Building a Bullet Proof Immune System

Dr. Flavio Cadegiani, MD

Dr. Kristina Carman, ND

Kristina Morros, CRNA

Hydration and Your Immune System

Plays a crucial role in producing lymph, which transports white blood cells and other immune system cells throughout the body. Additionally, maintaining proper hydration helps to flush out toxins and waste materials, making it easier for the immune system to combat infections.

- **Transportation of Immune Cells:** Water is a key component of blood and lymphatic fluid, which are responsible for circulating white blood cells and other immune cells throughout the body, ensuring they reach where they are needed most.

- **Removal of Toxins:** Adequate hydration aids the body's detoxification processes, including flushing out harmful pathogens and waste products, which is crucial for maintaining immune system health.

- **Mucosal Barrier Function:** Hydration helps maintain the mucous membranes' moisture in the respiratory and digestive tracts, which act as a first line of defense against pathogens.

- **Optimal Cellular Function:** Every cell in the body needs water to function properly, including immune cells. Adequate hydration ensures these cells can operate effectively in responding to infections and repairing tissues.

Well Known Causes of a Weak Immune System

- Low vitamin D levels | lack of sun exposure
- Low vitamin C intake
- Poor sleep quality
- Glucocorticoids
- Excessive alcohol intake
- Smoking

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Less Known Causes of a Weak Immune System

- Uncured and recurrent/ re-activated viral infections
- Imbalanced lifestyle
- Excessive training / mismatched training and diet
- Chronic very low high-quality carbohydrate intake/ low protein diet/ excessive dietary restrictions
- Chronic, unsolved psychosocial issues/ toxic relationships
- Metabolic diseases (Type 2 diabetes, fatty liver, and others)
- Excessive antibiotics
- Statins
- SIBO | SIFO | LIBO | IMO - Dysbiosis and low grade inflammation
- Excessive caffeine intake
- Hormonal changes/ Imbalance/ gender-affirming hormone therapy
- Misaligned circadian rhythm
- Lack of sexual activity/ healthy sexual practices
- Immune senescence

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Well Known Immune System Boosters

- Vitamin D
- Vitamin C
- Echinacea
- Lysine
- Timomoduline
- Caffeine
- Zinc
- Elderberry
- Propolis
- Honey
- Ginger
- Curcumin
- Peppers
- Oregano/Oregano oil

Less Known Immune System Boosters

- Omega-3 fatty acids
- Resistance training
- Vibration
- Licorice
- Astragalus
- Selenium
- Garlic
- Methylated B-complex vitamin
- Probiotics, prebiotics, symbiotics, and postbiotics
- Fiber intake
- Natural sources of vitamins
- Rapamycin
- Metformin
- Melatonin
- A range of phytotherapies for comprehensive physical and mental balancing
- Strength training
- Natural, identical hormonal replacement therapies
- Acerola, a superfruit
- Açaí fruit

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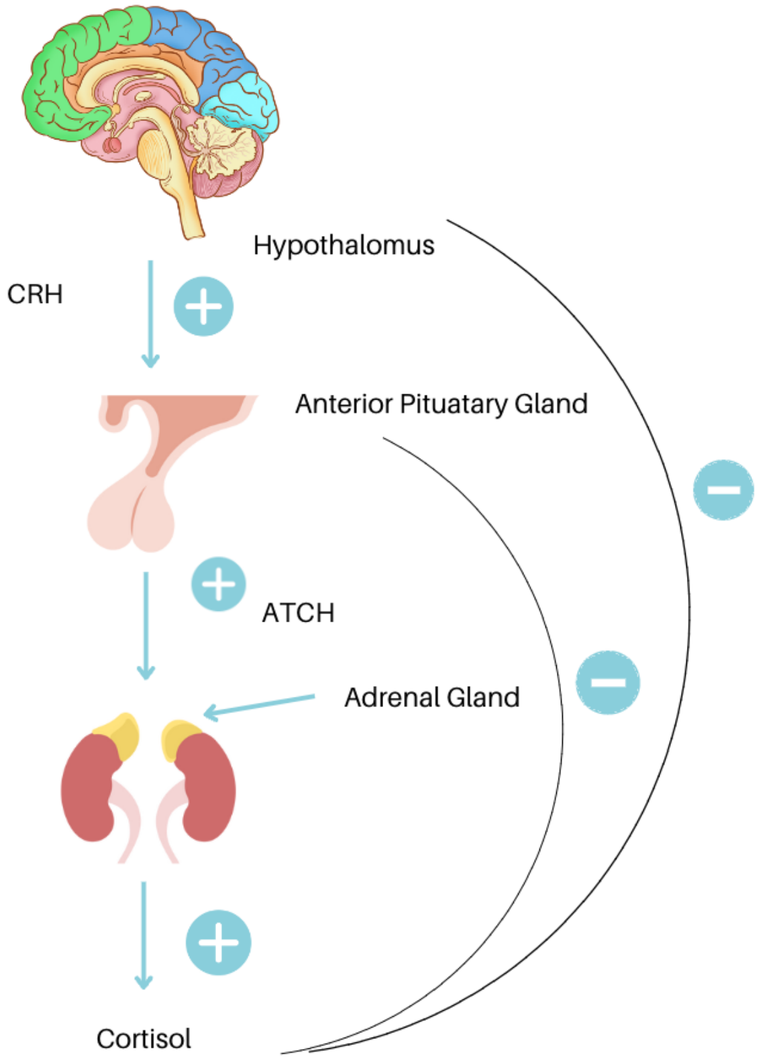
HPA



Components of the HPA Axis:

- **Hypothalamus:** A region of the brain that, upon detecting stress, releases corticotropin-releasing hormone (CRH).
- **Pituitary Gland:** CRH stimulates the pituitary gland to release adrenocorticotropic hormone (ACTH).
- **Adrenal Glands:** ACTH prompts the adrenal glands, located on top of the kidneys, to release cortisol, a primary stress hormone.

HPA Axis and Stress Response:

- When faced with a stressor, the HPA axis is activated, leading to a cascade of hormonal signals culminating in the release of cortisol.
- Cortisol helps the body manage stress by mobilizing energy reserves, altering immune system responses, and suppressing non-essential functions (like digestion and reproduction) to focus on the stressor.

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Cortisol: The Stress Hormone

Cortisol's Role:

- Called the "stress hormone" because it's released in higher amounts during stress.
- Helps the body cope by providing a burst of energy, improving alertness, and temporarily enhancing immunity by reducing inflammation.

Immune System Regulation:

- **Short-term Boost**: Initially, cortisol helps boost the immune system. It prepares the body to handle immediate challenges (like injuries or acute stress) by curbing inflammation and enhancing the effectiveness of certain immune cells.
- **Long-term Suppression:** However, prolonged or chronic elevation of cortisol (due to ongoing stress, for example) can suppress the immune system. It inhibits the production of substances that trigger allergic and inflammatory actions and reduces the number of lymphocytes (a type of white blood cell), weakening the body's immune response.

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Other Hormones and Immunity

Adrenaline, norepinephrine, estrogen, progestterone, testosterone:

- Hormones like adrenaline, norepinephrine, and sex hormones (estrogen, progesterone, testosterone) also interact with the immune system.
- For example, sex hormones can influence the severity and course of certain autoimmune diseases, and adrenaline can both stimulate and dampen various immune functions.

Balanced Hormone Levels for Optimal Immunity:

- For a well-functioning immune system, it's important to have balanced hormone levels.
- Chronic stress, poor diet, lack of sleep, and other lifestyle factors can disrupt hormonal balance, leading to weakened immunity.

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Metabolic Disease and the Immune System

Metabolic disease is caused by:

- Dysfunctional glucose, protein, and/or lipid metabolism
- Dysfunctional, imbalanced hormones – both cause and consequence of metabolic diseases
- Increased adipocyte – the 'Big Bang'

Impacts on the immune system:

- ↑Leptin + ↓Adiponectin → Impaired immune responses
- Low grade hypoxia → Low grade inflammation
- Indirect effects

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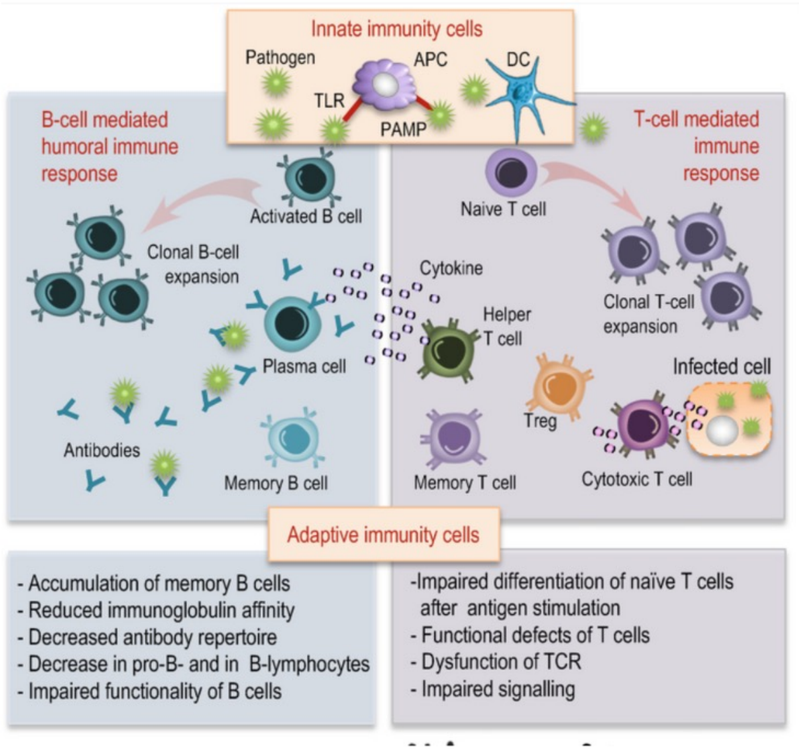
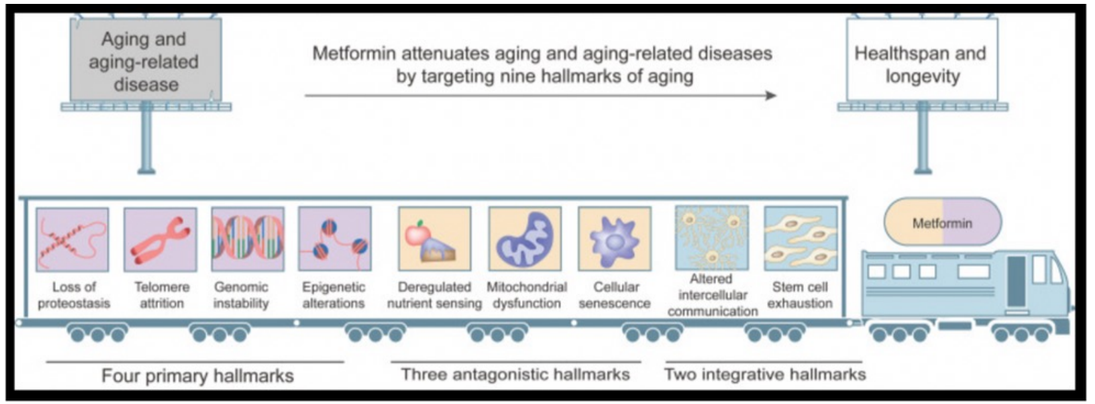
The Immune System and Aging

- Reduced production of B and T cells in bone marrow
- Reduced function of mature lymphocytes
- Impaired responses to immune challenges
- .Atypical presentation of infections
- Reactivation of chronic viral infections
- Increased susceptibility to infections
- Weakened responses to vaccines
- Impaired wound repair





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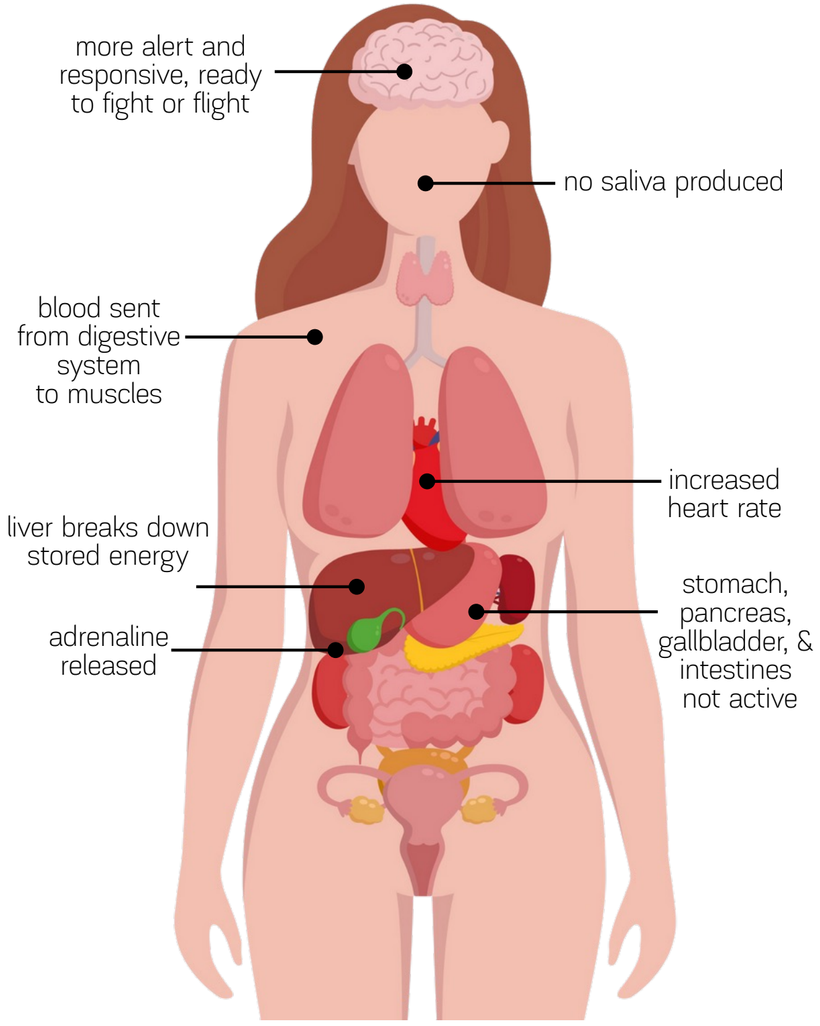
The Nervous System and Stress

sympathetic

State of Stress

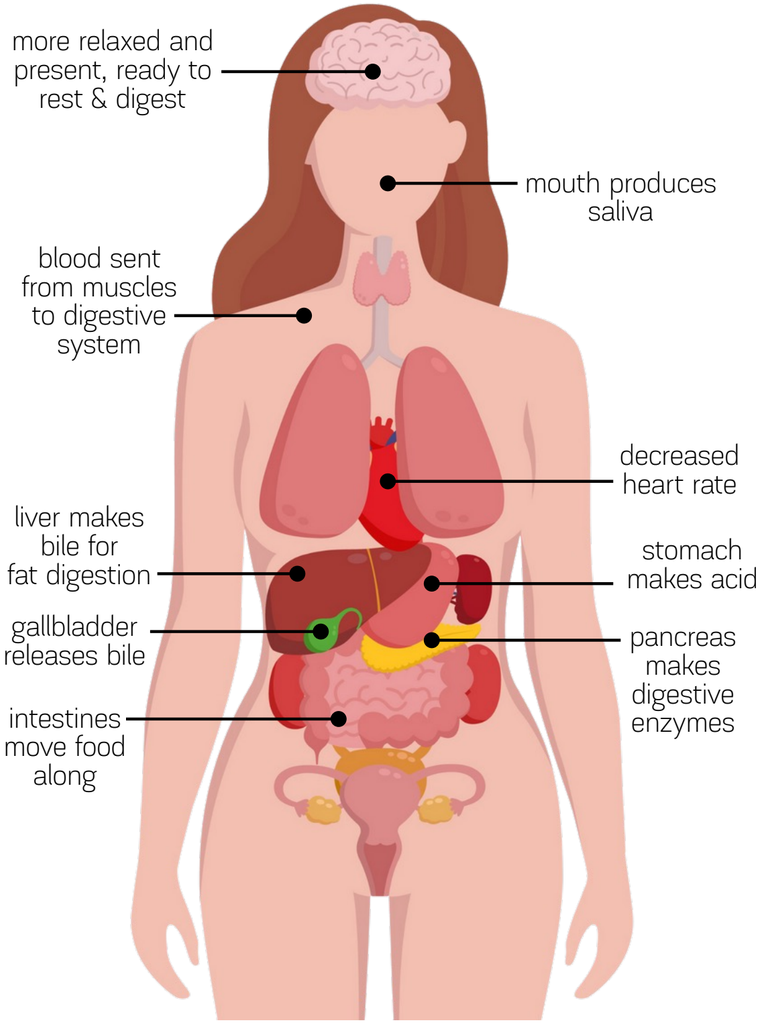
"I am distracted & rushed."



parasympathetic

State of Receiving

"I am calm & intentional."



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Case Presentation: Dr. Carman

A 47-year-old male patient presents with chronic fatigue, difficulty in managing stress, frequent colds, and a general feeling of being unwell. He reports a history of sleep disturbances, often feeling unrefreshed in the morning, and struggles with mood swings. He also mentions a recent increase in allergic reactions and a history of autoimmune issues in the family. Blood tests show slightly elevated cortisol levels.

Given these symptoms, what might be the underlying issue related to his immune function?

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Case Presentation: Dr. Carman

Answer:

HPA axis dysregulation has impacted immune resilience, potentially leading to increased susceptibility to infections and possibly exacerbating autoimmune responses.

- **Diet:** Incorporate foods rich in Vitamin C (like citrus fruits, bell peppers, and strawberries), B vitamins (whole grains, nuts, and seeds), and magnesium (leafy greens, legumes, and nuts) to support adrenal health. Omega-3 fatty acids from sources like flaxseeds, chia seeds, and walnuts.

- **Lifestyle:** Prioritize sleep hygiene, aiming for 7-9 hours of good quality sleep. Practice stress-reduction techniques such as yoga, meditation, and deep breathing exercises. Gentle physical activities like walking or tai chi can be beneficial without overstraining the body.

- **Nutrients:** Adaptogenic herbs such as ashwagandha, rhodiola, to help in balancing cortisol levels. Vitamin C and B-Vitamins, Probiotics and prebiotics to support the gut-brain axis.

Case Presentation: Dr. Cadegiani

A 43-year-old women with recurrent lower respiratory tract infections for 02 years, with persisting symptoms of low-grade fever and diffuse sweating on early evenings, despite no changes in body weight.
She has an intrauterine device (Kyleena) since 2021, in amenorrhea since then.

Physical examination revealed abnormal respiratory auscultation
X-Ray and CT scan showed enlarged hilar lymph nodes and airspace nodules with cavities

- Based on the history, what could be the diagnosis? How do we investigate the underlying issue?
- What may have happened to the immune system?
- What may be the underlying cause?

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Case Presentation: Dr. Cadegiani

Answer

Diagnosis of tuberculosis

- Tuberculosis and the immune system
- Opportunistic infections after a dysfunctional menopause – the symbol of the weakened immune system after early menopause
- Ovarian reserve reduced after 4 COVID shots
- Emerging opportunistic infections (Ois) – we should all pay attention to this

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Building a Bullet Proof Immune System

Thank You!