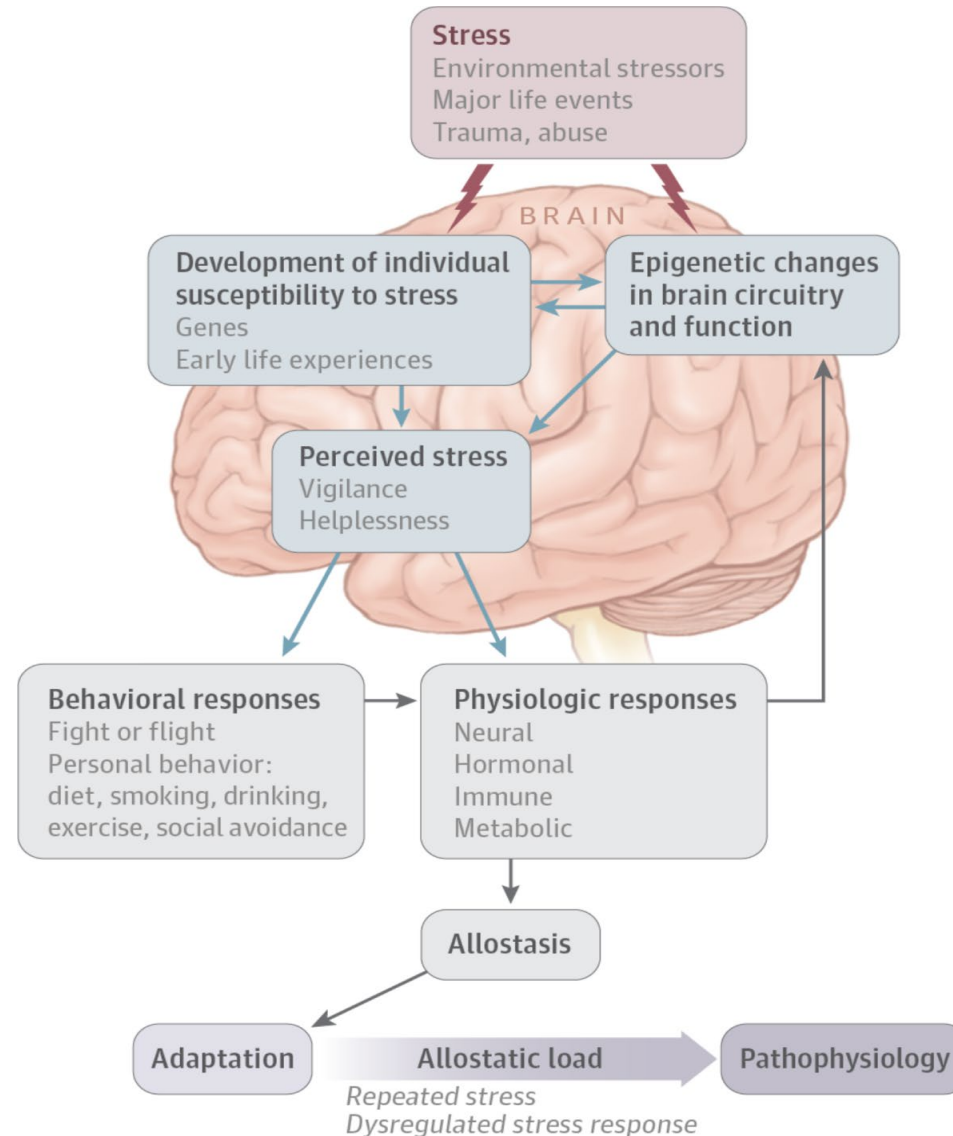
WHO study in 10 countries found that  
**13-61% of women**  
reported experiencing  
violence by a partner



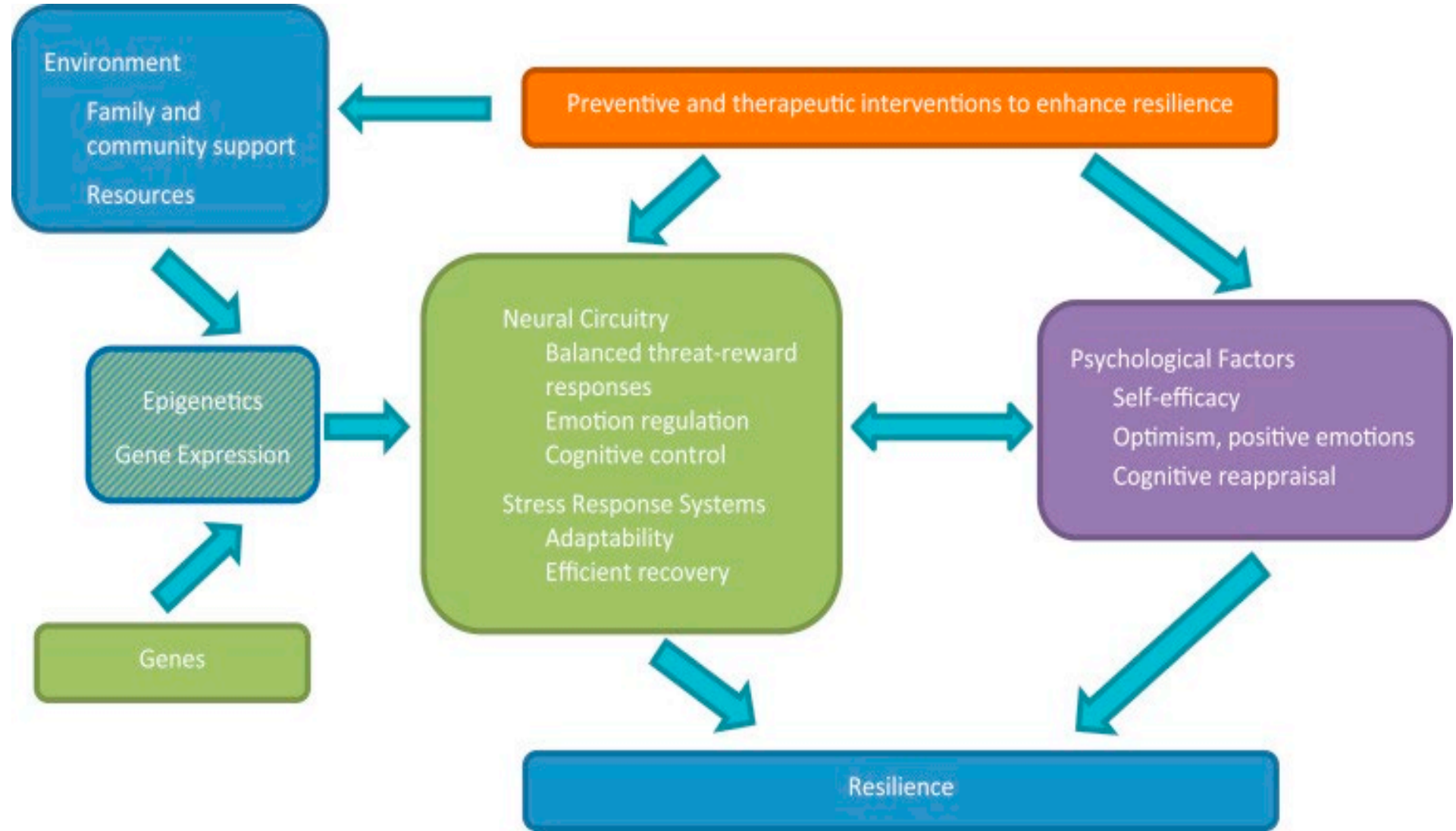
**Over 1 in 3 women**  
in the US experience IPV  
during their lifetimes  
**80% before age 25**

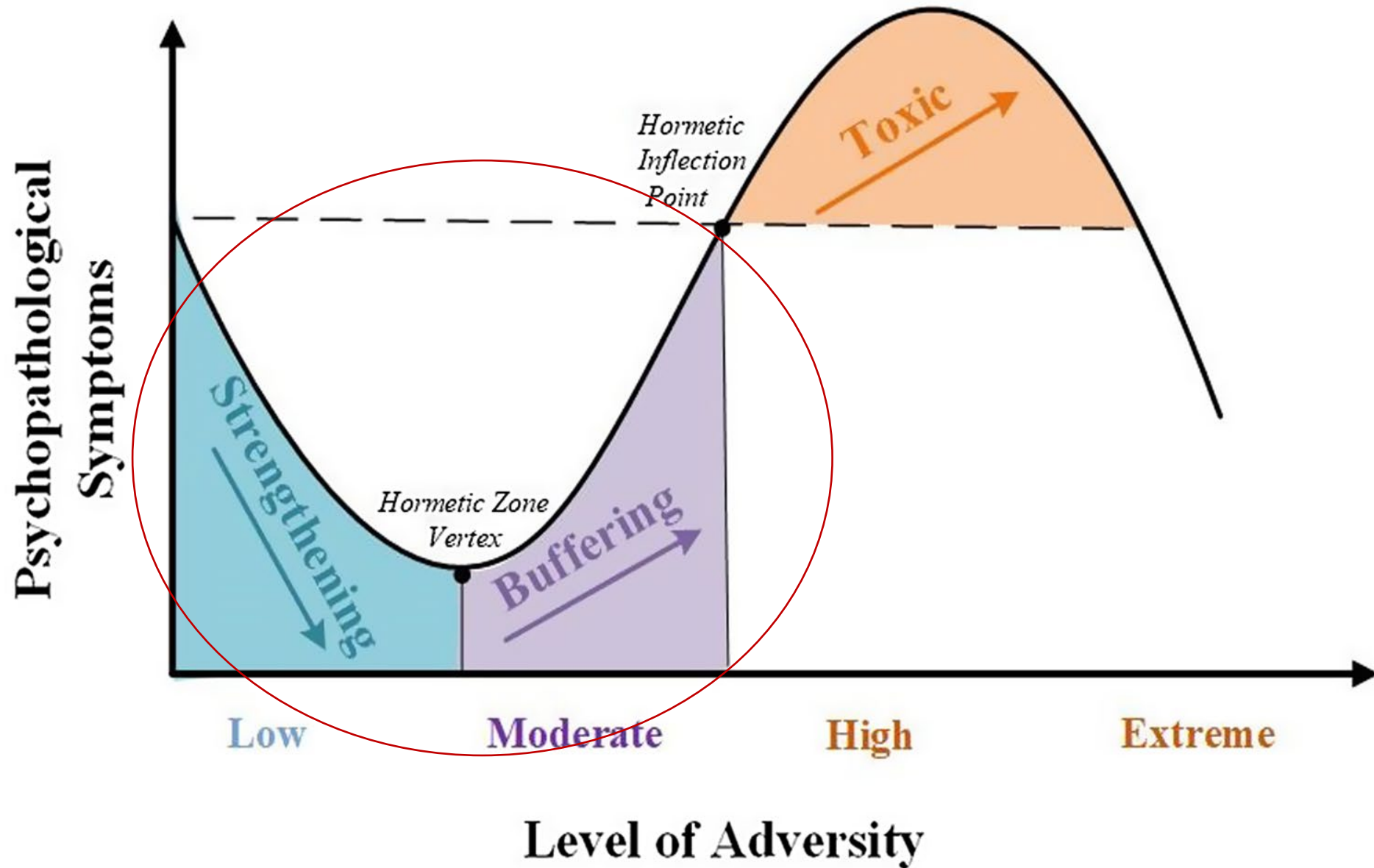
World Health Organization, 2012  
National Intimate Partner and Sexual Violence Survey, 2015  
<https://www.cdc.gov/violenceprevention/nisvs/2015NISVSdatabrief.html>

# Stress response: seeking allostasis



# Resilience Across the Lifespan





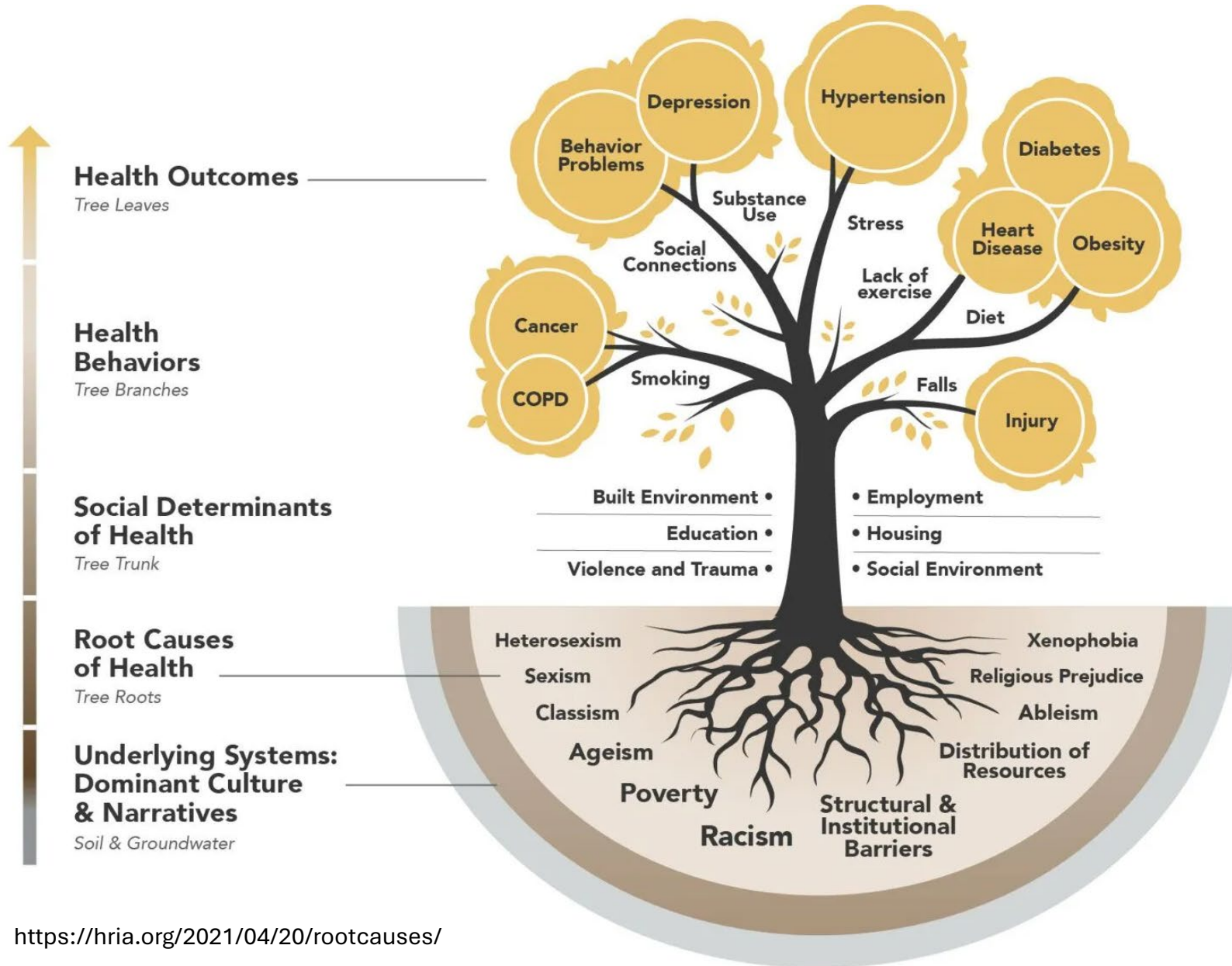
## Trauma-Informed Approach

- Focus on optimizing engagement
- Universal precautions
- Universal framing
- Avoid retriggering
- Variability of role & context of care

VS

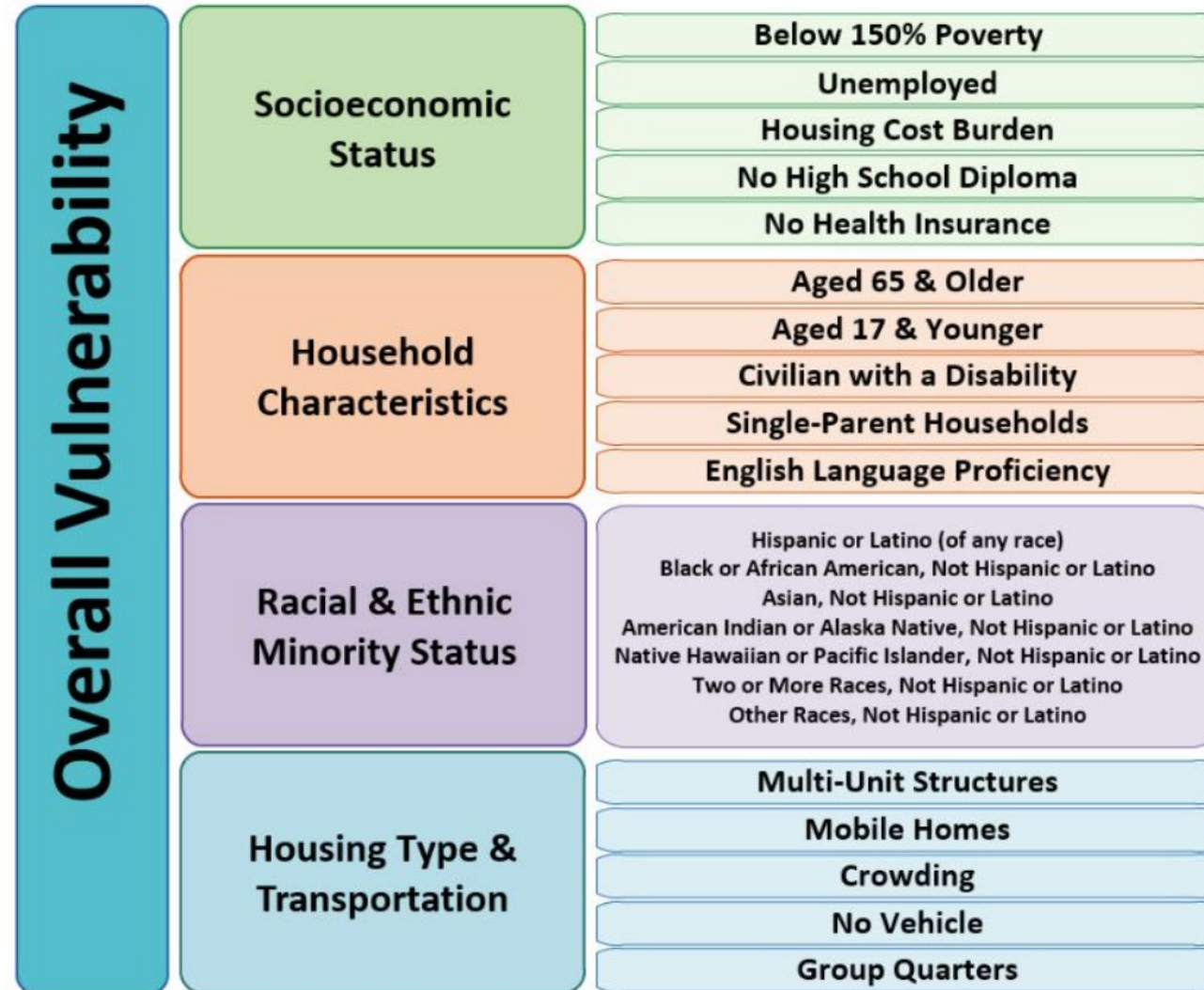
## Trauma-Focused Treatment

- Addressing trauma experience directly
- Treatment focused on resolution of trauma-related symptoms
- May require detailed trauma history as part of the treatment



# Health & its Social Determinants

# Social Vulnerability Index (SVI)



> [Ann Surg.](#) 2022 Jul 1;276(1):22-29. doi: 10.1097/SLA.0000000000005471. Epub 2022 May 12.

## The Social Vulnerability Index and Long-term Outcomes After Traumatic Injury

Juan P Herrera-Escobar <sup>1 2</sup>, Tarsicio Uribe-Leitz <sup>1 2 3</sup>, Joyce Wang <sup>4</sup>, Claudia P Orlas <sup>1</sup>, Mohamad El Moheb <sup>5</sup>, Taylor E Lamarre <sup>1</sup>, Niha Ahmad <sup>1</sup>, Ka Man Hau <sup>1</sup>, Molly Jarman <sup>1</sup>, Nomi C Levy-Carrick <sup>6</sup>, Sabrina E Sanchez <sup>7</sup>, Haytham M A Kaafarani <sup>5</sup>, Ali Salim <sup>2</sup>, Deepika Nehra <sup>8</sup>

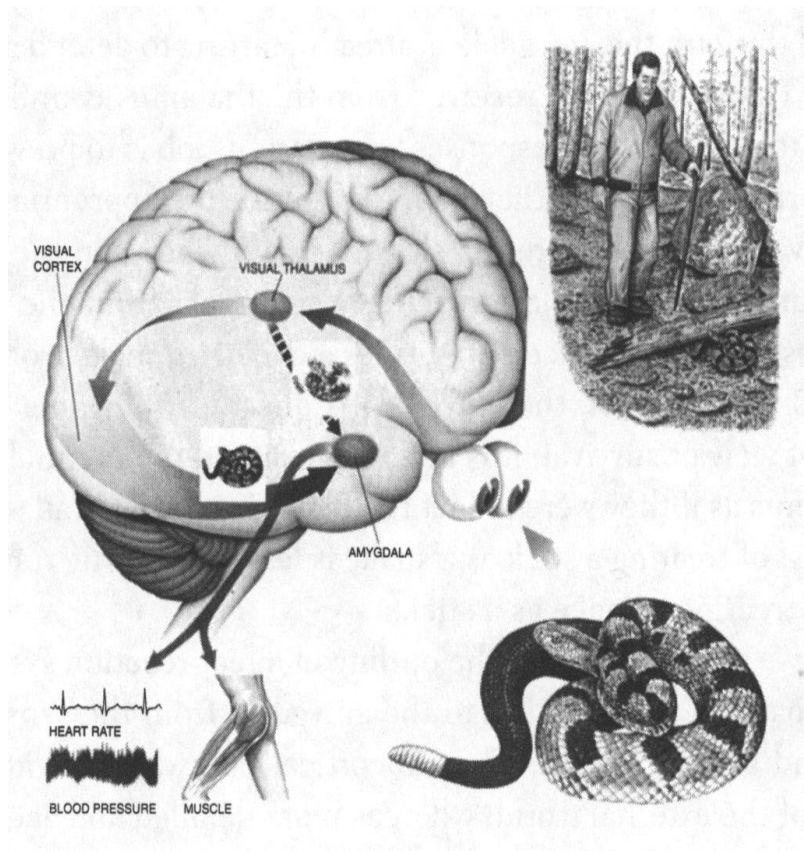
Review

> [Injury.](#) 2024 Dec;55(12):112016. doi: 10.1016/j.injury.2024.112016. Epub 2024 Nov 9.

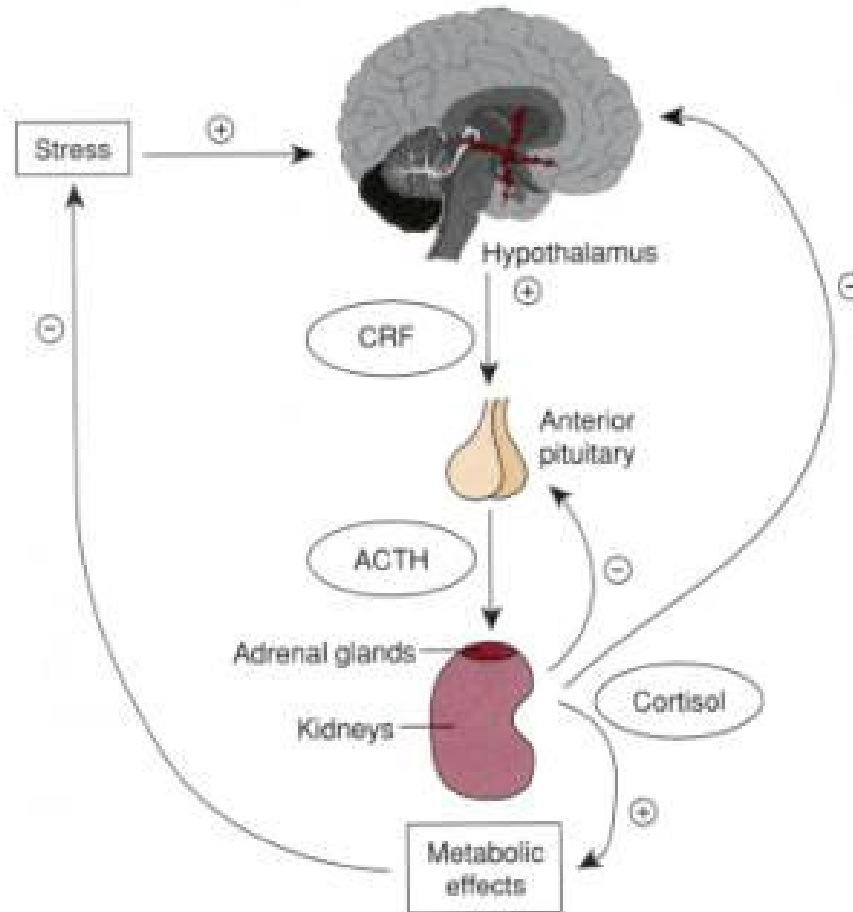
## "Utility of social vulnerability index in trauma: A systematic review"

Anthony J Duncan <sup>1</sup>, Samuel J Bloomsburg <sup>2</sup>, Mentor Ahmeti <sup>3</sup>

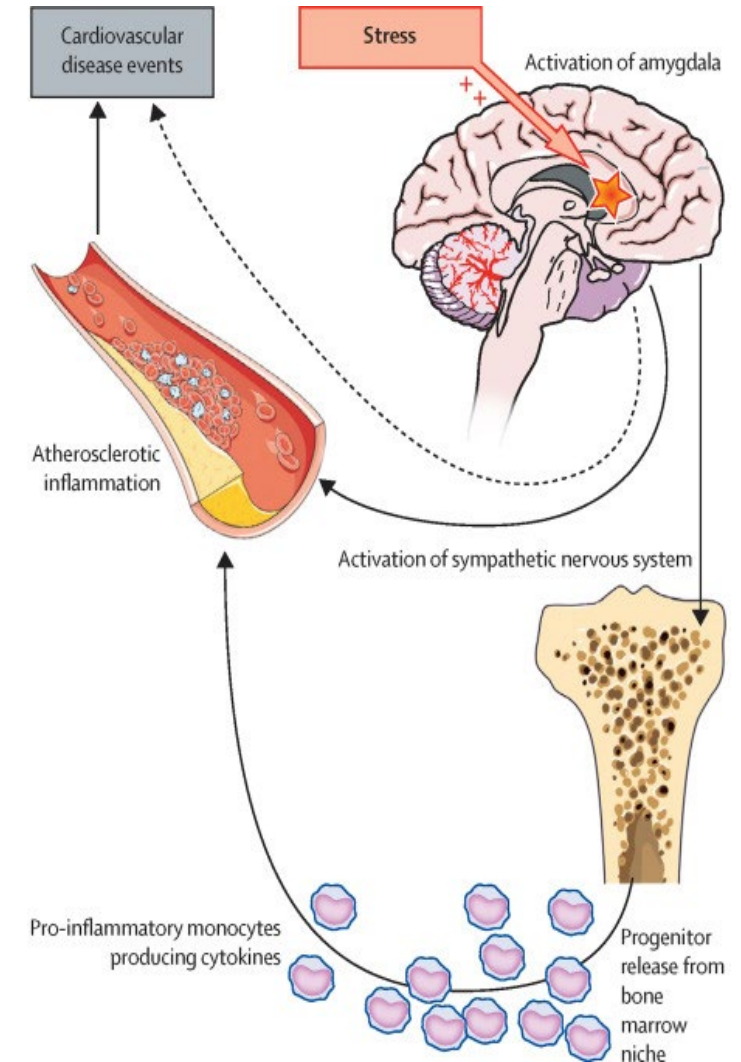
# Fight-flight-freeze: sympatho-adrenergic stress responses



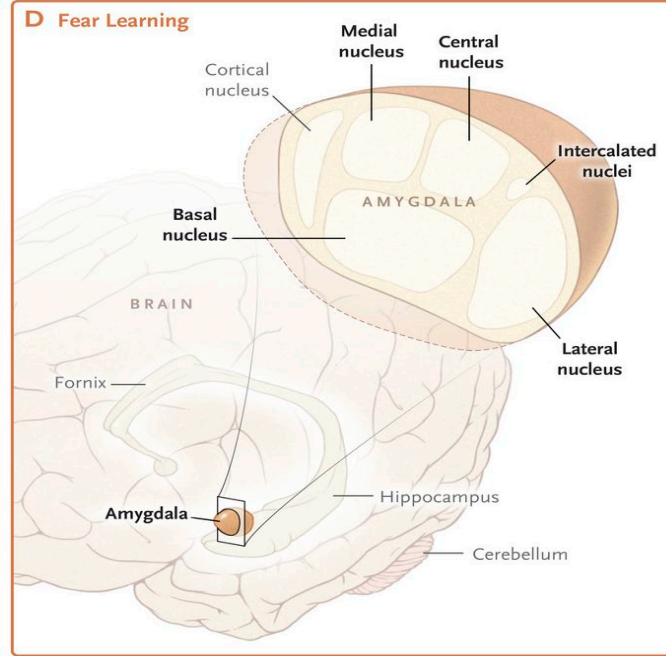
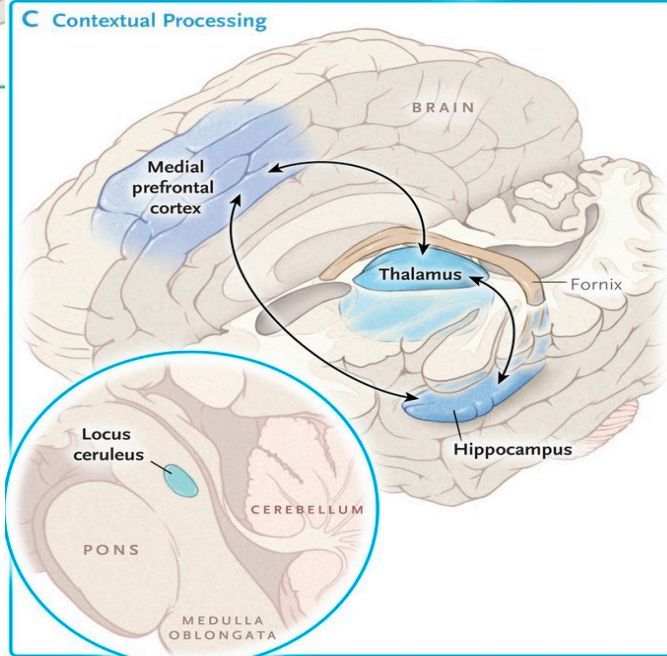
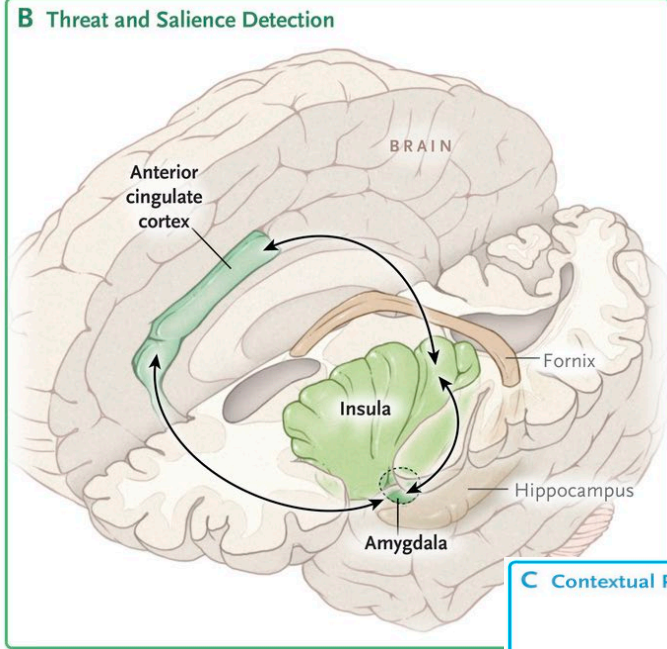
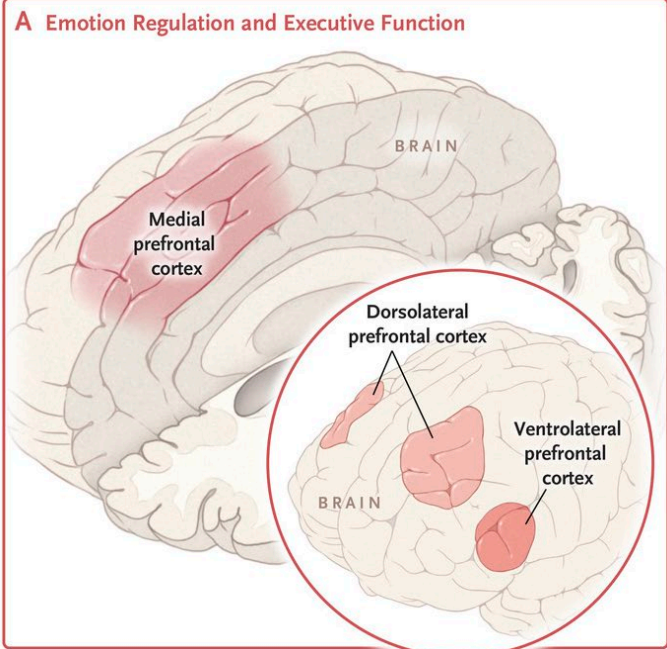
LeDoux (1998)



Smith, Vale (2006)



Tawakol, et al (2017)



# Trauma and Stress-Related Disorders

- 4 categories of symptoms
  - Intrusion symptoms
  - Avoidance
  - Negative alterations in cognitions and mood
  - Alterations in arousal and reactivity (incl sleep disturbance)
- Time frames
  - Acute <3 months
  - Chronic >3 months
  - Delayed onset - >6 months after stressor
- Functional impact
- Heterogeneity: **636,120 ways to have PTSD**

## Trauma and PTSD: Common Co-morbidities

- Depression
- Anxiety
- Substance use disorders
- Functional Neurologic Disorders
- Cardiovascular disease, diabetes
- Sexual dysfunction
- Social isolation

## Case Examples

- *24yo woman presents with dizziness, two days after reported accidental fall at home. Presents as guarded and limited historian.*
- *43yo woman presents in DKA, requiring ICU admission for stabilization. Presents variably as irritable or withdrawn with different clinicians.*
- *60yo non-English speaking woman presents with abdominal pain. Gets agitated when asked to change into hospital gown for exam.*

# The Trauma-Informed Care Paradigm Shift

*What's wrong with you?*

*What happened to you, and how is that impacting your health?*

# The Trauma-Informed Approach (“4 Rs”)

- ***Realizes*** the widespread impact of trauma and understands potential paths for recovery
- ***Recognizes*** how trauma affects all individuals involved in an organization, including its own workforce
- ***Responds*** by fully integrating knowledge about trauma into policies, procedures, and practices
- ***Resists*** re-traumatization

A TI approach refers to a change  
in ***organizational*** culture.

# Trauma-Informed Care: 6 Principles

Safety: Physical &  
psychological

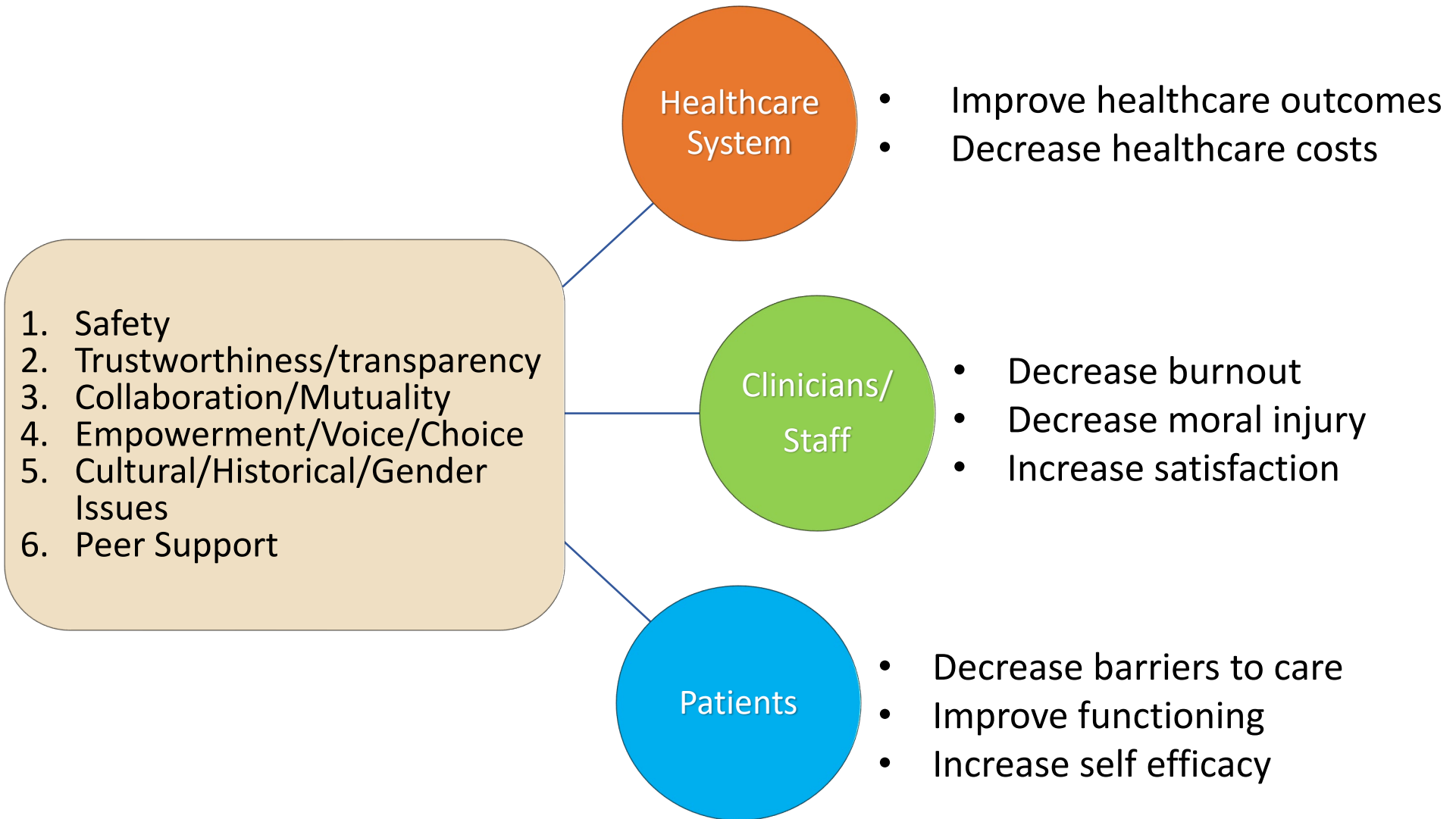
Trustworthiness &  
transparency

Peer Support

Collaboration &  
Mutuality

Empowerment,  
Voice, Choice

Cultural Humility  
and  
Responsiveness



## ***Learning Objective #3:*** Discuss strategies for engaging trauma survivors in health care services

Consider settings and contexts

- Providers and Staff
- Patients receiving clinical care
- Spectrum of mental health services – stepped levels of care
- Community Resources
- Next steps

# Health Care Systems Barriers...and **Opportunities**

- **OpenNotes** for those amidst IPV, immigration status, persons with justice involvement, other vulnerabilities
- **Diagnostic overshadowing** and medical disparities
- **Roles for CHWs/Peer-Recovery Coaches** in helping bridge to care
  - Peer support instilling hope, helping marginalized service users
- **Screening vs Inquiry**
- **Discharge planning** including mental health care prn
- **Range of options** is key – ie telehealth vs on-site

# Strategies to Optimize Engagement:

## #1 Universal Precautions

Assume **every** person has survived some adversity.



Inquire about the **impact** of trauma  
instead of the trauma itself.

## #2 Universal Framing

### Explain:

- **What** will be done
- **How** it will be done
- **Why** it is necessary



Say what you  
will do  
*before*  
you do it


“We’ll start by asking about the symptoms you’re experiencing right now...”

“We do not need to revisit your trauma-experiences at this time...”

“We will also do a review of memory and attention, that is part of the standard exam...”

## #3 Critical Awareness of Role and Context

- **Team-based care**
  - Clinical vs non-clinical
  - Treater vs peer support
- **Across the health system**
  - Screening
  - Evaluation
  - Prevention
  - Treatment – and the nature of treatment
  - Referral



Consider the  
context before  
you introduce  
yourself

## TIC in Practice: Clinician Perspective

- **Fear** of being overwhelmed or making bad decisions
- **Feeling helpless or inadequate** if can't predict the outcome or “cure” the problem
- **Frustration** with survivor/patient for not aligning their behaviors with our desire to do a good job
- **Lack of attention** to personal history and vicarious trauma can result in vulnerability to retriggering and burnout



> [J Acad Consult Liaison Psychiatry](#). 2024 Sep-Oct;65(5):451-457. doi: 10.1016/j.jaclp.2024.02.007.

Epub 2024 Feb 29.

# Psychiatric and Substance Use Disorders and Their Association With Clinical Outcomes in Diabetic Ketoacidosis and Hyperosmolar Hyperglycemic Syndrome

Jacinta Leyden <sup>1</sup>, Amy Uber <sup>2</sup>, Juan P Herrera-Escobar <sup>2</sup>, Nomi C Levy-Carrick <sup>2</sup>

Affiliations + expand

PMID: 38431209 DOI: 10.1016/j.jaclp.2024.02.007

> [Psychosomatics](#). 2019 May-Jun;60(3):263-270. doi: 10.1016/j.psym.2018.07.011.

Epub 2018 Jul 25.

## Hospital Length of Stay With a Proactive Psychiatric Consultation Model in the Medical Intensive Care Unit: A Prospective Cohort Analysis

Melissa Bui <sup>1</sup>, Robyn P Thom <sup>2</sup>, Shelley Hurwitz <sup>1</sup>, Nomi C Levy-Carrick <sup>1</sup>, Molly O'Reilly <sup>1</sup>, Dara Wilensky <sup>1</sup>, Daniel Talmasov <sup>1</sup>, Bonnie Blanchfield <sup>1</sup>, Vineeta Vaidya <sup>1</sup>, Rose Kakoza <sup>1</sup>, Michael Klompas <sup>1</sup>, Elizabeth Stanley <sup>1</sup>, David Gitlin <sup>1</sup>, Anthony Massaro <sup>1</sup>

Multicenter Study > Am J Surg. 2024 Jul;233:72-77. doi: 10.1016/j.amjsurg.2024.02.013.

Epub 2024 Feb 14.

## Determinants of long-term physical and mental health outcomes after intensive care admission for trauma survivors

Juan P Herrera-Escobar <sup>1</sup>, Taylor Lamarre <sup>2</sup>, Jordan Rosen <sup>3</sup>, Saba Ilkhani <sup>4</sup>, Ashley N Haynes <sup>5</sup>, Kaman Hau <sup>6</sup>, Kendall Jenkins <sup>7</sup>, Jack Ruske <sup>8</sup>, Joyce Y Wang <sup>9</sup>, Jessica Serventi-Gleeson <sup>10</sup>, Sabrina E Sanchez <sup>11</sup>, Haytham Ma Kaafarani <sup>12</sup>, George Velmahos <sup>13</sup>, Ali Salim <sup>14</sup>, Nomi C Levy-Carrick <sup>15</sup>, Geoffrey A Anderson <sup>16</sup>

Affiliations + expand

PMID: 38413351 DOI: 10.1016/j.amjsurg.2024.02.013

### Abstract

**Introduction:** Collectively, studies from medical and surgical intensive care units (ICU) suggest that long-term outcomes are poor for patients who have spent significant time in an ICU. We sought to identify determinants of post-intensive care physical and mental health outcomes 6-12 months after injury.

Multicenter Study > J Trauma Acute Care Surg. 2021 Feb 1;90(2):319-324.

doi: 10.1097/TA.0000000000003032.

## Long-term outcomes of psychoactive drug use in trauma patients: A multicenter patient-reported outcomes study

Mohamad El Moheb <sup>1</sup>, Juan P Herrera-Escobar, Kerry Breen, Claudia Orlas, Ashley N Haynes, Nomi C Levy-Carrick, Deepika Nehra, Sabrina E Sanchez, Ali Salim, George Velmahos, Haytham M A Kaafarani

**Thank you!**

Questions?

# Know your local resources ...and place in an easily-accessible document

## Hotlines

- [SafeLink](#) 1-877-785-2020 (TTY 1-877-521-2601)
- [Respond Inc.](#) 1-617-623-5900
- [The Network/ La Red](#) 1-617-742-4911 (800-832-1901 Toll Free)
- [HarborCOV](#) 1-617-884-9909
- [National Domestic Violence Hotline](#) 1-800-799-SAFE (TTY 1-800-787-3224)
- [National Sexual Assault Hotline](#) 1-800-656-4673
- [National Teen Dating Abuse Helpline](#) 1-866-331-9474 (TTY 1866-331-8453)
- [National Human Trafficking Hotline](#) 1-888-373-7888 (TTY: 711)
- [Hot Peach Pages](#) (International Directory of Domestic Violence Agencies)

## General Resources

- [Intimate Partner Violence Workflow for Telehealth Visit](#)
- [Building Resilience During Covid-19 Pandemic Through Trauma-Informed Care Principles](#)
- [Sexual Assault Brochure](#)

# References - 1

- Admon R, Milad MR, Hendler T. (2013) A causal model of post-traumatic stress disorder: disentangling predisposed from acquired neural abnormalities. *Trends in Cognitive Sciences*, 17(7).
- Ahmad, & Teo, S. P. (2021). Post-intensive Care Syndrome. *Annals of Geriatric Medicine and Research*, 25(2), 72–78. <https://doi.org/10.4235/agmr.21.0048>
- Amar, A., & Lewis-O'Connor, A. (2015) Trauma-Informed Care. In: Sigma Theta Tau, Nursing Knowledge International, tentatively titled, “A Practical Guide to Forensic Nursing: Incorporating forensic principles into nursing practice”.
- American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders (2013), 5<sup>th</sup> Edition: DSM-5. Arlington VA: American Psychiatric Publishing.
- Benjet C, Bromet E, Karam EG, et al. The epidemiology of traumatic event exposure worldwide: results from the World Mental Health Survey Consortium. *Psychol Med*. 2016;46(2):327-343
- Bolton, Thilges, S., Lane, C., Lowe, J., & Mumby, P. (2019). Post-traumatic Stress Disorder Following Acute Delirium. *Journal of Clinical Psychology in Medical Settings*, 28(1), 31–39. <https://doi.org/10.1007/s10880-019-09689-1>
- Creamer M, Burgess P, McFarlane AC. Post-traumatic stress disorder: Findings from the Australian National Survey of Mental Health and Well-being. *Psychol Med*. 2001;31(7):1237–1247.
- Daskalakis NP, Bagot RC, Parker KJ, Vinkers CH, de Kloet ER. The three-hit concept of vulnerability and resilience: Toward understanding adaptation to early-life adversity outcome, *Psychoneuroendocrinology*, Volume 38, Issue 9, 2013, 1858–1873
- De Sousa Moreira, Barbosa, S. M. B., Vieira, J. G., Chaves, N. C. B., Felix, E. B. G., Feitosa, P. W. G., da Cruz, I. S., da Silva, C. G. L., & Neto, M. L. R. (2021). The psychiatric and neuropsychiatric repercussions associated with severe infections of COVID-19 and other coronaviruses. *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, 106, 110159–110159. <https://doi.org/10.1016/j.pnpbp.2020.110159>
- Duncan, A. J., Bloomsburg, S. J., & Ahmeti, M. (2024). "Utility of social vulnerability index in trauma: A systematic review". *Injury*, 55(12), 112016. <https://doi.org/10.1016/j.injury.2024.112016>
- Fabrazzo, Russo, A., Luciano, M., Camerlengo, A., Catapano, P., Amoroso, B., Catapano, F., & Coppola, N. (2022). Delirium and Psychiatric Sequelae Associated to SARS-CoV-2 in Asymptomatic Patients With Psychiatric History and Mild Cognitive Impairment as Risk Factors: Three Case Reports. *Frontiers in Psychiatry*, 13, 868286–868286. <https://doi.org/10.3389/fpsyt.2022.868286>
- Fallot, R., & Harris, M. (2006) “Trauma Informed Services: A Self-Assessment and Planning Protocol.” *Community Connections*.
- Feder A, Fred-Torres S, Southwick SM, Charney DS. The Biology of Human Resilience: Opportunities for Enhancing Resilience Across the Life Span. *Biol Psychiatry*. 2019 Sep 15;86(6):443-453. doi: 10.1016/j.biopsych.2019.07.012. Epub 2019 Jul 24. PMID: 31466561.

## References - 2

- Felitti, Anda et al., (1997). “Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study.” *American Journal of Preventive Medicine*, 14, 4, 245-258.
- Felitti V, Anda R et al (1998) Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*. **14** (4): 245–258.
- Grant BF, Chou SP, Goldstein RB, Huang B, Stinson FS, Saha TD, et al. Prevalence, correlates, disability, and comorbidity of DSM-IV borderline personality disorder: results from the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. *J Clin Psychiatry*. 2008;69:533–45.
- Galatzer-Levy IR and Bryan RA (2013) 636,120 Ways to Have Posttraumatic Stress Disorder. *Perspectives on Psychological Science* 8(6) 651-662.
- Grover, Sahoo, S., Chakrabarti, S., & Avasthi, A. (2019). Post-traumatic stress disorder (PTSD) related symptoms following an experience of delirium. *Journal of Psychosomatic Research*, 123, 109725–109725. <https://doi.org/10.1016/j.jpsychores.2019.05.003>
- Hariyanto, Putri, C., Hananto, J. E., Arisa, J., Fransisca V Situmeang, R., & Kurniawan, A. (2021). Delirium is a good predictor for poor outcomes from coronavirus disease 2019 (COVID-19) pneumonia: A systematic review, meta-analysis, and meta-regression. *Journal of Psychiatric Research*, 142, 361–368. <https://doi.org/10.1016/j.jpsychires.2021.08.031>
- Huang, L.N., Sharp, C.S., Gunther, T. SAMHSA and National Council for Behavioral Health webinar 8/6/13. “It’s Just Good Medicine: Trauma Informed Primary Care.” [www.integration.samhsa.gov](http://www.integration.samhsa.gov)
- Herrera-Escobar, J. P., Seshadri, A. J., Stanek, E., Lu, K., Han, K., Sanchez, S., Kaafarani, H. M. A., Salim, A., Levy-Carrick, N. C., & Nehra, D. (2021). Mental Health Burden After Injury: It's About More than Just Posttraumatic Stress Disorder. *Annals of surgery*, 274(6), e1162–e1169. <https://doi.org/10.1097/SLA.0000000000003780>
- Herrera-Escobar, J. P., Uribe-Leitz, T., Wang, J., Orlas, C. P., Moheb, M. E., Lamarre, T. E., Ahmad, N., Hau, K. M., Jarman, M., Levy-Carrick, N. C., Sanchez, S. E., Kaafarani, H. M. A., Salim, A., & Nehra, D. (2022). The Social Vulnerability Index and Long-term Outcomes After Traumatic Injury. *Annals of surgery*, 276(1), 22–29. <https://doi.org/10.1097/SLA.0000000000005471>
- Jain KM, Davey-Rothwall, et al (2018) PTSD, Neighborhood Residency and Satisfaction, and Social Network Characteristics among underserved women in Baltimore, Maryland. *Women’s Health Issues*, p1-8
- Karam EG, Friedman MJ, Hill ED, et al (2014). Cumulative traumas and risk thresholds: 12-month PTSD in the World Mental Health (WMH) Surveys. *Depress Anxiety*; 31:130-42
- Kessler RC, Rose S, Koenen KC, et al. (2015) How well can post-traumatic stress disorder be predicted from pre-trauma risk factors? An exploratory study in the WHO World Mental Health Surveys. *World Psychiatry* 13:265.
- Kessler, R.C., Berglund, P., Delmer, O., Jin, R., Merikangas, K.R., & Walters, E.E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62(6): 593-602.



# References - 3

- Kubzansky L, Bordelais P, Jun HJ et al. (2014) The weight of traumatic stress: a prospective study of PTSD symptoms and weight status in women. *JAMA-Psych* 71:1:44-51
- Latour, Kentish-Barnes, N., Jacques, T., Wysocki, M., Azoulay, E., & Metaxa, V. (2022). Improving the intensive care experience from the perspectives of different stakeholders. *Critical Care* (London, England), 26(1), 1–218. <https://doi.org/10.1186/s13054-022-04094-x>
- Lazris A, Roth A, Haskell H, James J. (2023). Diagnostic Overshadowing: When Cognitive Biases Can Harm Patients. *American Family Physician*.
- LeDoux JL (1994) Emotion, Memory and the Brain. *Scientific American*.
- Lewis-O'Connor, A. & Alpert, E. (2017) Caring for Survivors Using a Trauma Informed Care Framework. *Human Trafficking Is a Public Health Issue: A Paradigm Expansion in the United States*. Editors: Makini Chisolm-Straker, Hanni Stoklosa.
- Lewis-O'Connor, A. & Chadwick, M. (2015). Voice of the patient: informing research, policy and practice on violence against women. *Journal of Forensic Nursing*, 11:4, 188-197.
- Leyden, J., Uber, A., Herrera-Escobar, J. P., & Levy-Carrick, N. C. (2024). Psychiatric and Substance Use Disorders and Their Association With Clinical Outcomes in Diabetic Ketoacidosis and Hyperosmolar Hyperglycemic Syndrome. *Journal of the Academy of Consultation-Liaison Psychiatry*, 65(5), 451–457. <https://doi.org/10.1016/j.jaclp.2024.02.007>
- Machtinger EL, Davis KB, Kimberg LS, Khanna N, Cuca YP, Dawson-Rose C, Shumway M, Campbell J, Lewis-O'Connor A, Blake M, Blanch A, McCaw B. From Treatment to Healing: Inquiry and Response to Recent and Past Trauma in Adult Health Care. *Womens Health Issues*. 2019 Mar-Apr;29(2):97-102. doi: 10.1016/j.whi.2018.11.003. Epub 2018 Dec 31. PMID: 30606467.
- Madonna, Enrico, P., Ciappolino, V., Boscutti, A., Colombo, E., Turtulici, N., Cantù, F., Cereda, G., Delvecchio, G., De Falco, S., Chierichetti, M., Savioli, M., Grasselli, G., & Brambilla, P. (2022). Factors Associated With Severity of Delirium Complicating COVID-19 in Intensive Care Units. *Frontiers in Neurology*, 13, 774953–774953. <https://doi.org/10.3389/fneur.2022.774953>
- Merrick MT, Ford DC, Ports KA, et al. *Vital Signs: Estimated Proportion of Adult Health Problems Attributable to Adverse Childhood Experiences and Implications for Prevention — 25 States, 2015–2017*. *MMWR Morb Mortal Wkly Rep* 2019;68:999-1005. DOI: <http://dx.doi.org/10.15585/mmwr.mm6844e1external icon>
- McEwan, BS Allostasis and the Epigenetics of Brain and Body Health Over the Life Course The Brain on Stress *JAMA Psychiatry*. Published online April 26, 2017. doi:10.1001/jamapsychiatry.2017.0270
- McEwen BS, Gray JD, Nasca C. 60 Years of Neuroendocrinology: Redefining Neuroendocrinology: stress, sex and cognitive and emotional regulation. *Journal of Endocrinology* 2015. 226, T67-83
- Misak, Herridge, M., Ely, E. W., Clay, A., & Mikkelsen, M. E. (2021). Patient and Family Engagement in Critical Illness. *Critical Care Medicine*, 49(9), 1389–1401. <https://doi.org/10.1097/CCM.0000000000005136>
- Nordness, Bipin Patel, M., Erickson, C. R., Kiehl, A., Jackson, J. C., Raman, R., Pandharipande, P. P., Ely, E. W., & Wilson, J. E. (2021). Depression predicts long-term cognitive impairment in survivors of critical illness. *The Journal of Trauma and Acute Care Surgery*, 90(1), 79–86. <https://doi.org/10.1097/TA.0000000000002955>
- Perez DL, Matin N, Barsky A, Costumero-Ramos V, et al (2017) Cingulo-insular structural alterations associated with psychogenic symptoms, childhood abuse and PTSD in functional neurological disorders. *J Neurol Neurosurg Psychiatry*. 2017 Jun;88(6):491-497

# References - 4

- Perez DL, Matin N, Barsky A, Costumero-Ramos V, et al (2017) Cingulo-insular structural alterations associated with psychogenic symptoms, childhood abuse and PTSD in functional neurological disorders. *J Neurol Neurosurg Psychiatry*. 2017 Jun;88(6):491-497
- Perez DL et al. A Neural Circuit Framework for Somatosensory Amplification in Somatoform Disorders *J Neurol Neurosurg Psychiatry* 2015 doi:10.1136/jnnp-2016-314998
- Prince, Gerstenblith, T. A., Davydow, D., & Bienvenu, O. J. (2018). Psychiatric Morbidity After Critical Illness. *Critical Care Clinics*, 34(4), 599–608. <https://doi.org/10.1016/j.ccc.2018.06.006>
- Roberts AL, Agnew-Blais JC, Spiegelman D, Kubzansky LD, et al (2015). PTSD and incidence of type 2 diabetes mellitus in a sample of women: a 22-year longitudinal study.
- Rosales R, Campbell LR, Levy-Carrick NC. A Trauma-Informed Approach to Outpatient Psychiatric Services. *Psychiatric Services*. 2025
- Rosen RL, Levy-Carrick NC, Reibman J, Xu N, Shao Y, Liu M, Ferri L, Kazeros A, Caplan-Shaw CE, Pradhan DR, Marmor M, Galatzer-Levy IR. (2017) Elevated C-reactive protein and posttraumatic stress pathology among survivors of the 9/11 World Trade Center attacks. *Journal of Psychiatric Research* 89, 14-21
- Santaularia et al (2014) Relationships between sexual violence and chronic disease: a cross-sectional study. *BMC Public Health* 14:1286
- Shalev A, Liberzon I, Marmar C. Post-Traumatic Stress Disorder. *New England Journal of Medicine* 2017 376;25.
- Shima, Miyamoto, K., Shibata, M., Nakashima, T., Kaneko, M., Shibata, N., Shima, Y., & Kato, S. (2020). Activities of daily living status and psychiatric symptoms after discharge from an intensive care unit: a single-center 12-month longitudinal prospective study. *Acute Medicine & Surgery*, 7(1), e557–n/a. <https://doi.org/10.1002/ams2.557>
- Tawakol A, Ishai A, Takx RAP, Figueroa AI, Ali A, Kaiser Y, Truong QA, Solomon CJE, Calcagno C, Mani V, Tang CY, Mulder WJM, Murrough JW. Relation between resting amygdalar activity and cardiovascular events: a longitudinal and cohort study. *Lancet*, Volume 389, Issue 10071, 2017, 834–845. Warshaw, Carole. "Creating Trauma Informed Services and Organizations." Faulkner Hospital Grand Rounds, October 30th, 2014.
- "The Adverse Childhood Experiences (ACE) Study". [cdc.gov](http://cdc.gov). Atlanta, Georgia: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Division of Violence Prevention. May 2014. Archived from the original on 27 December 2015.
- Voiritot, Oualha, M., Pierre, A., Salmon-Gandonnière, C., Gaudet, A., Jouan, Y., Kallel, H., Radermacher, P., Vodovar, D., Sarton, B., Stiel, L., Bréchet, N., Préau, S., & Joffre, J. (2022). Chronic critical illness and post-intensive care syndrome: from pathophysiology to clinical challenges. *Annals of Intensive Care*, 12(1), 58–58. <https://doi.org/10.1186/s13613-022-01038-0>
- Watanabe, Liu, K., Nakamura, K., Kozu, R., Horibe, T., Ishii, K., Yasumura, D., Takahashi, Y., Nanba, T., Morita, Y., Kanaya, T., Suzuki, S., Lefor, A. K., Katsukawa, H., & Kotani, T. (2022). Association between Early Mobilization in the ICU and Psychiatric Symptoms after Surviving a Critical Illness: A Multi-Center Prospective Cohort Study. *Journal of Clinical Medicine*, 11(9), 2587. <https://doi.org/10.3390/jcm11092587>
- Winning A, Gilsanz P, Koenen KC, et al. (2017) PTSD and 20-year physical activity trends among women. *Am J Prev Med* 52(6) 753-760.
- 2010 National Epidemiologic Survey on Alcohol and Related Conditions
- <https://www.acesaware.org/wp-content/uploads/2022/01/Trauma-resillience-practice-paper.pdf>
- <https://www.medicalnewstoday.com/articles/the-impact-of-historical-trauma-on-american-indian-health-equity>
- <https://www.ptsd.va.gov/professional/ptsd-overview/epidemiological-facts-ptsd.asp>
- [http://www.medscape.org/viewarticle/751769\\_transcript](http://www.medscape.org/viewarticle/751769_transcript)