

dear residents

Resilience, Stress and Allostasis

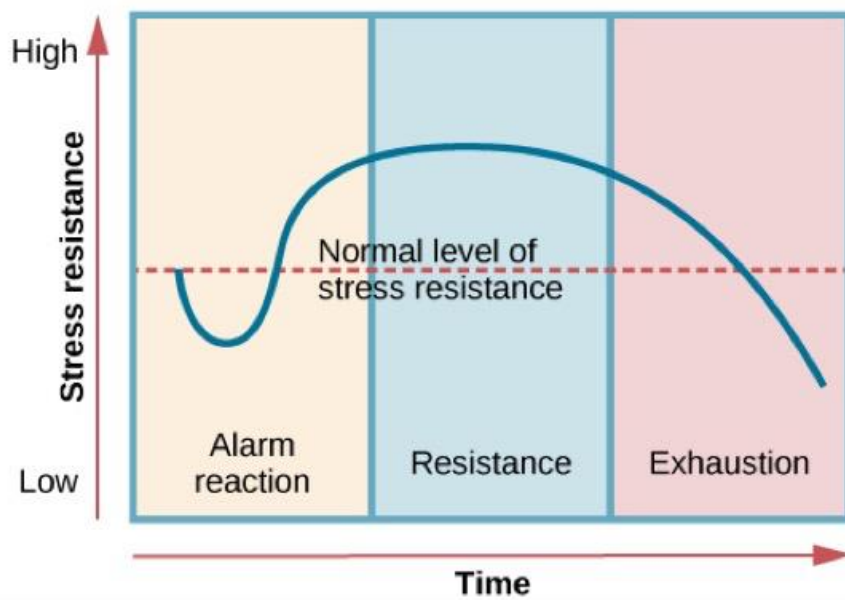
October 6, 2024

Dear Residents,

By the end of the day, my phone enters **low power mode**, but still manages to do everything I ask of it. Even at 1% it doesn't seem to drop calls or fail to fetch email. Yet, that 1% reminds me that I don't have long before I need to recharge it. It's a resilient device. Similarly, humans can perform remarkably well even when running on low reserves - whether it's swimmers, runners, construction workers, nurses, or residents. **Resilience** is the ability to pursue a goal, whether short-term or long-term, despite facing **adversity** or hardship. That adversity can be immediate, stemming from a task at hand, or more abstract, coming from an awareness of societal challenges like weather events, pandemics, or global conflicts.

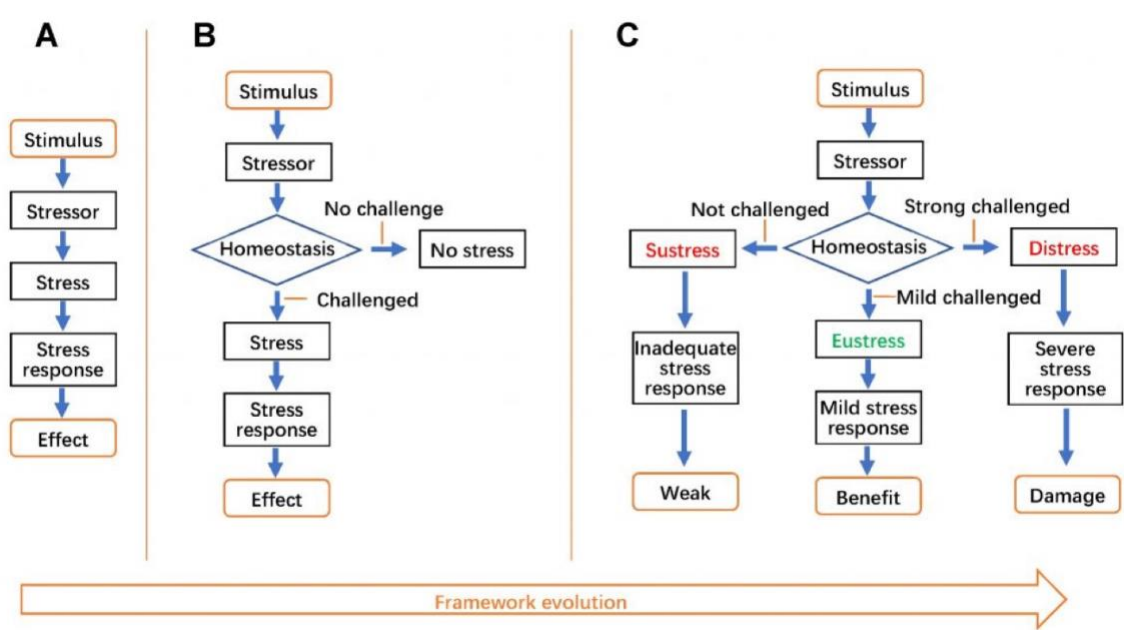
Because we often manage to keep going, **resilience is sometimes viewed as an individual trait**. However, organizations can overlook the vital role they play in supporting their workforce during personal or systematic hardships. In this program we do not stigmatize any personal hardship – we will always find a way to give you the support you need. I am also aware of system issues that sap your energy and effectiveness. For example, I am now very actively working with our VA to facilitate maintaining access to their information systems. I know that keeping your access current feels like an unnecessary adversity. It is up to the program to facilitate this and not place the burden on just you. We will need your partnership, but we must design a system that doesn't count on your personal heroism alone.

Individual reservoirs of energy and vigor, the personal traits of optimism, and the strength of your social networks are all valuable components of resilience, but they must be complemented by organizational resources and commitments to facilitate and promote joy in your work. I am an active member of the Epic optimization workgroup – we meet frequently to continuously improve the documentation burden and streamline Epic secure chat. **Not all adversity in residency training can be eliminated**. By its very nature patient care is replete with previously unexpected situations for which no optimized pathway exists. When challenged this way, I view these situations as **eustress** – the right amount of stress that fosters my growth and development. **Stress theory** was developed in the 1930's by **Hans Selye** and communicated in a now classic [Nature Letter to the Editor](#). In rats subjected to a variety of noxious stimuli Selye observed enlargement of the adrenal cortex and increased levels of cortisol, shrinking of the thymus gland, spleen, and lymphatic structures and deep ulcers in the stomach. He characterized his observations in three stages: alarm reaction, a resistance stage, followed by exhaustion. Selye wrote: "Since the syndrome as a whole seems to represent a generalised effort of the organism to adapt itself to new conditions, it might be termed the **general adaptation syndrome**."



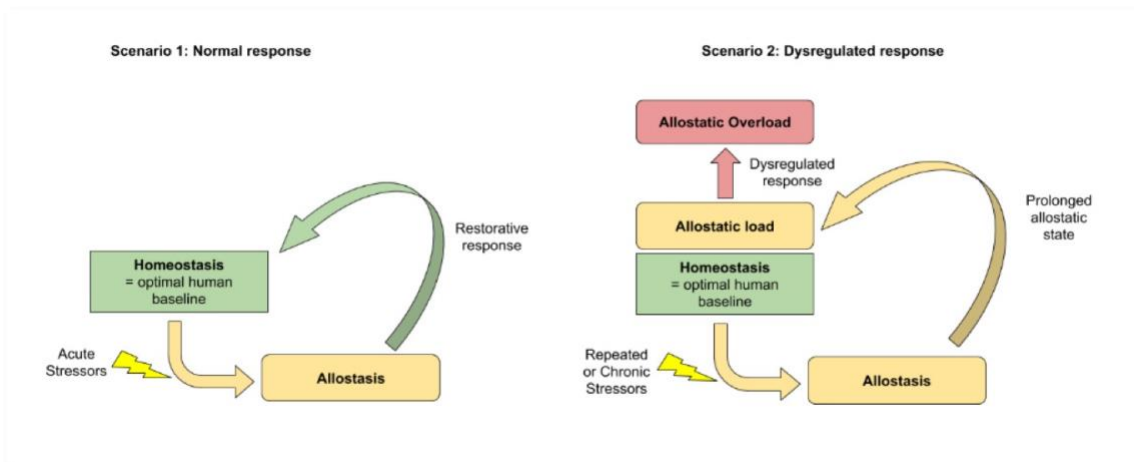
<https://courses.lumenlearning.com/waymaker-psychology/chapter/studying-stress/1000/>

Since then, Selye’s “general adaptation syndrome” has evolved beyond viewing stress from the perspective of activation of the HPA axis (which focused on stress as a negative force) to having adaptive benefits. In later work, Selye differentiated between good stress (eustress) and bad stress (distress). **The framework of stress** is based on five basic elements: stimulus, stressor, stress, stress response, and effect (**Panel A**). The concept of homeostasis was added to the framework (**Panel B**).



<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8166217/>

The contemporary framework of the stress stimulus-response system (**Panel C**) expands the stress response to three pathways: *sustress*, *eustress* and *distress*. **Eustress** emerges as the beneficial pathway and suggests that being mildly challenged produces benefit. Another emerging concept is while *homeostasis* is a canonical concept in biology, *allostasis* may be more relevant to our cultural and societal constructs and is also emerging as a biological construct in chronic disease states. Allostasis refers to a dynamic equilibrium as opposed to a static state. Chronic and repeated stressors can drive a dysregulated response by prolonging the **allostatic load**.



<https://www.urbanhealthcouncil.com/health-lexicon/homeostasis-vs-allostasis>

Returning to resilience, one can now think of our resilience as not just the ability to respond to deviations from the steady state, but the **ability and capacity to respond to a variable and evolving environment**. This resiliency is constantly evolving. Much of our efforts are directed in preserving what works well, but we attempt to anticipate change and proactively equip you with the tools needed to thrive and succeed. We have moved from overnight call to a night float system – from homeostasis to a new allostatic load – we have aimed for eustress but have likely contributed to distress. The VA has been mindful of security risks and has shortened the interval during which you retain access to their systems, thereby increasing the allostatic load on you. The Epic notewriter has probably done the same thing. Change is inevitable – how we respond to it is a function of both personal and organization resilience.

Wishing you just the right quantity of stress!

Dino Kazi