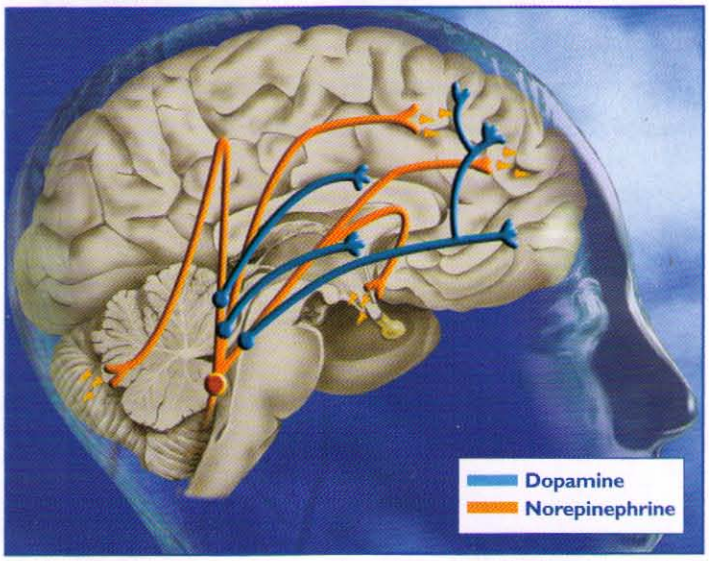
THE SCIENCE BEHIND ADHD

What really causes ADHD?

The condition known as ADHD is hard on everyone. Many parents and children feel confused and frustrated when behaviors seem out of their control. A common misperception is that ADHD is due to faulty parenting, divorce, poor intelligence, sibling rivalry, or other family-related environmental factors. However, there is now strong evidence that ADHD is the result of low or imbalanced levels of chemicals in the brain that carry messages from one cell to another. These chemicals are called neurotransmitters.



The illustration above is an artist's interpretation of the neurotransmitter pathways in the brain.

Why are neurotransmitters important?

Neurotransmitters are responsible for transmitting the brain signals that control the ability to focus, work, and learn. There are two main neurotransmitters that are implicated in ADHD:

- **Dopamine**
- **Norepinephrine**

How are these neurotransmitters associated with ADHD symptoms?

Abnormally low levels of these neurotransmitters are associated with the "core impairments" that are the hallmarks of ADHD: inattention, hyperactivity, and impulsivity. It is believed that abnormal dopamine levels play a role in inattention and hyperactivity. Likewise, low levels of norepinephrine may lead to inattention and the inability to control impulsive behaviors. The table below lists the core impairments of ADHD and associated symptoms that are frequently seen.

ADHD Core Impairment	Associated Symptoms
Inattention	■ Easily distracted ■ Has trouble following directions ■ Has trouble organizing tasks ■ Makes careless mistakes ■ Has trouble focusing on tasks or play ■ Is forgetful or loses things
Hyperactivity	■ Fidgets, squirms, or seems restless ■ Runs or climbs excessively at the wrong times ■ Talks excessively or has trouble playing quietly ■ Leaves his or her seat in the classroom ■ Seems always "on the go"
Impulsivity	■ Acts without thinking ■ Has difficulty waiting his/her turn ■ Interrupts others

Improve neurotransmission, relieve symptoms

Fortunately, modifying neurotransmitter levels with the proper medication has been shown to reduce the core impairments of ADHD. By treating the core impairments, it may be possible to avoid the consequences associated with the symptoms of ADHD, such as poor academic performance, troubled peer relationships, and low self-esteem.

Medication...part of a comprehensive treatment plan

There are several medication options available that treat the core impairments of ADHD. All of these medications are thought to increase or balance levels of neurotransmitters. Some of these medications are available as long-acting formulations that allow children to take only one dose in the morning for symptom control that can last through the day. Your doctor can help you determine which medication is right for your child.

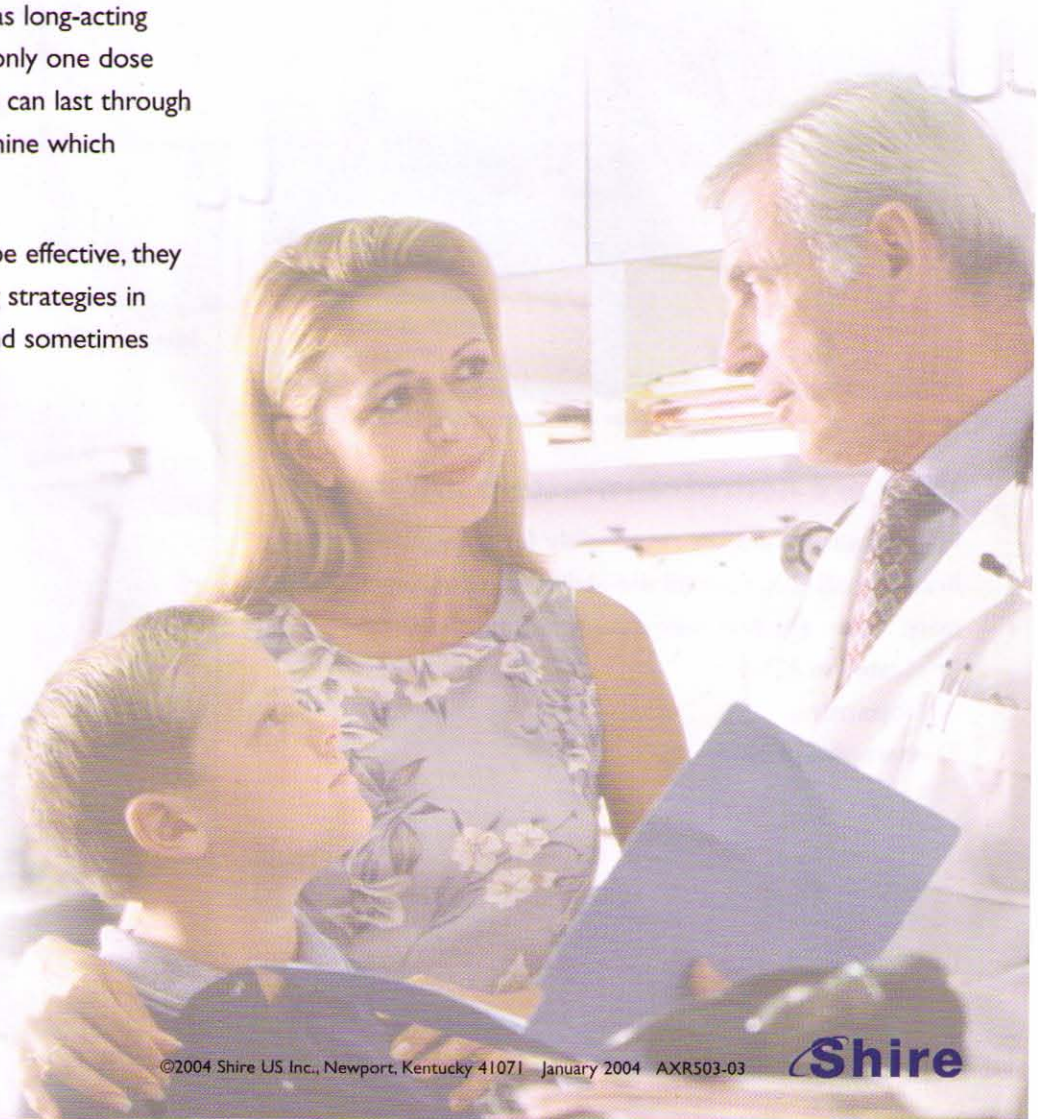
While medications have been shown to be effective, they work best when used along with learning strategies in school, behavior modification at home, and sometimes counseling...individual, family, or group.

You and your physician—partners in your child's therapy

It is important that you and your physician work as a team to ensure the best treatment plan for your child. Together, you and your physician may determine which medication is most appropriate for your child.

To evaluate the effectiveness of treatment, your doctor may ask you to complete a symptom rating scale. You can then discuss your child's score to determine whether adjustments should be made to the current treatment regimen.

Remember, ADHD is a biological disorder and there are treatments designed to help. Partnering with your doctor today can make a difference in your child's life...and the lives of those who care for your child.



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