



The link between PTSD and cardiovascular disease: Mechanisms and treatment

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Disclosures:

- Neither I nor my spouse/partner has a relevant financial relationship with a commercial interest to disclose.

Veterans and military personnel have high cardiovascular disease (CVD) risk

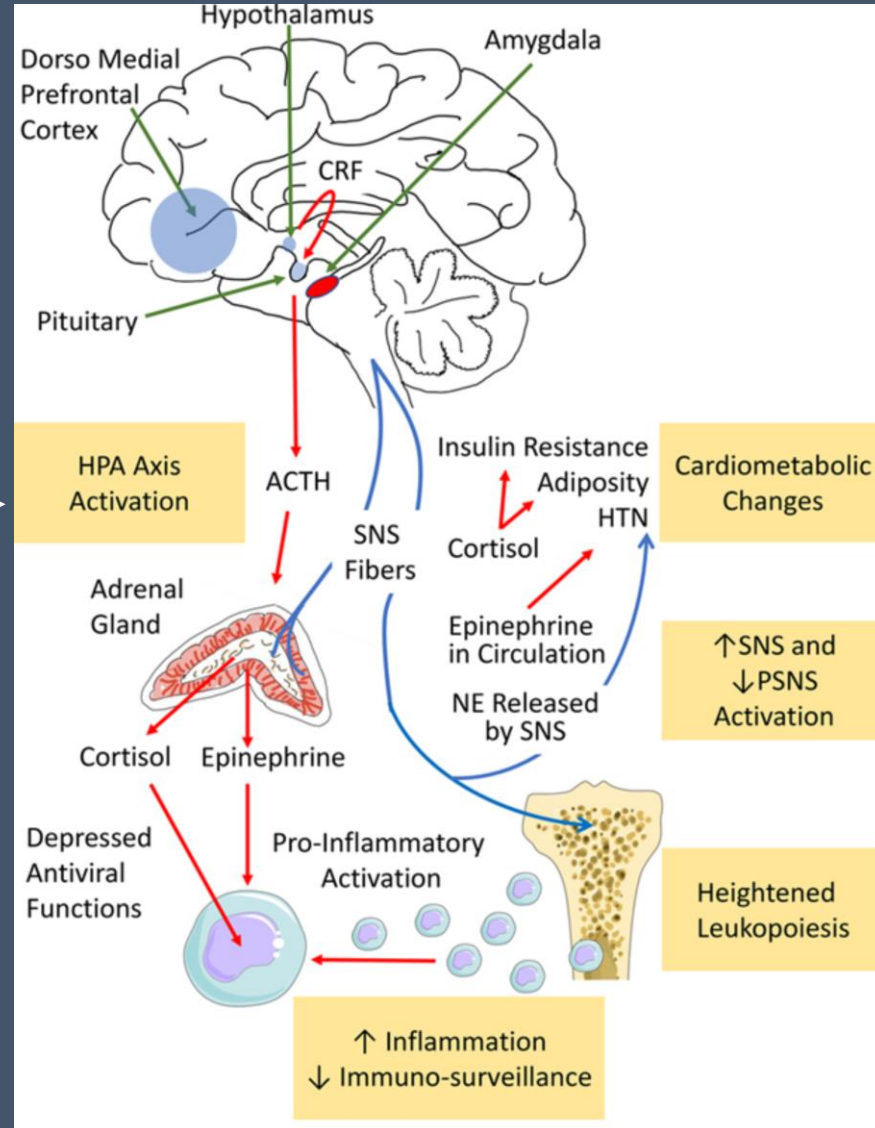
- Myocardial infarction
- Stroke
- Heart failure
- Hypertension

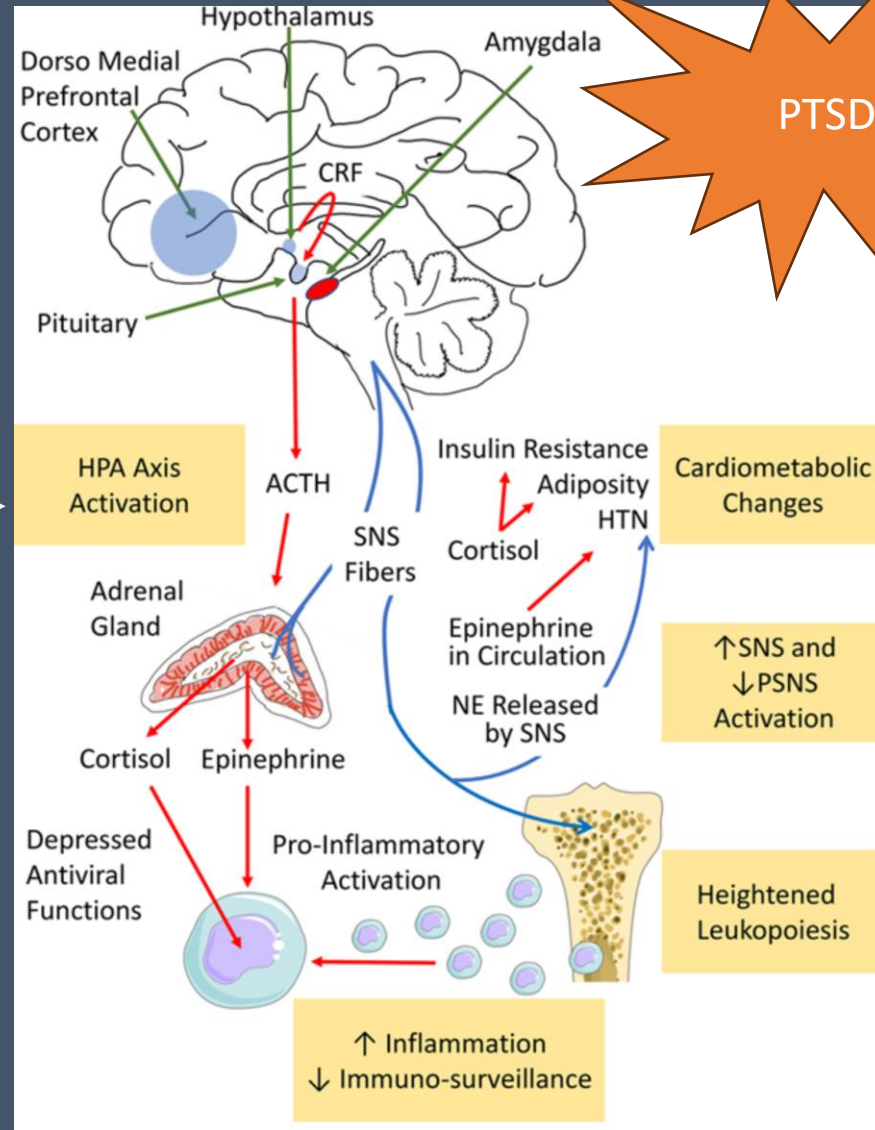


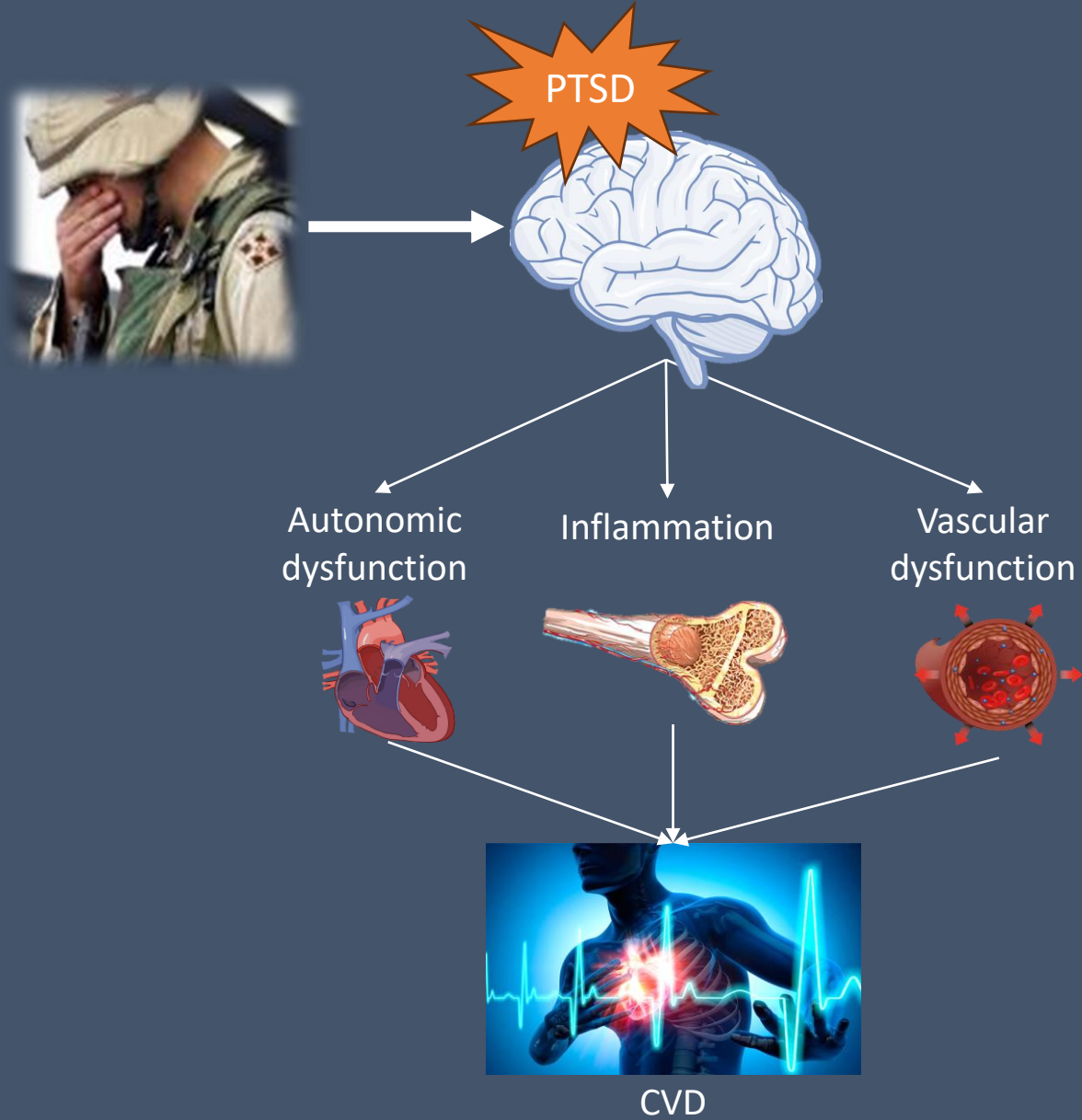
Trauma and PTSD increase CVD risk

- NIH working group, “*The Cardiovascular Consequences of Post-Traumatic Stress Disorder*”
- Overactive stress response
- Underactive stress regulation









CVD

Autonomic dysfunction predicts CVD



BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

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Brain Behavior and Immunity

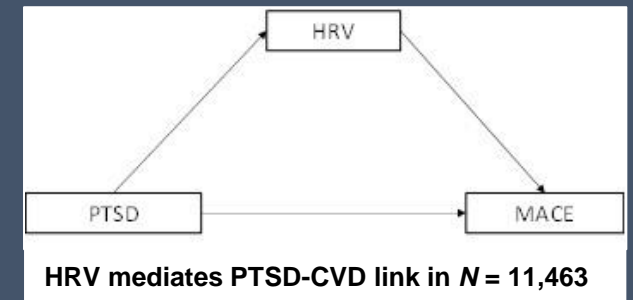
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Full-length Article

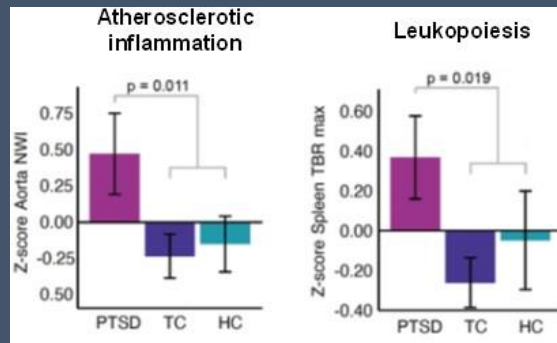
PTSD increases risk for major adverse cardiovascular events through neural and cardio-inflammatory pathways

Antonia V. Seligowski^{a,b,*}, Simran S. Grewal^{b,c,1}, Shady Abohashem^{b,c}, Hadil Zureigat^{b,c}, Iqra Qamar^{b,c}, Wesam Aldosoky^{b,c}, Charbel Gharib^b, Erin Hanlon^b, Omar Alani^b, Sandeep C. Bollepalli^d, Antonis Armoundas^{d,e}, Zahi A. Fayad^f, Lisa M. Shin^{a,g}, Michael T. Osborne^{b,c}, Ahmed Tawakol^{b,c}

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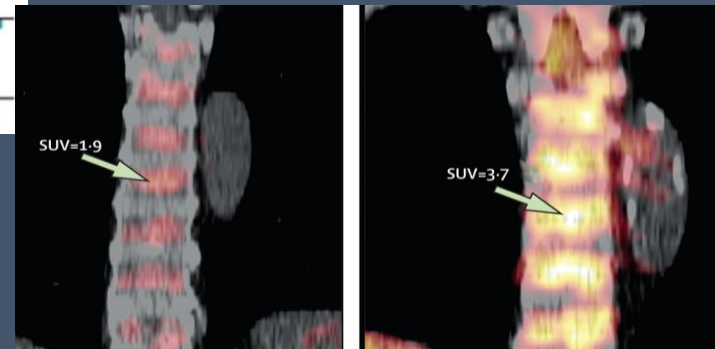


Inflammation predicts CVD

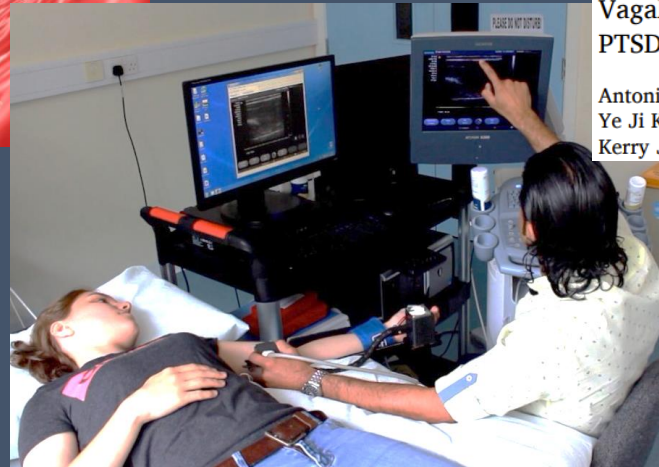
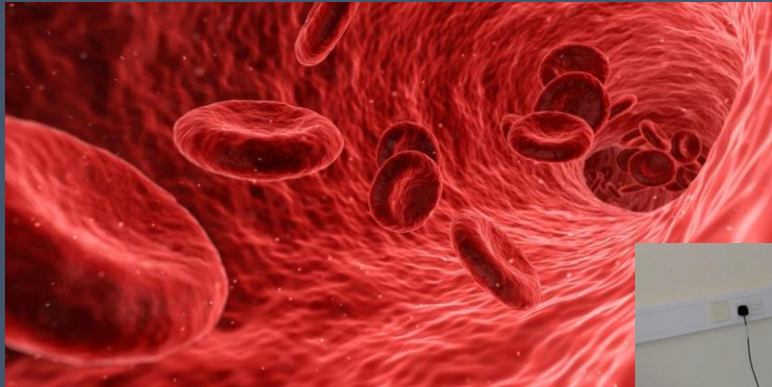


Cortico-limbic interactions and carotid atherosclerotic burden during chronic stress exposure

Charbel Gharios ¹, Mandy M. T. van Leent ^{2,3,4}, Helena L. Chang ⁵, Shady Abohashem ^{1,6}, David O'Connor ², Michael T. Osborne ^{1,6}, Cheuk Y. Tang ², Audrey E. Kaufman ², Philip M. Robson ², Sarayu Ramachandran ², Claudia Calcagno ², Venkatesh Mani ², Maria Giovanna Trivieri ^{4,7}, Antonia V. Seligowski ¹, Sharon Dekel ^{8,9}, Willem J. M. Mulder ^{2,3,10,11,12}, James W. Murrough ^{13,14}, Lisa M. Shin ^{8,9,15}, Ahmed Tawakol ^{1,5*,†}, and Zahi A. Fayad ^{2,3*,†}



Vascular dysfunction predicts CVD



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Brain, Behavior, & Immunity - Health

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Vagal control moderates the association between endothelial function and PTSD symptoms in women with T2DM

Antonia V. Seligowski^{a,b,*}, Ida T. Fonkoue^c, Natalie C. Noble^b, Drew Dixon^d, Rachel Gluck^d, Ye Ji Kim^e, Abigail Powers^d, Thaddeus W.W. Pace^f, Tanja Jovanovic^g, Guillermo Umpierrez^h, Kerry J. Ressler^{a,b}, Arshed A. Quyyumiⁱ, Vasiliki Michopoulos^{d,j}, Charles F. Gillespie^d

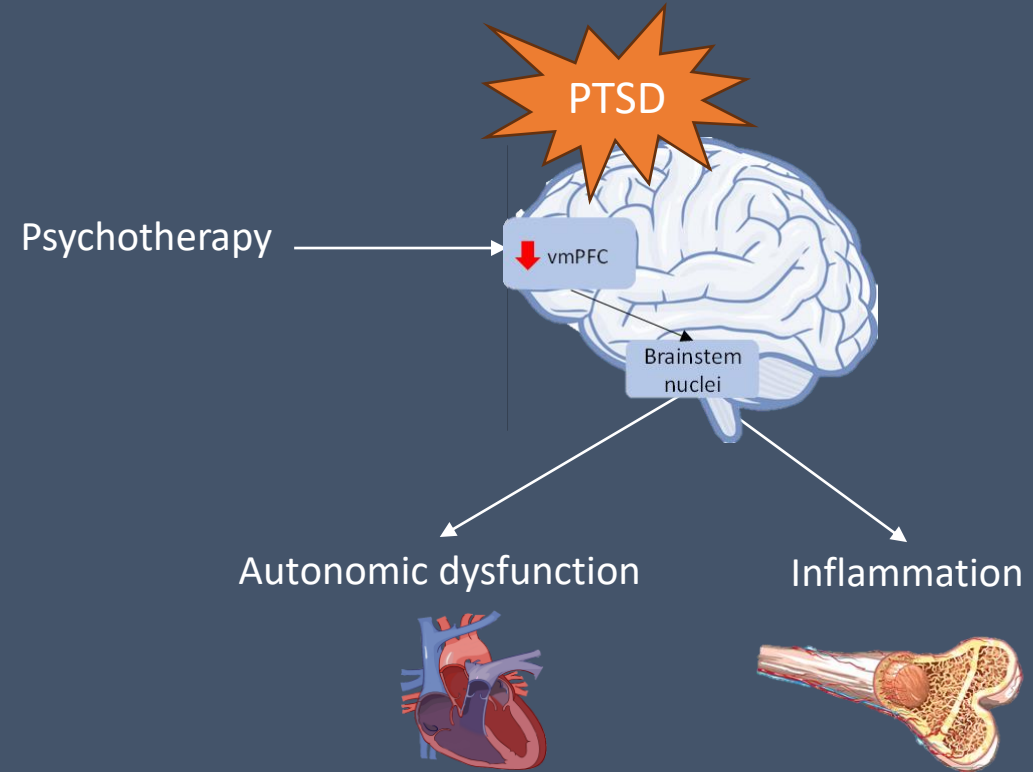
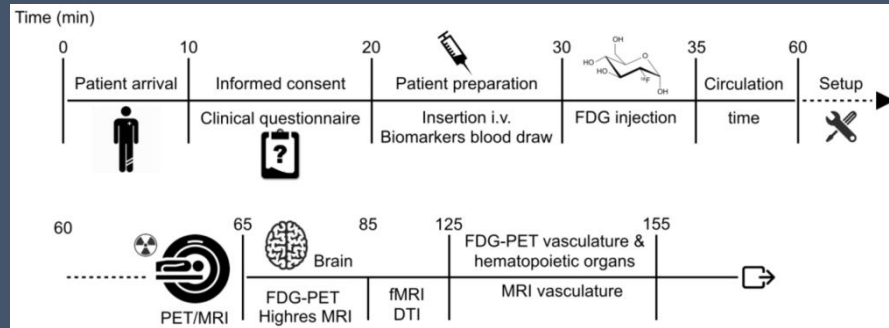
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Research questions

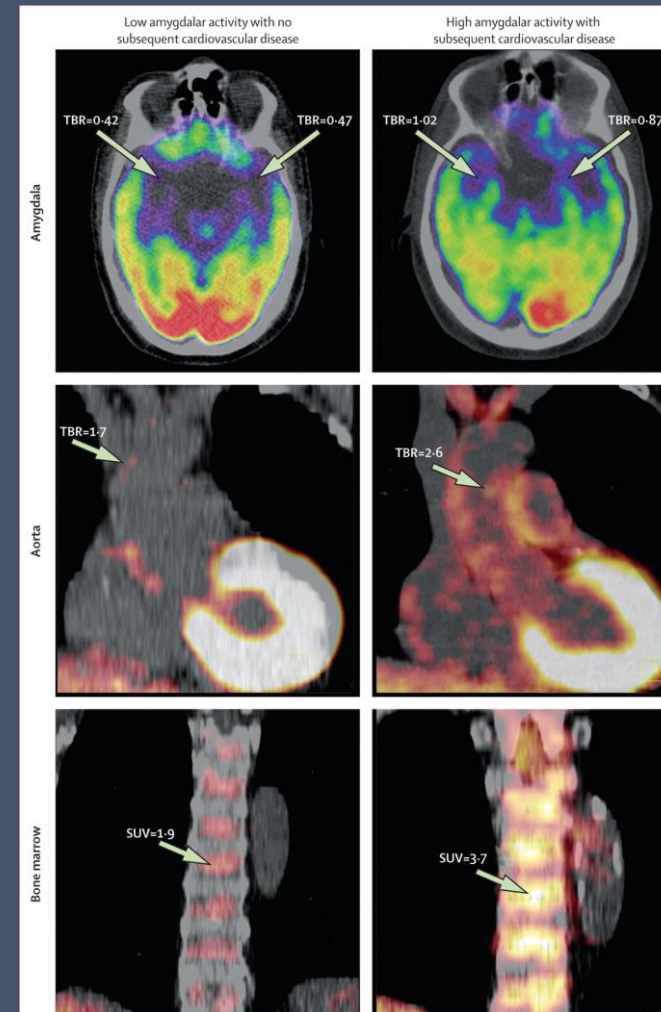
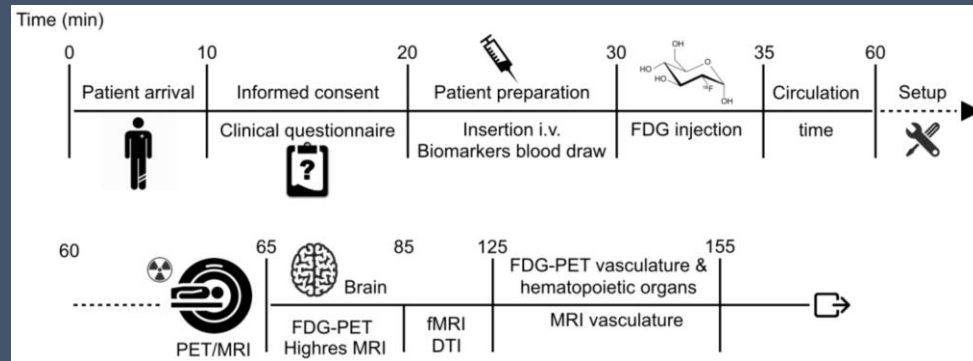
- Does PTSD treatment improve CVD risk?
 - Existing gold-standard treatments
 - Before overt CVD
- What mechanisms might treatment impact?
 - PTSD treatments show promise for CVD risk
- Can we mitigate early risk and prevent CVD?

Current research

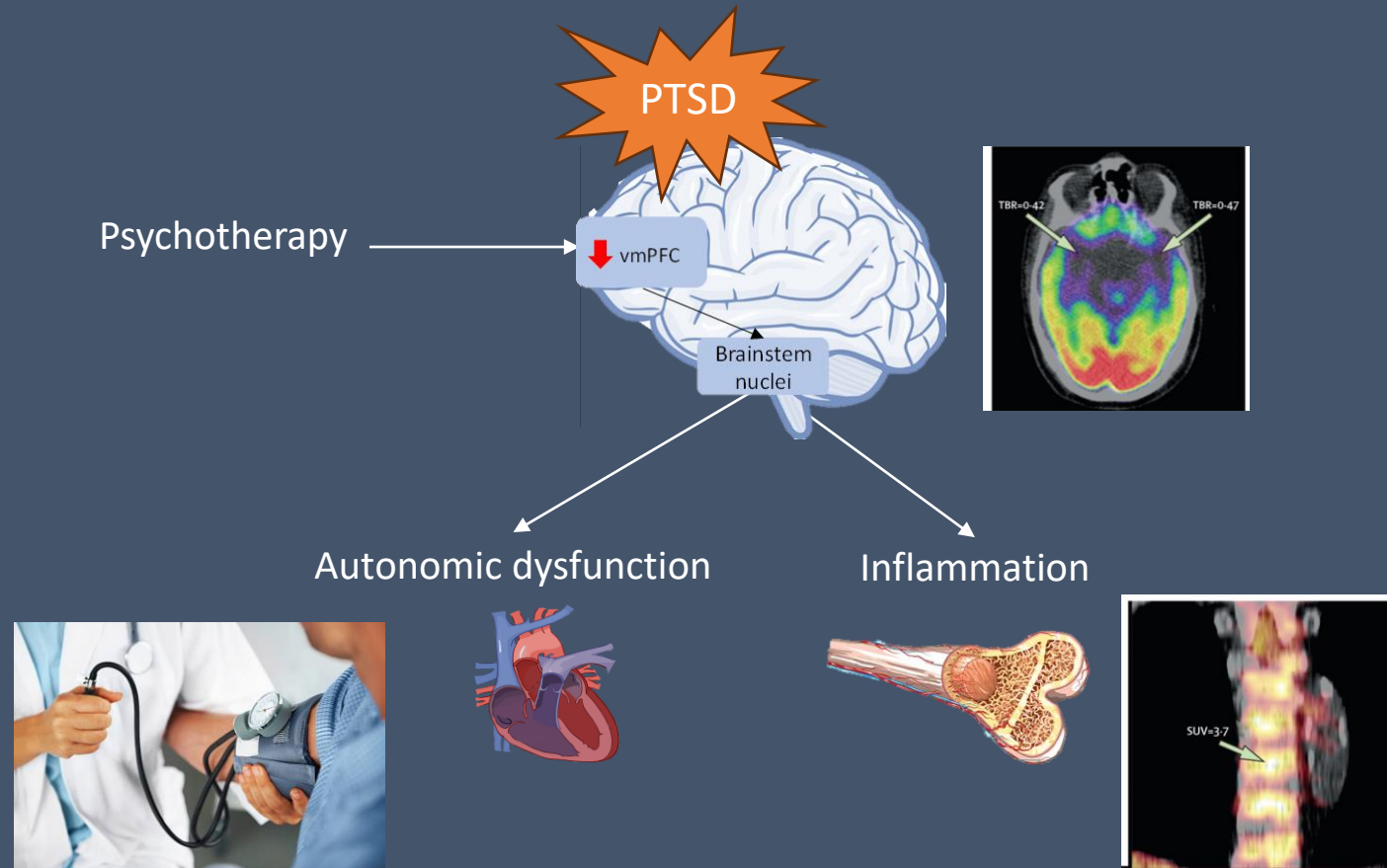
- AHA-funded treatment study
 - PTSD and CVD risk



Current research

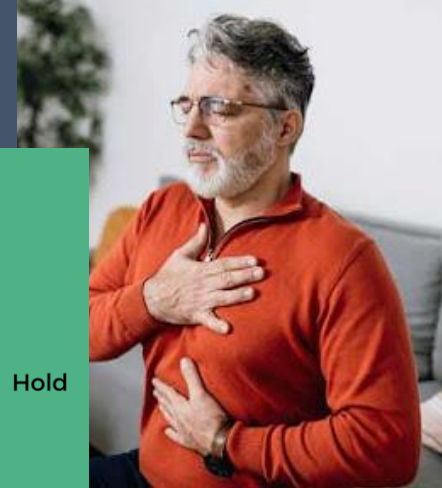
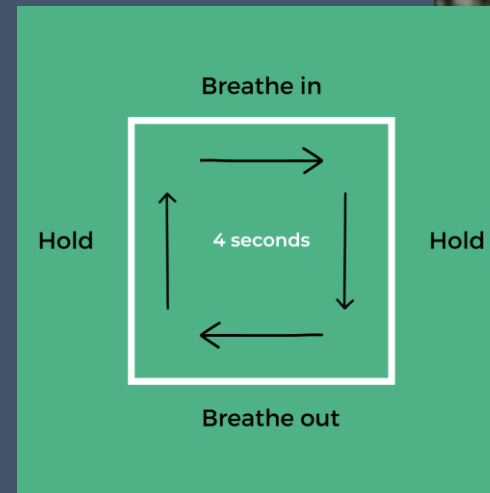


Current research



Next steps

- Larger NIH-funded trial
 - Add vascular measures
 - Test sex differences
- Other treatments
 - Breathwork
 - Exercise
- Long-term follow up





Acknowledgements



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American Heart Association

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23SCISA1143491

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