



Mass General Brigham

BRIGHAM AND
WOMEN'S HOSPITAL

Trauma-Informed Care: A Neuropsychiatric Approach

Nomi C. Levy-Carrick, MD, MPhil

Vice Chair, Clinical Programs, Dept of Psychiatry, BWH

Co-Chair, BWH Trauma-Informed Care Collaborative

Assistant Professor of Psychiatry, Harvard Medical School

Harvard Neuropsychiatry in Women CME – May 23, 2024



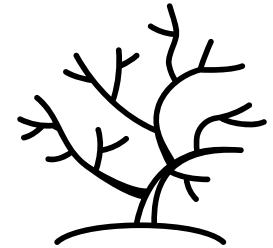
HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL

No Disclosures

- Support for Trauma-Informed Music Composition Intervention to Promote Resilience in Survivors of Hospitalization During COVID-19 (2021-23)
- Support for Trauma-Informed Care programming provided by RWJ Foundation Clinical Scholars Fellowship (2018-2021)
- Support for Critical Illness Recovery Program (“After the ICU”) provided by Ariadne Labs SPARK grant (2018-2020)

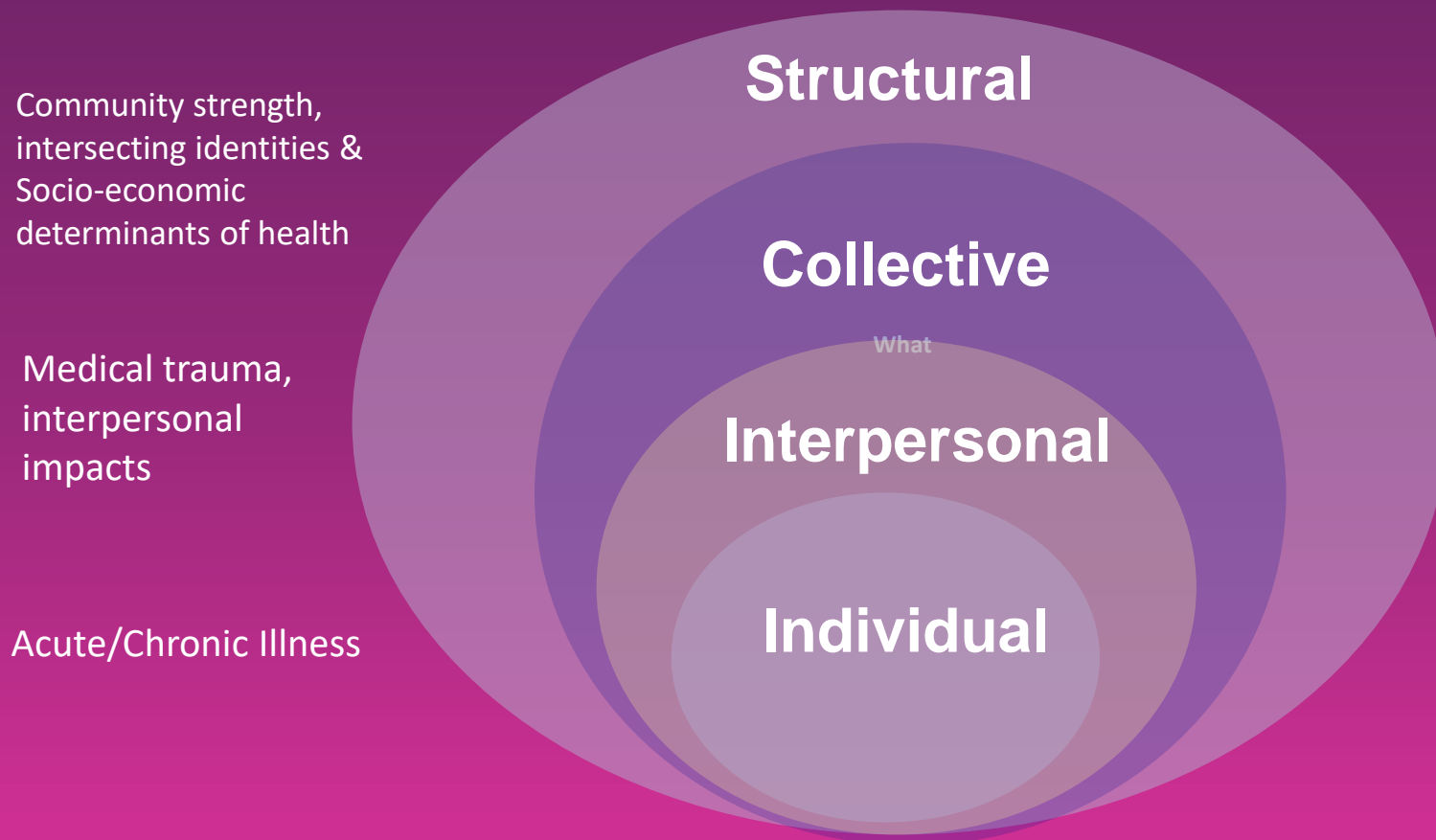


Objectives

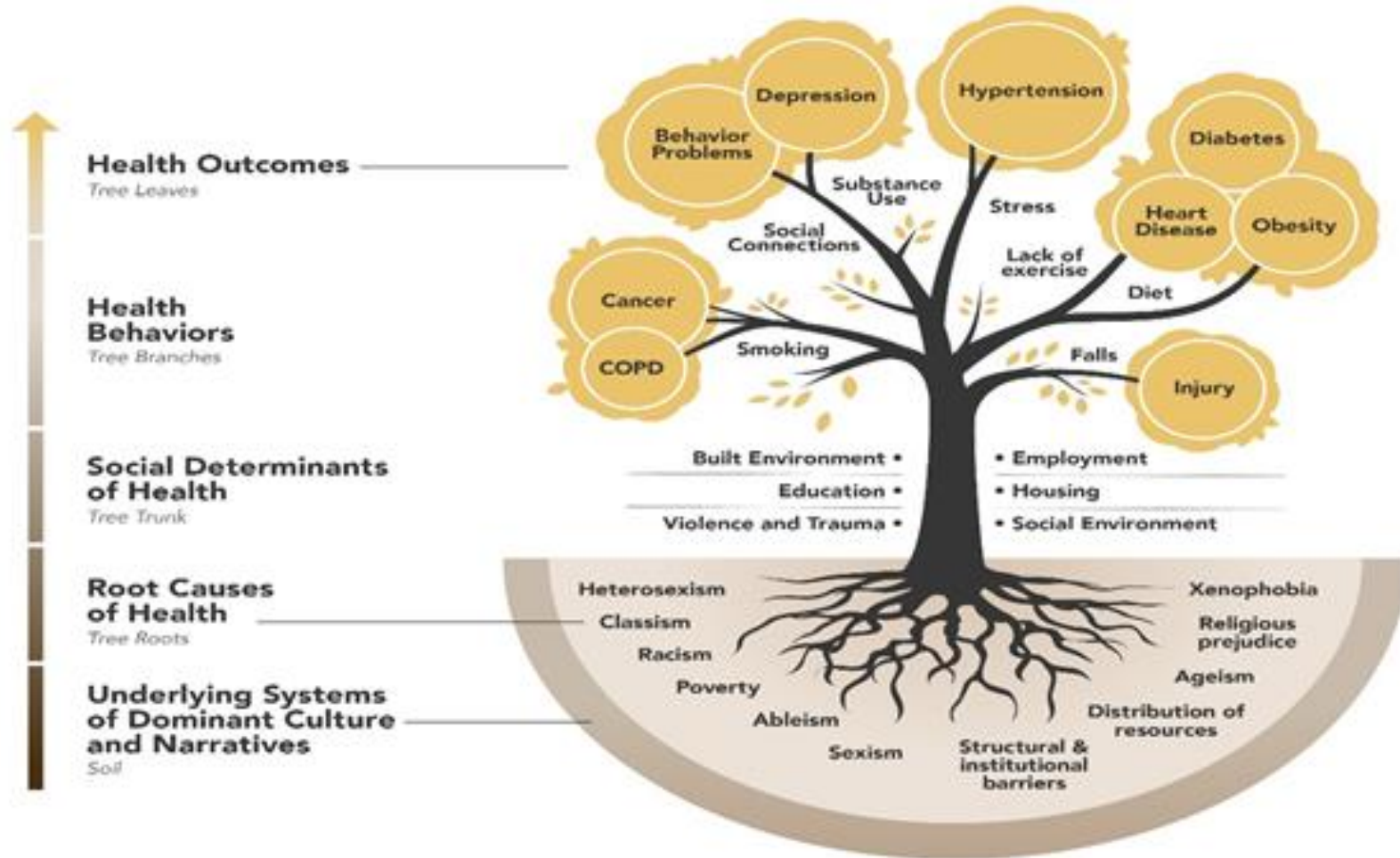


1. Recognize the high rates of exposure to trauma and adversity
2. Understand neurobiological principles underlying the trauma-informed care (TIC) framework
3. Consider how trauma-informed strategies support a health equity-focused approach to supporting patients, clinicians and health care systems

What is Trauma?



Health and its Social Determinants



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>
- Averse 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



OBESITY



DIABETES



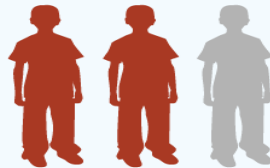
DEPRESSION



SUBSTANCE
ABUSE

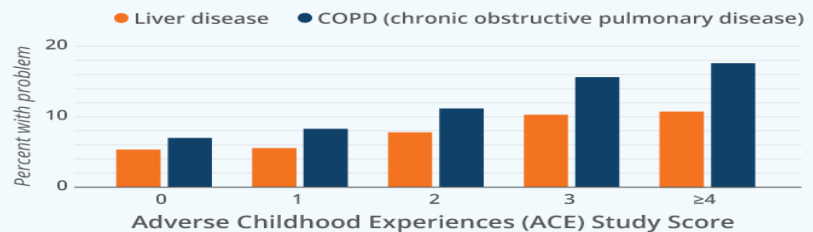
THE STUDY ALSO FOUND

**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, AI/AN, Black, and Other more likely to report 4+ ACEs than Men and 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

Intimate Partner Violence: Incidence and Prevalence

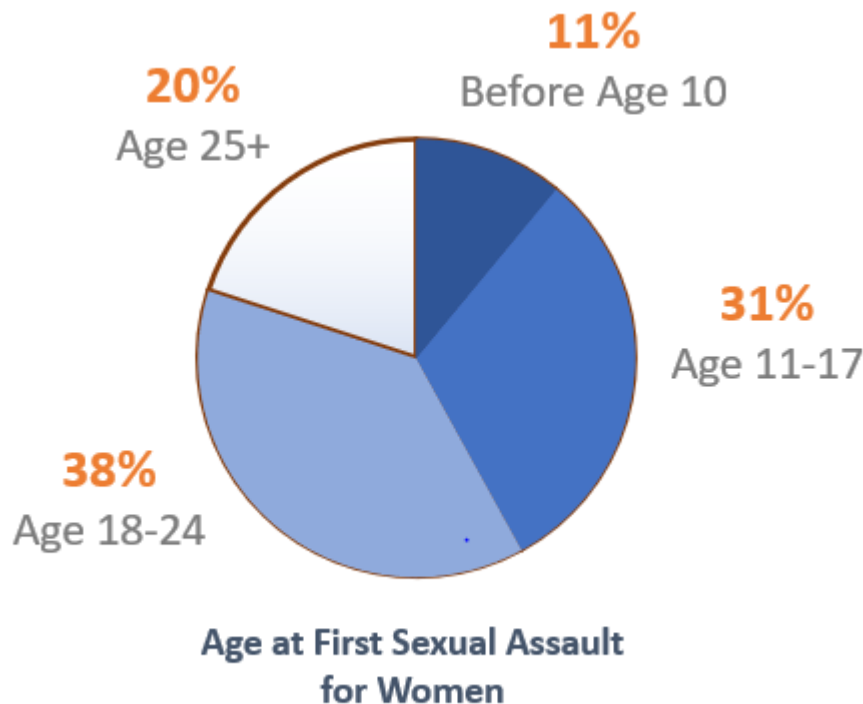
WHO study in 10 countries found that
13-61% of women
reported experiencing
violence by a partner



Over 1 in 3 women
in the US experience IPV
during their lifetimes

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

Sexual Violence Often Starts Early

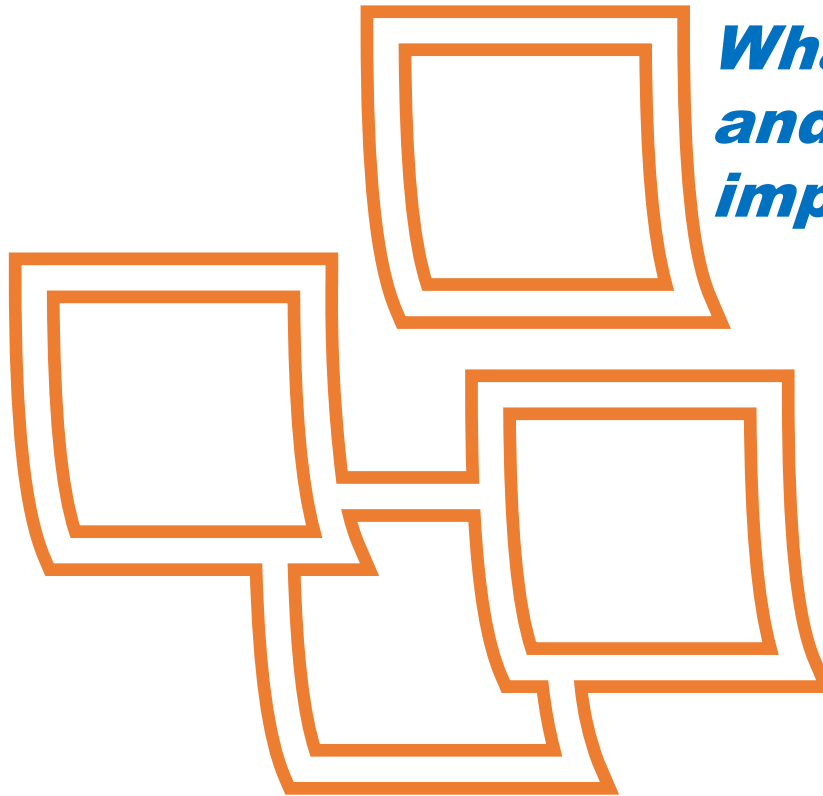


42%
of women who
have been raped
were first raped
before age 18

80%
before age 25

The National Intimate Partner and Sexual Violence Survey (NISVS): 2010-2012 State Report. Atlanta, GA. NCIPC, CDC

The TIC Paradigm Shift in Health Care



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

What's wrong with you?

The Trauma-Informed Approach

- **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

Trauma-Informed Approach

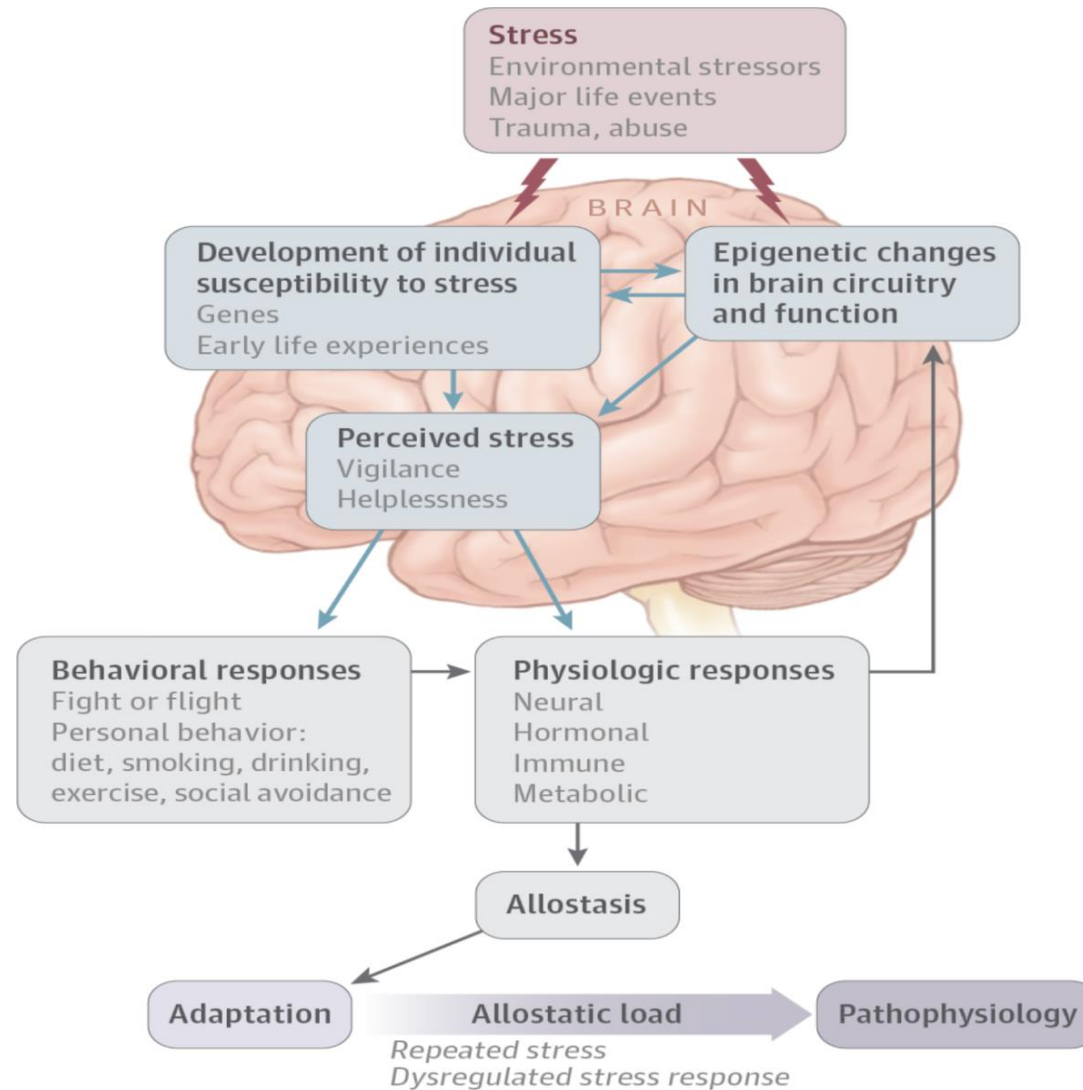
vs

Trauma-Focused Treatment

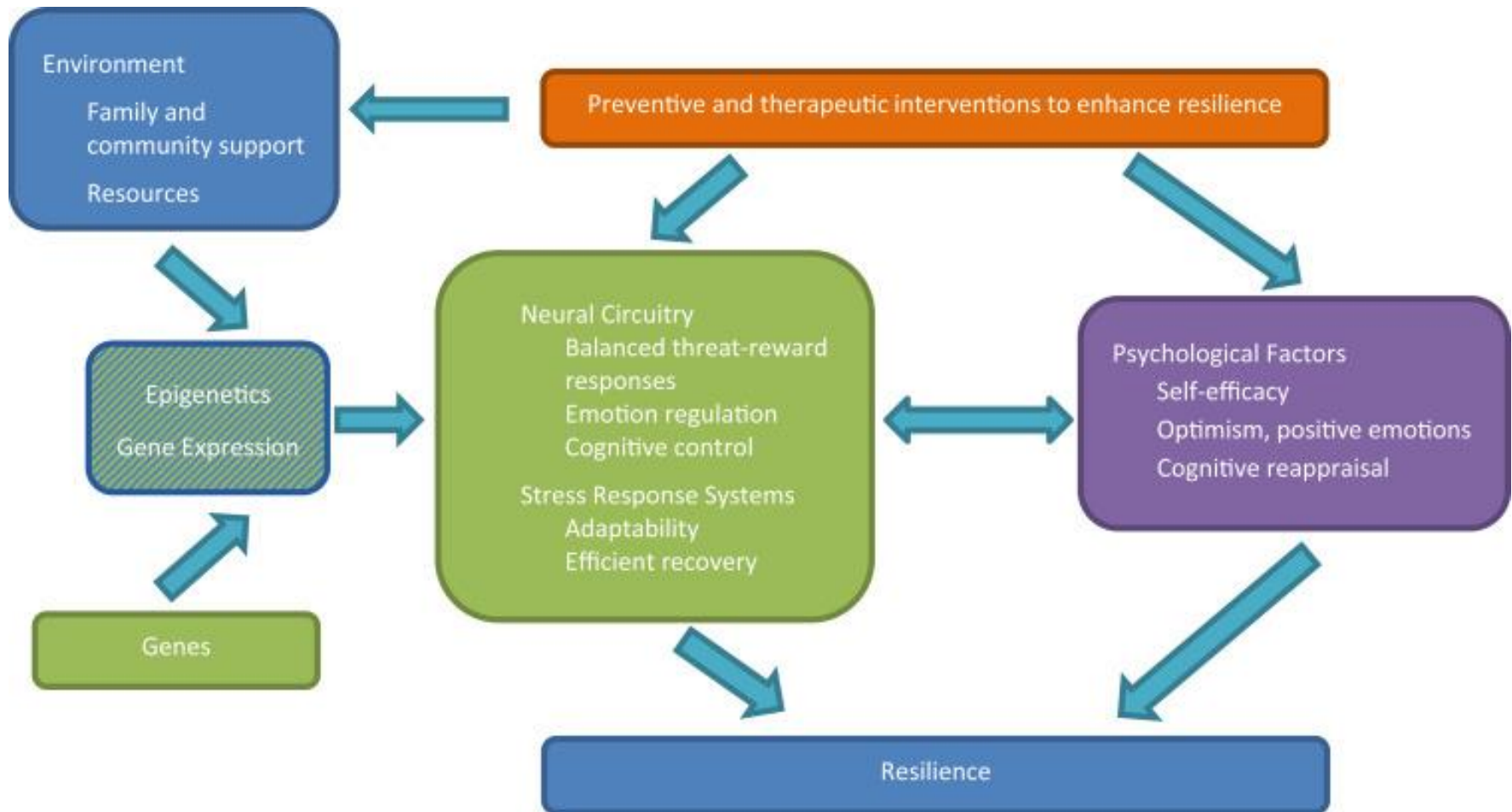
- Focus on optimizing engagement
- Universal precautions
- Universal framing
- Avoid retriggering
- Variability of role and context of care

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

Stress response: seeking allostasis

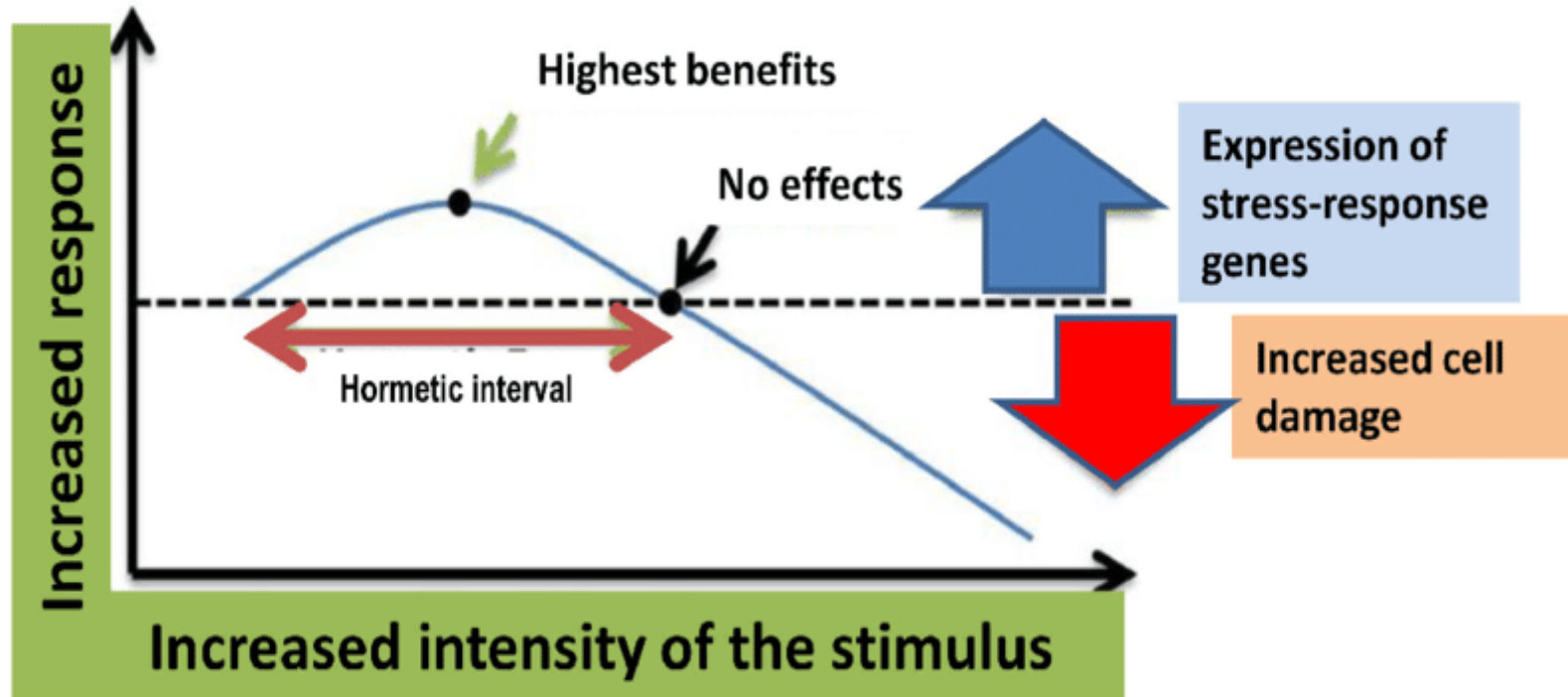


Resilience



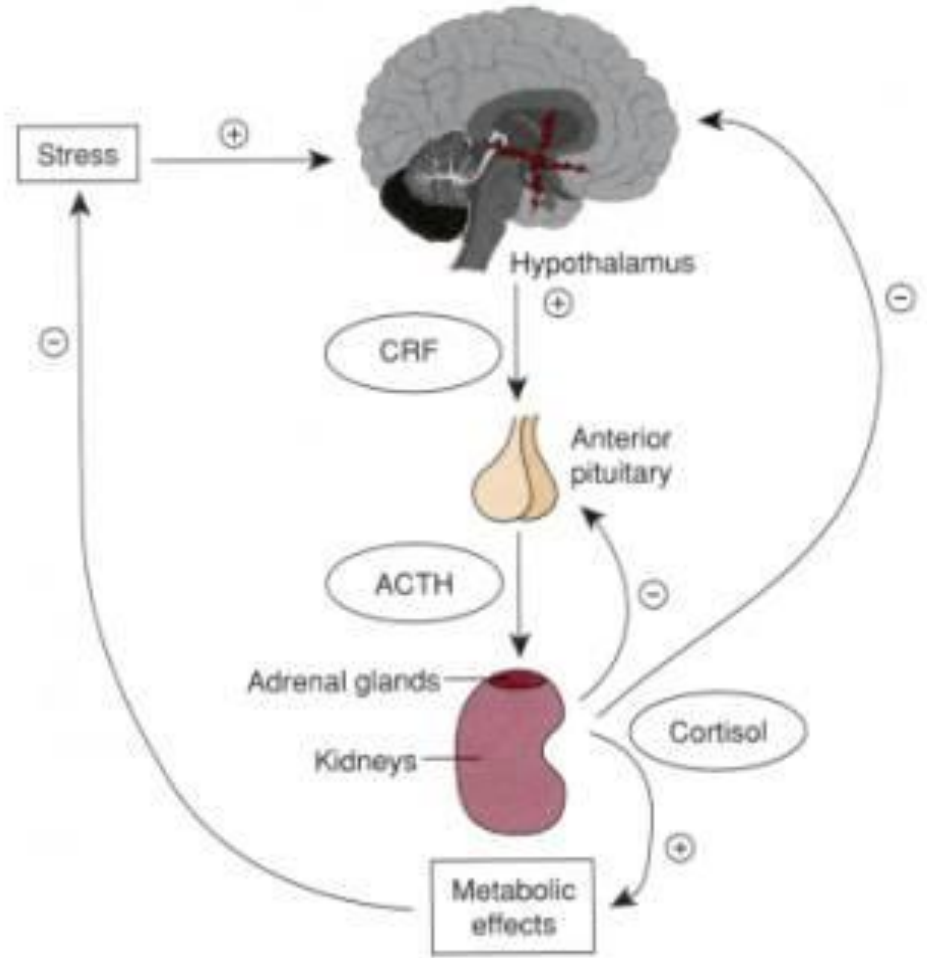
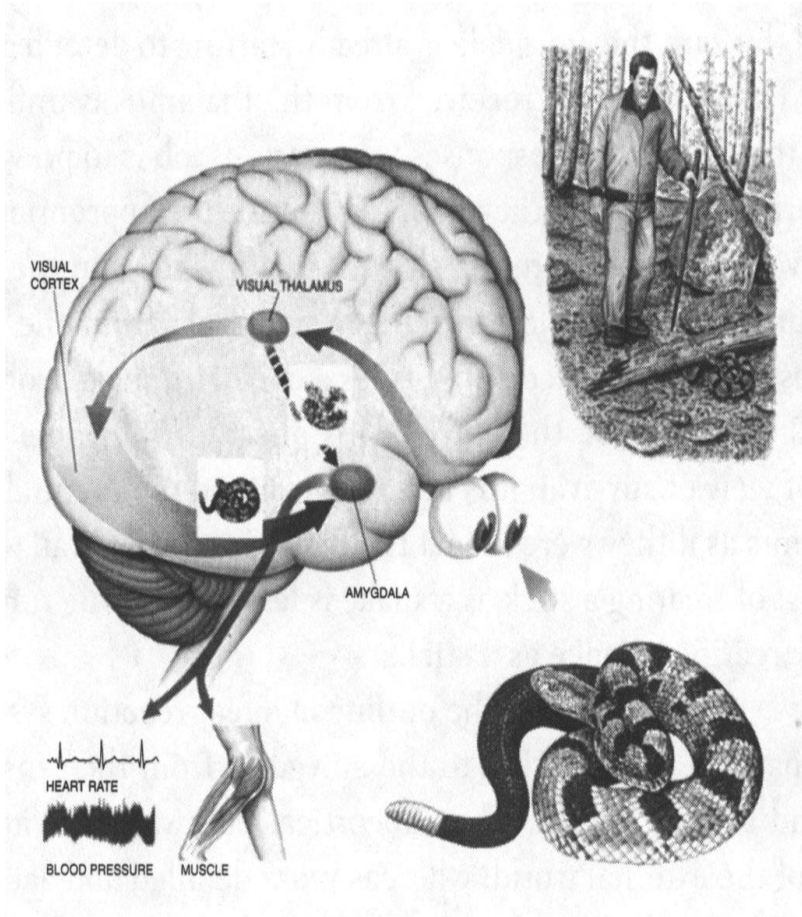
Hormesis: Stress/Toxic Stress and Resilience

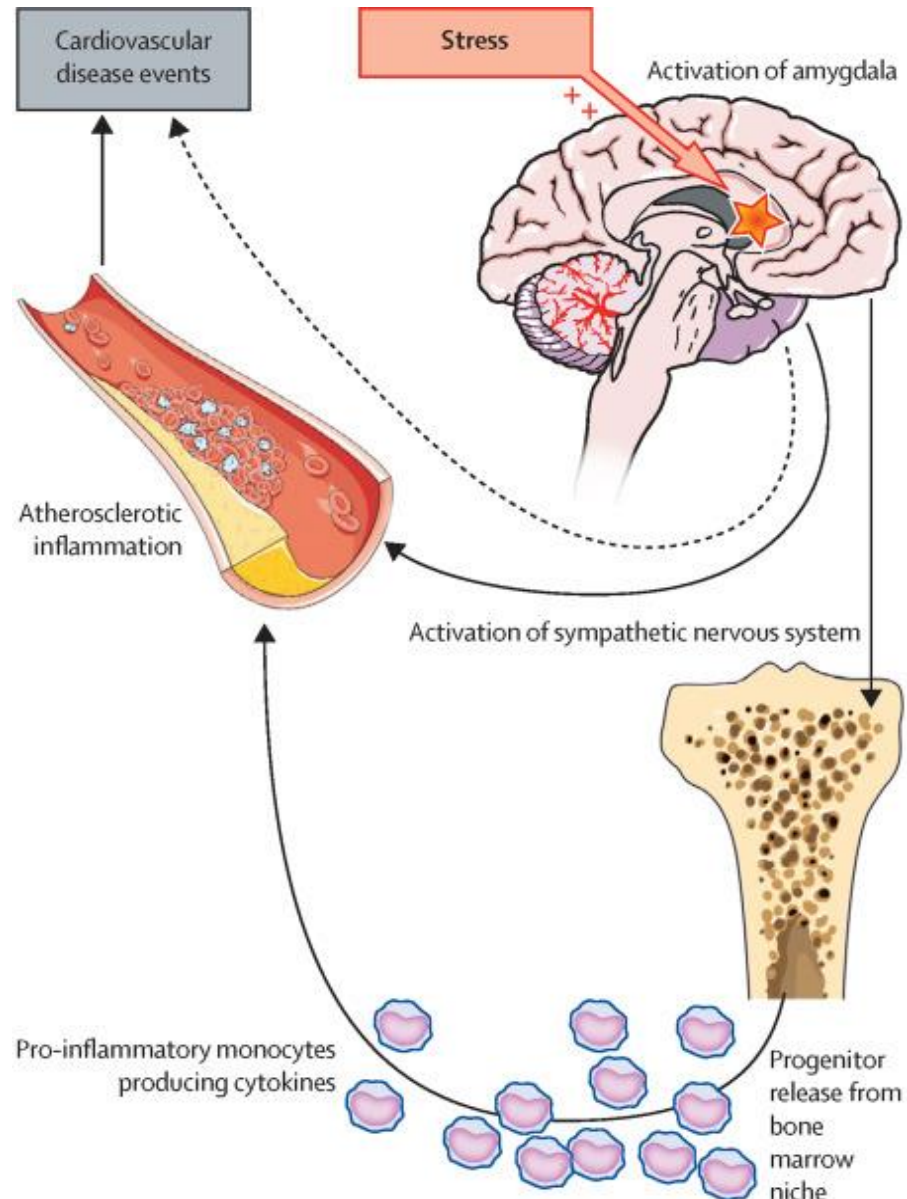
The biphasic hormetic response to stressors



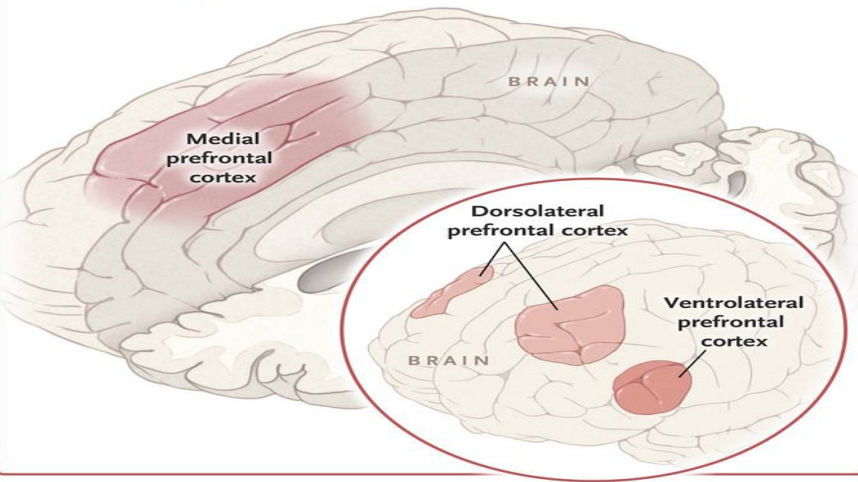
- Leri, Manuela & Scuto, & Ontario, Marialaura & Calabrese, & Bucciantini, Monica & Stefani, Massimo. (2020). Healthy Effects of Plant Polyphenols: Molecular Mechanisms. *International Journal of Molecular Sciences*. 21. 1250. 10.3390/ijms21041250.

Allostasis and HPA Axis Activation

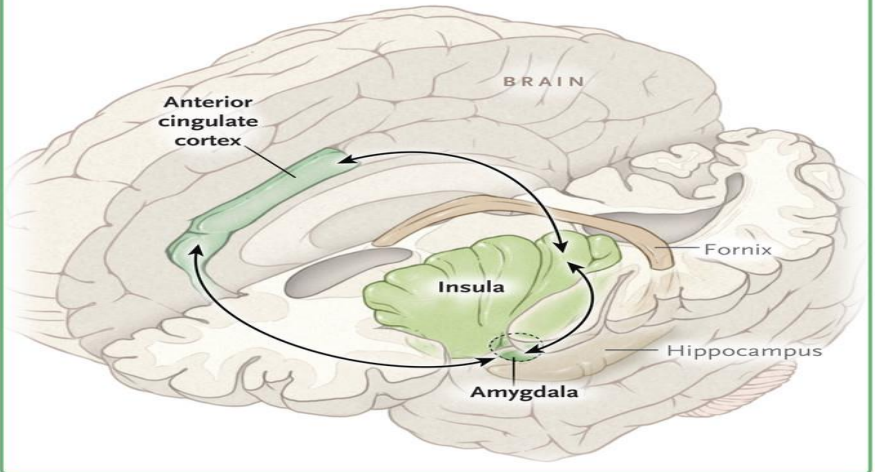




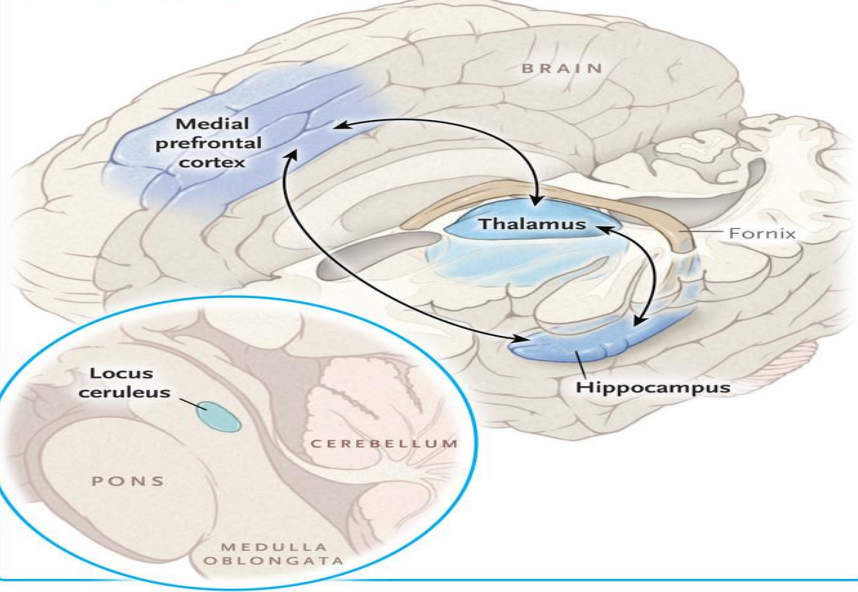
A Emotion Regulation and Executive Function



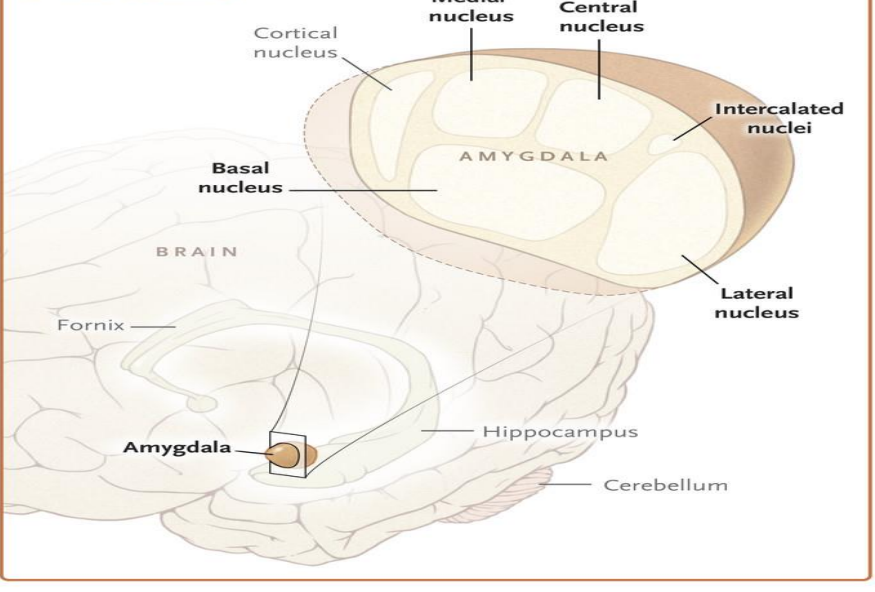
B Threat and Salience Detection

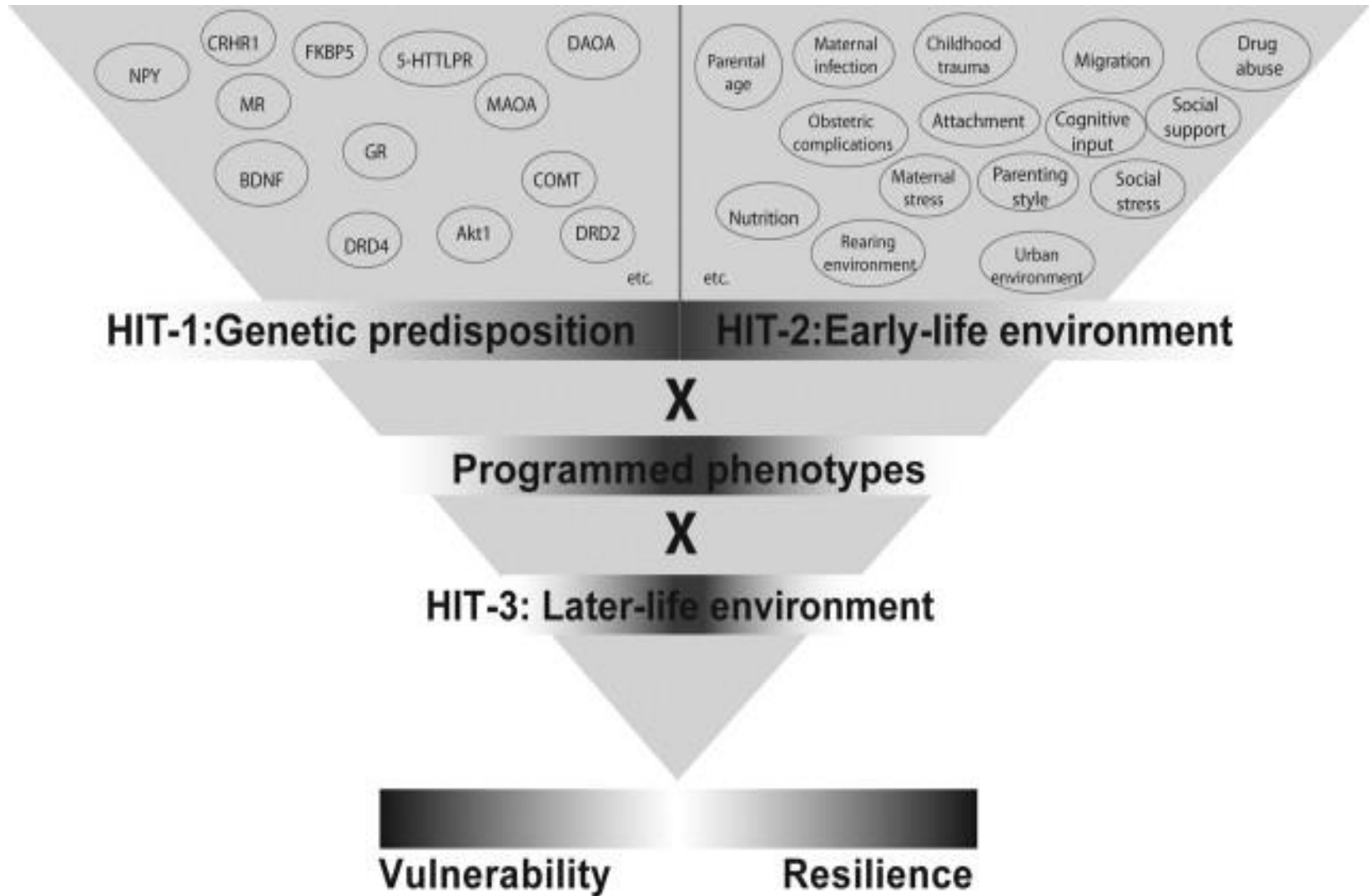


C Contextual Processing



D Fear Learning





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

Trauma-Informed Care Guiding Principles

Corollaries to PFA Core Actions and VA's Stress First Aid



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
 - Referral



Next: looking at racial trauma
through a TIC lens

Acknowledgments

TIC in Critical Care Recovery

Daniela Lamas
Stacey Salomon
Gerald Weinhouse
Anthony Massaro

BWH Dept Psychiatry

David Silbersweig
David Gitlin
Sejal Shah
Leena Mittal
Joji Suzuki
John Grimaldi

RWJF Clinical Scholars

Annie Lewis-O'Connor
Samara Grossman
Eve Rittenberg
Hanni Stoklosa

Stepping Strong & FORTE

Eric Goralnick
Juan Herrera Escobar
Ali Salim
Adil Haider
Deepika Nehra
Cheryl Clarke

Go Team(s)!

V-Day & beyond

Jeffrey Katz & team
Annie Lewis-O'Connor
Mardi Chadwick-Balcom
Wanda McClain
Michelle Keenan

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), 5th 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>
- 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*.
- 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.” 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.

References - 2

- 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>
- www.integration.samhsa.gov
- 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.
- 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>
- LeDoux JL (1994) Emotion, Memory and the Brain. *Scientific American*.
- Leri, Manuela & Scuto, & Ontario, Marialaura & Calabrese, & Bucciantini, Monica & Stefani, Massimo. (2020). Healthy Effects of Plant Polyphenols: Molecular Mechanisms. *International Journal of Molecular Sciences*. 21. 1250. 10.3390/ijms21041250.

References - 3

- 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.
- 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>
- 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.00000000000005136>
- 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
- 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.

References - 4

- 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, Murrugh 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.
- Voiriot, 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.
- <https://www.acesaware.org/wp-content/uploads/2022/01/Trauma-resillience-practice-paper.pdf>
- <https://www.ptsd.va.gov/professional/ptsd-overview/epidemiological-facts-ptsd.asp>
- <https://www.medicalnewstoday.com/articles/the-impact-of-historical-trauma-on-american-indian-health-equity>
- http://www.medscape.org/viewarticle/751769_transcript
- <https://www.psychiatry.org/psychiatrists/cultural-competency/education/stress-and-trauma/indigenous-people#:~:text=Intergenerational%20Trauma%3A%20The%20intergenerational%20and,spiritual%20practices%2C%20language%20and%20culture.>
- 2010 National Epidemiologic Survey on Alcohol and Related Conditions
- "The Adverse Childhood Experiences (ACE) Study". *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.