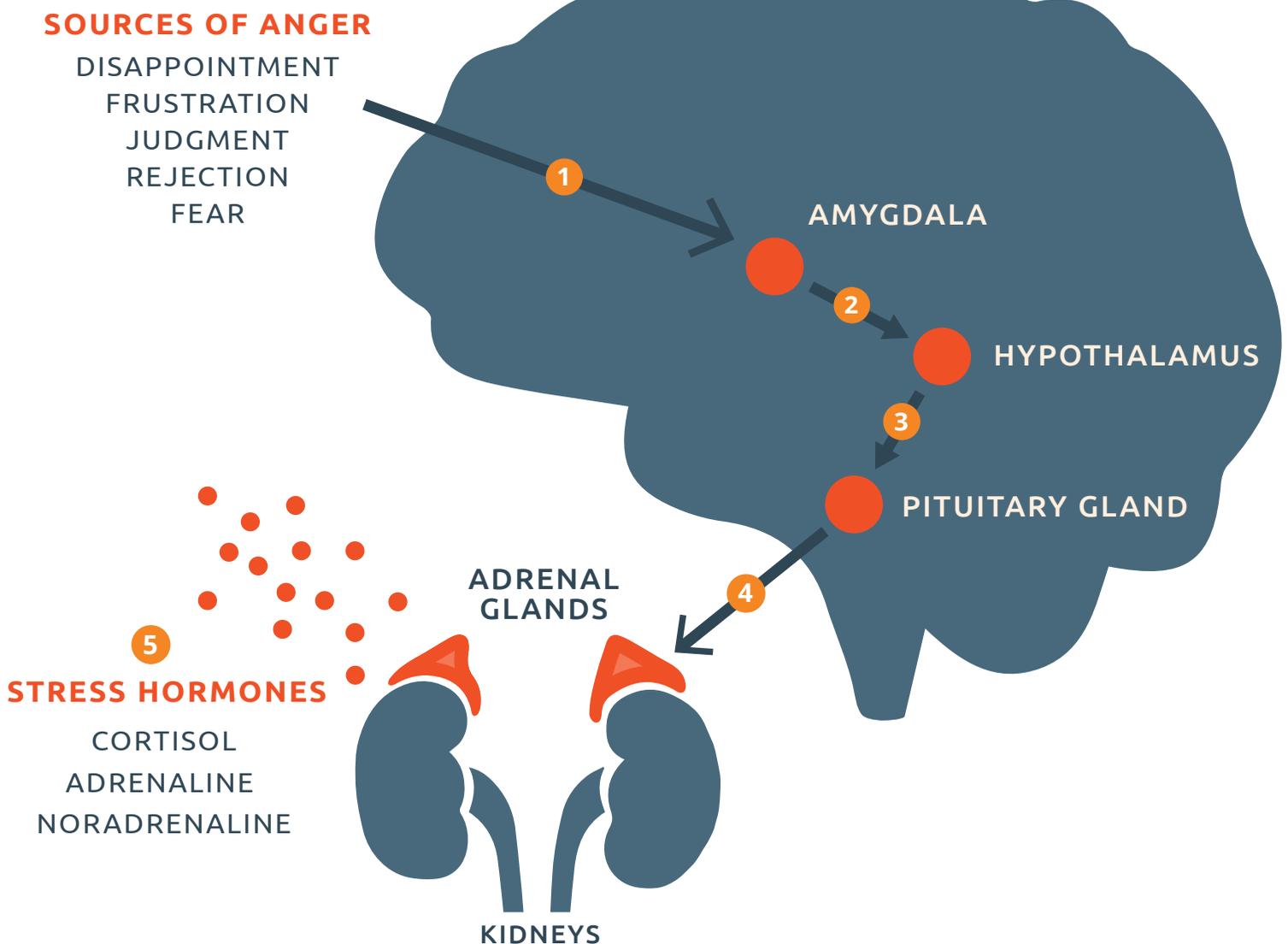


# HOW ANGER AFFECTS YOUR BRAIN AND BODY

- 1 The first spark of anger activates the amygdala before you're even aware of it.
- 2 The amygdala activates the hypothalamus.
- 3 The hypothalamus signals the pituitary gland by discharging corticotropin-releasing hormone (CRH).
- 4 The pituitary activates the adrenal glands by releasing adrenocorticotropic hormone (ACTH).
- 5 The adrenal glands secrete stress hormones like cortisol, adrenaline, and noradrenaline.



# HOW ANGER CHANGES YOUR BRAIN

1. Elevated cortisol causes neurons to accept too much calcium through their membrane. A calcium overload can make cells fire too frequently and die.

The hippocampus and prefrontal cortex (PFC) are particularly vulnerable to cortisol and these negative effects.

## PREFRONTAL CORTEX



Elevated cortisol causes a loss of neurons in the prefrontal cortex (PCF). Suppressed activity in the PFC prevents you from using your best judgment - it keeps you from making good decisions and planning for the future.

## HIPPOCAMPUS



Elevated cortisol kills neurons in the hippocampus and disrupts the creation of new ones. Suppressed activity in the hippocampus weakens short-term memory. It also prevents you from forming new memories properly. (This is why you might not remember what you want to say in an argument.)

2. Too much cortisol will decrease serotonin – that’s the hormone that makes you happy. A decrease in serotonin can make you feel anger and pain more easily, as well as increase aggressive behavior and lead to depression.

# HOW STRESS HORMONES AFFECT YOUR BODY



## CARDIOVASCULAR SYSTEM

- Heart rate ↑
- Blood pressure ↑
- Arterial tension ↑
- Blood glucose level ↑
- Blood fatty acid level ↑

When these symptoms become chronic, blood vessels become clogged and damaged. This can lead to stroke and heart attack.



## IMMUNE SYSTEM

- Thyroid function ↓
- The number of natural killer cells ↓
- The number of virus-infected cells ↑
- Incidence of cancer ↑



## DIGESTIVE SYSTEM

- Blood flow ↓
- Metabolism ↓
- Dry mouth ↑



- Intraocular pressure ↑
- Eye sight ↓



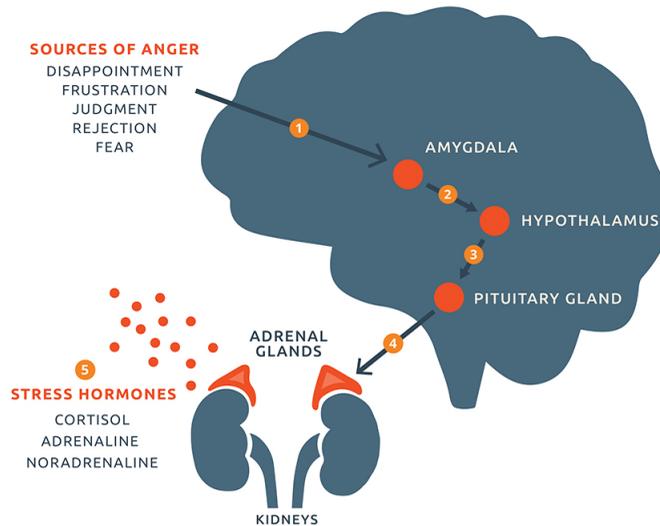
- Migraines ↑
- Headaches ↑



- Bone density ↓

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High levels of cortisol cause a loss of neurons in the prefrontal cortex (PFC). Suppressed activity in the PFC prevents you from using your best judgment - it keeps you from making good decisions and planning for the future.

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**Other Effects**

- Intraocular pressure ↑
- Eye sight ↓

- Migraines ↑
- Headaches ↑

- Bone density ↓