Nicotine & the Brain

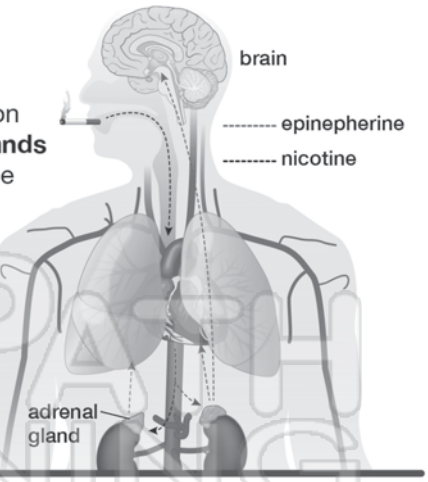
Health

Name _____ Class _____ Date _____

What does nicotine do to the the brain?

The **nicotine** in any tobacco product readily absorbs into the blood when a person uses it. Upon entering the blood, nicotine immediately stimulates the **adrenal glands** to release the hormone **epinephrine** (adrenaline). **Epinephrine** then stimulates the **central nervous system,** including the **brain,** which results in ***increased blood pressure***, ***breathing***, and ***heart rate***.

As with drugs such as cocaine and heroin, nicotine activates the **brain's reward circuits** and also increases levels of the chemical messenger **dopamine**, which reinforces rewarding behaviors. Long-term changes in the brain, brought on by continued nicotine exposure, may result in **addiction**.



*The **brain's pleasure circuit** spans the **brainstem, limbic system** (including basal ganglia, amygdala, hippocampus) and **frontal cerebral cortex**.*

Why is nicotine unsafe for young brains?

The brain keeps developing until about age 25. Using nicotine in adolescence can harm the parts of the brain that control ***attention***, ***learning***, ***mood*** and ***impulse control***.

Each time a new memory is created or a new skill is learned, stronger connections – or **synapses** – are built between brain cells. Young people's brains build synapses faster than adult brains. Nicotine changes the way these synapses are formed.

Using nicotine in adolescence may also **increase risk** for future **addiction** to other drugs.

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