



# ADHD From the Pediatrician Perspective

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# \* A little about me....

- \* Grew up outside D.C.
- \* NC for college & grad school (ADHD clinic)
- \* Moved to Louisville in 2002 for internship
- \* My wife is a psychologist at the VA
- \* 3 kids; Matthew (9<sup>th</sup> grader at NOHS), Michael (8<sup>th</sup> grader at NOMS), Alexis (4<sup>th</sup> grader at Goshen)
- \* Previous Experience
  - \* Licensed teacher
  - \* Psychologist at Bingham, Norton Children's
  - \* SCS/Centerstone school based psychologist
  - \* Oldham County Mental Health Consultant
  - \* Pediatrician/Psychologist at NCMA-Springhurst



# Disclosures...

- \* I'm not getting paid to be here (thanks for the invitation)!
- \* I'm not selling anything
- \* I'm here to help you better understand ADHD
- \* Dispel some myths
- \* Educate myself
- \* My statements are evidence-based
  - \* Supported by lots of good, recent research
  - \* Supported by the American Academy of Pediatrics
  - \* Big fan of Russell Barkley's work
- \* Please be interactive!
- \* Let's begin!





\* Fact or Myth?

# “ADHD is some new psychobabble diagnosis to excuse bad behavior in kids these days”

- \* Fact: What we currently call ADHD was described by doctors almost 250 years ago!
- \* In 1770 Dr. Weikard described disorders of attention
  - \* Isolation, herbs, sour milk, horseback riding
- \* In 1895 Dr. Still described volitional inhibition
- \* 1920s-40 journals described Restlessness Syndrome and Organic Driveness
  - \* Might have been started on Dexedrine in 1936
- \* 1950-70 journals described minimal brain dysfunction, hyperactive child syndrome
  - \* Might have started Ritalin in the 1960s
- \* In 1980s diagnostic term of Attention Deficit Disorder
- \* 1994 diagnostic term of Attention Deficit Hyperactivity Disorder
  - \* Predominately hyperactive/impulsive type
  - \* Predominately inattentive type
  - \* Combined type



## “If ADHD were real, it would be found in other countries, not just the US”

- \* Fact: All cultures and ethnic groups have children with ADHD.
- \* Well known in US because US is world leader in published research on mental health disorders in children
- \* Rates in US=6-10%
- \* Rates in Japan=7%
- \* Rates in China=6-8%
- \* Rates in India= 5-9%
- \* Rates in Brazil 5-6%
- \* International rates based on studies over the past 25 years show global ADHD rates of 5-8% in children



## “ADHD is just boys being boys”

- \* Fact: ADHD is diagnosed about 3x more often in boys than girls...
- \* But boys with ADHD are significantly different than boys without ADHD
- \* For example, boys with ADHD...
  - \* Are more active
    - \* During the day and night
    - \* When sleeping
    - \* Biggest difference during school
  - \* Move around a space 8x more
  - \* Move their arms 2x more
  - \* Move their legs 4x more
  - \* 3x more restless when watching TV



## “It’s just a phase. He’ll outgrow this soon”

- \* Fact: 70-80% of children diagnosed with ADHD continue to qualify for the diagnosis at age 16
- \* 65-80% of children with ADHD continue to have impairment causing symptoms as they reach adulthood
- \* Only 10-20% of children with ADHD reach adulthood without significant ADHD symptoms
- \* Fewer than 5% of children on ADHD medication continue on medication in mid-20’s



# “Treatment? There was no treatment back in the day and these kids did just fine”

- \* Fact: The life of a child with untreated ADHD is likely to be filled with failure and underachievement
- \* 30-50% are retained in school at least once
- \* 35% fail to complete high school
- \* 3x more likely to have accidental injury (Double the medical bills)
- \* 5x more likely to have oral trauma
- \* 3x more likely to smoke/drink alcohol as teens
- \* 3x more likely to abuse drugs
- \* 4x more likely to get speeding tickets
- \* 3x more likely to cause car accidents
- \* 5x more likely to attempt suicide
- \* 4x more likely to have STI
- \* 10x more likely for teenage pregnancy





# \*ALERT New ADHD Findings!



- \* Life expectancy in people with ADHD is 11 years less than people without ADHD
- \* Having ADHD is a stronger predictor of shorter life expectancy than smoking, obesity, alcohol use, high cholesterol and high BP combined!
- \* Children with ADHD are 2x more likely to die in childhood than children without ADHD
- \* Adults with ADHD are 3-5x more likely to die by midlife compared to adults without ADHD



# \* New ADHD findings (at least for me)

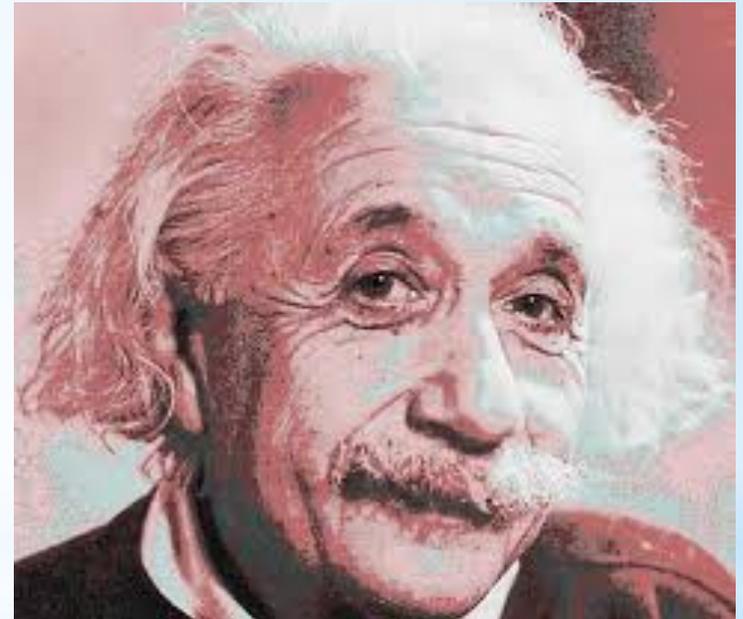
- \* Health risks for kids with ADHD
  - \* 40% more upper respiratory infections
  - \* 66% have sleep problems
  - \* 5x more likely to have enuresis and encopresis
  - \* 4x more likely to have an eating disorder (for girls)
  - \* 2x more likely to have asthma
  - \* 2.5x more likely to have acne
- \* Health risks for adults with ADHD
  - \* Increased rates of coronary heart disease
  - \* 2x more likely to have dementia
  - \* 33% have internet/gaming addiction
  - \* 3x more likely to have Type 2 diabetes
  - \* 3x more likely to be obese



# “Well this is depressing. Kids with ADHD are destined for failure.”

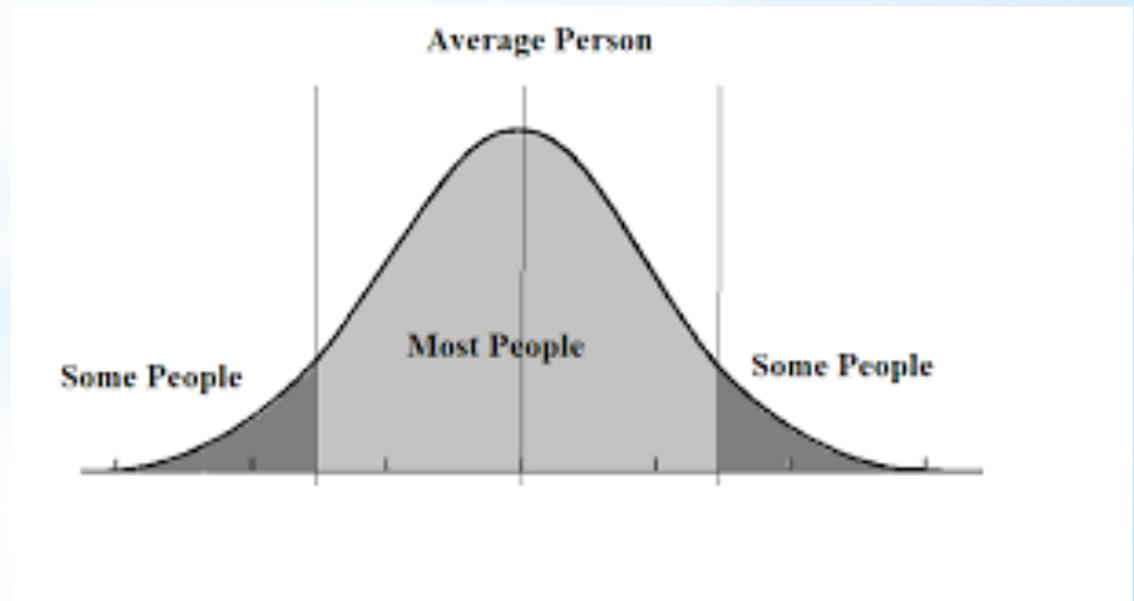
\* Fact: Plenty of people with ADHD are extremely successful. Children (and adults) with ADHD who are appropriately treated have very similar outcomes to children without ADHD

- \* Thomas Edison      Michael Jordan
- \* Will Smith          Albert Einstein
- \* Walt Disney         Leonardo DaVinci
- \* Stephen Spielberg   Jim Carey
- \* Abraham Lincoln    Virginia Woolf
- \* Benjamin Franklin   Tim Howard
- \* Emily Dickinson    Henry Ford
- \* Picasso                Mozart



# “Einstein’s the exception, kids with ADHD aren’t very bright.”

- \* Fact: Children with ADHD perform just as well as children without ADHD on tests of intelligence
- \* However, 30-50% of children with ADHD will develop a reading disorder
- \* Higher rates of math and writing disorders compared to children without ADHD



# “No one will want to hire an adult with ADHD”

- \* Fact: Adults with ADHD tend to do fine and often excel in good fit jobs
- \* Characteristics of good fit jobs for adults with ADHD
  - \* Passion-fueled
    - \* Social worker, fitness trainer, vet, clergy, etc.
  - \* High intensity
    - \* Police officer, coach, firefighter, etc.
  - \* Very structured
    - \* Military, data analyst, software tester, etc.
  - \* Lightning paced
    - \* Trauma surgeon, teacher, EMT, ER nurse, etc.
  - \* Hands-on Creative
    - \* Musician, entertainer, mechanic, artist, etc.
  - \* Independent risk taker
    - \* Entrepreneur, pro athlete, stock broker, etc.



# “Just get rid of sugar/TV/internet/food dye/ video games/food allergies/yeast/etc. and you’ll get rid of ADHD

- \* Fact: Over 50,000 published studies (and counting) have been devoted to ADHD. There is not support for these ideas. For example...
- \* Children without ADHD loaded with sugar have no change in behavior
- \* Power of suggestion study with parents
- \* AAAI does NOT recommend allergy testing for ADHD symptoms
- \* Children with ADHD may watch more TV and play more video games because it requires less effort and shorter attention span. Not cause and effect



“Spare the rod, spoil the child. His parents just need to teach him some discipline.”

- \* Fact: For hundreds of years, parents have been blamed for the behavior of children with ADHD. Current research shows that this is the equivalent of blaming a parent for his or her child's diabetes.
- \* 3x more likely to suffer physical abuse
- \* Parents of children with untreated ADHD do tend to give more commands, be more directive and be more negative...but
- \* When the child is treated and the child's behavior improved, so did the parent's behavior.
- \* The parent's negative behavior was shown to be in response to the child's difficult behavior, not the cause of it.

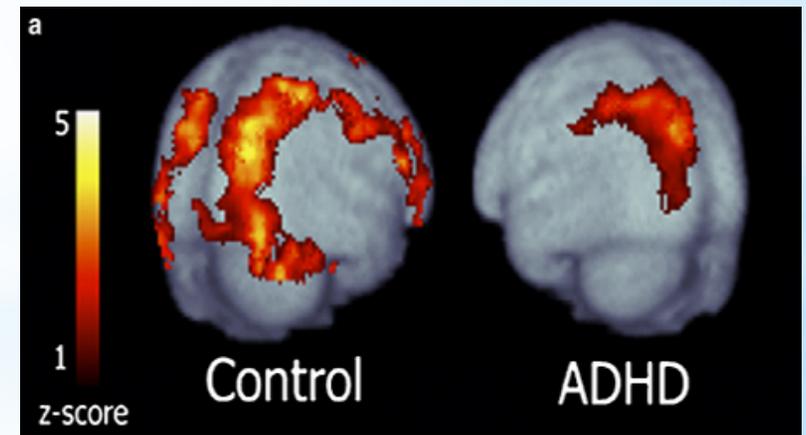
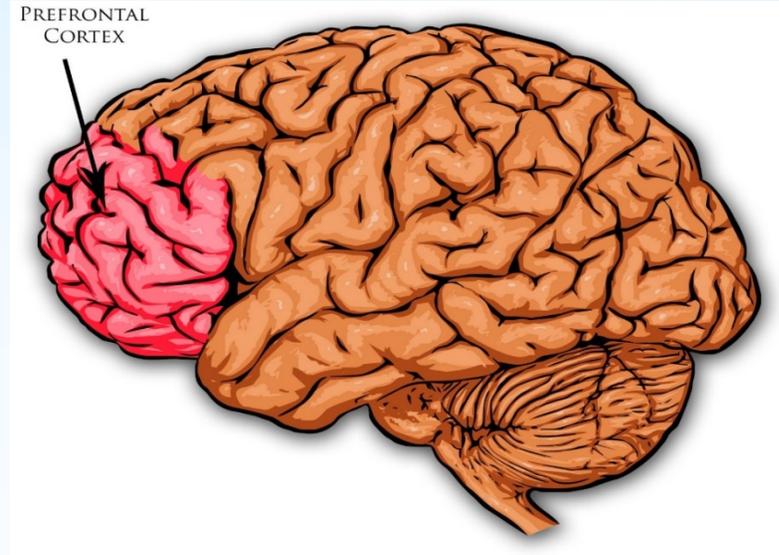


**\* ADHD is NOT the result of  
bad parenting!!!**

The scientific community has understood this for 40-50 years, but has been slow to get this information out to the general public, and parent blaming persists.

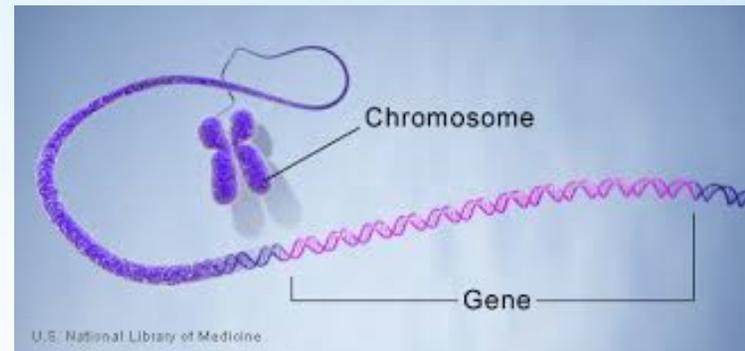
# So what does cause ADHD?

- \* ADHD is the result of abnormalities in brain development (75%) or brain injuries (25%)- primarily in the prefrontal cortex.
- \* How do we know?
  - \* Primate studies disabling prefrontal region
  - \* Brain volume studies
    - \* Brain growth and maturation of children with ADHD is 2-3 years behind
      - \* Especially in frontal lobe
  - \* Brain activity studies in patients with ADHD
    - \* EEG shows less activity in frontal region
    - \* PET scans and fMRI show less brain activity in neural pathways originating in prefrontal cortex



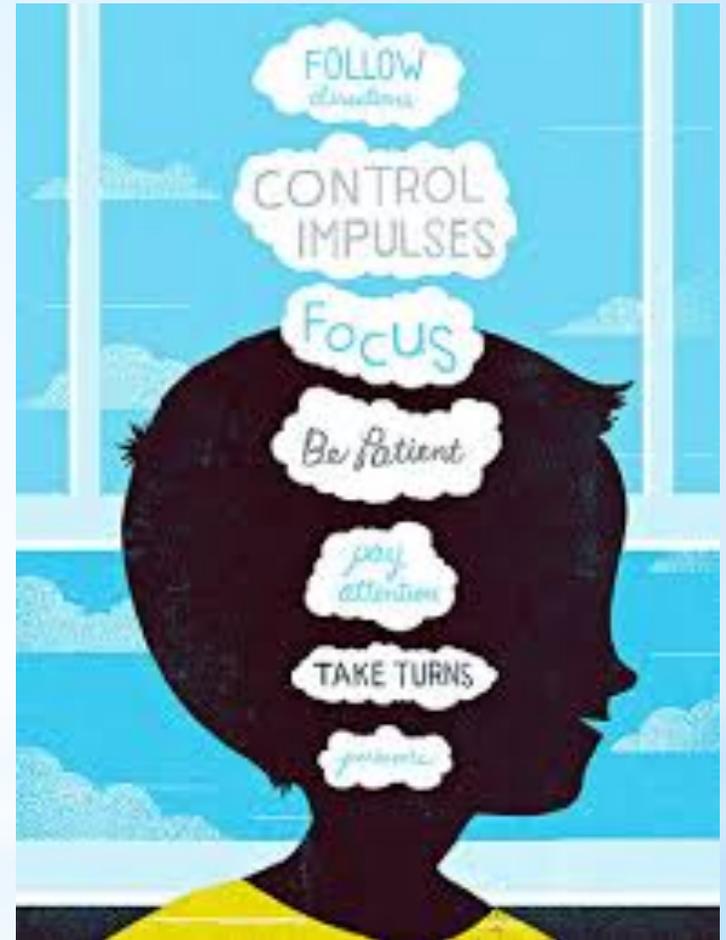
# ADHD is in the genes

- \* Family studies
  - \* >25% of first degree relatives with ADHD also had ADHD (compared to 5%)
  - \* If a twin has ADHD, the likelihood of other twin having ADHD is 75-90%
- \* Gene studies
  - \* 25-40 genes have been identified as altered in people with ADHD
    - \* Definitely no single ADHD gene
    - \* Each ADHD risk gene contributes increased risk of developing symptoms
  - \* For example, children with a longer DRD4 gene have less sensitive dopamine nerve cells in the brain
    - \* These kids' brains require more dopamine to activate cells
    - \* More likely to seek novelty in order to generate more dopamine



# Pre-frontal cortex and Executive Functioning

- \* The prefrontal cortex is the primary location of executive functioning- the abilities that are delayed in children with ADHD
- \* Executive functioning basics
  - \* Executive functioning is the ability to self-regulate/motivate/control
    - \* The ability to wait before responding
    - \* The ability to inhibit behavior
    - \* The ability to be self-aware
    - \* The ability to use hindsight and foresight
    - \* The ability to use self talk for motivation
    - \* The ability to store information in working memory



# ADHD= Executive Functioning Disorder

- \* What it might be like...
  - \* Imagine having to respond to everything, all day long, in less than 1 second
  - \* Having an attention span of children 3 years younger than yourself
    - \* I picture an “Interest timer” continuously counting down
  - \* Rarely being able to remember what was said minutes ago
  - \* Feeling like the end of a week is an eternity
  - \* Having a perfectly normal understanding of what you’re “supposed” to do



# I think my child has ADHD- what do I do?

- \* Have your child evaluated
  - \* Basic; ADHD rating scales (Vanderbilt/Connors)
  - \* Screen for other psych issues (BASC/CBCL)
  - \* Screen for learning disorders (WISC/WIAT)
- \* Pediatrician evaluation benefits
  - \* Familiar
  - \* Shorter wait to get an appointment
  - \* Most are comfortable with basic screening
  - \* Most are comfortable with ADHD medications
  - \* Schools accept ADHD diagnosis from MD
- \* Pediatrician evaluation shortcomings
  - \* Mental health training is typically lacking
  - \* Rule in ADHD, but may not be able to rule out depression, anxiety, PTSD, LDs
  - \* Tend to undertreat ADHD



# What about an evaluation by a psychologist?

- \* Psychologist evaluation benefits
  - \* Experts in mental health and ADHD
  - \* Can provide comprehensive evaluation looking at ADHD, LDs, anxiety, depression, IQ
  - \* Reports should be accepted by public schools
  - \* May offer resources for parent training and behavioral therapy following evaluation
  - \* Comprehensive evaluation is one of the recommendations from the AAP for kids with ADHD
- \* Psychologist evaluation shortcomings
  - \* Typically a longer wait to get an evaluation
  - \* Significantly more expensive than pediatric visit
  - \* Unable to prescribe medications

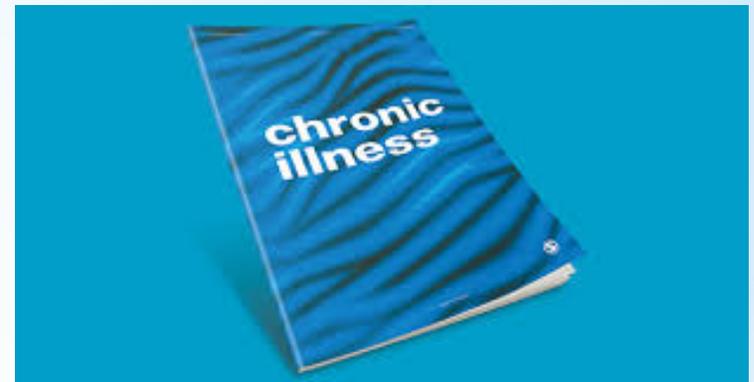




\* My child has a diagnosis of  
ADHD...what do I do now?

# First, approach ADHD like a chronic illness

- \* Type 1 diabetes analogy
  - \* ADHD and diabetes result from the lack of a necessary chemical in the body
  - \* Neither diabetes or ADHD is the child or parents' "fault"
  - \* Telling a child with ADHD to "just pay attention" when they've used up their dopamine is like telling a child with diabetes to "just make more insulin" when their pancreas is unable to do so.
  - \* First step in treatment is medical management
  - \* Aggressive, continuous management of both allows the child/adult to function optimally
  - \* Lifestyle changes for the family help support the child/adult
  - \* Failure to treat regularly can have devastating consequences
  - \* Both are life-long conditions



## Stimulant medications are first line treatments, (Not when all else has failed)

- \* Stimulant medication increases the activity in the underactive regions of the brains of children with ADHD
- \* Only treatment to date that normalizes inattentive, impulsive, restless behavior in 50-65% of children with ADHD
  - \* Improves the behavior in 70-90%
- \* Non-addictive
  - \* Lower rates of substance use
- \* Do not stunt growth
- \* Do not cause sudden death, cancer, etc.



# Medications

## \* 1<sup>st</sup> line medications; Stimulants

### \* Methylphenidates

- \* Ritalin
- \* Concerta
- \* Metadate
- \* Focalin
- \* Aptensio
- \* Daytrana (patch)
- \* Quillivant (liquid)
- \* Jornay (evening)

### \* Amphetamines

- \* Dexedrine
- \* Adderall
- \* Vyvanse
- \* Mydayis

## \* 2<sup>nd</sup> line medications; Non-Stimulants

- \* Strattera
- \* Tenex
- \* Intuniv



# Medication things to know

## \* How they work

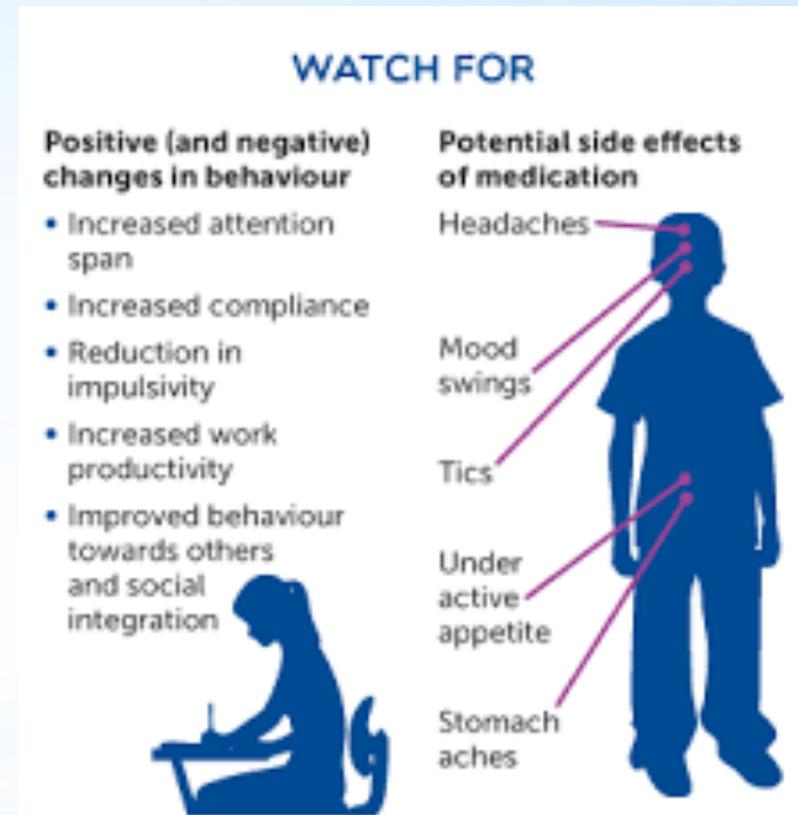
- \* Increasing specific neurotransmitters that occur naturally in the brain
  - \* Especially dopamine and norepinephrine
  - \* Concentrated very heavily in prefrontal region
- \* Increased neurotransmitters result in increased action of neurons in prefrontal cortex

## \* Which is the best?

- \* No one medication is superior
- \* 70% respond to amphetamines
- \* 70% respond to methylphenidate
- \* 10% don't respond to either
- \* GENOMIND Testing

## \* Side effects

- \* Start low, steadily increase
- \* Watch for side effects
  - \* Decreased appetite, insomnia, tics, mood changes



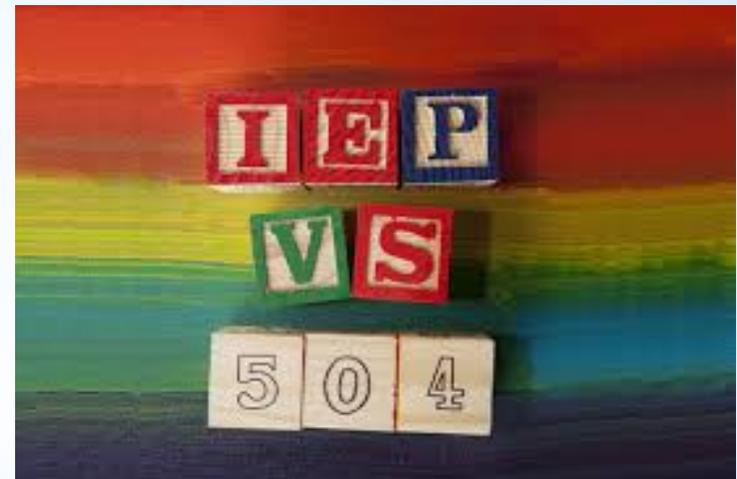
# My increasingly aggressive (research based) approach to medication management

- \* Just started using [www.mehealth.com](http://www.mehealth.com)
  - \* Parents and teacher provide on-line feedback about child's behavior before and during medication changes
- \* Start on low dose stimulant (without Vitamin C), increase dose every 3-5 days until ideal dose is reached
- \* Recommend taking medication 7 days/week
  - \* Benefits of increased performance in school
  - \* Avoid serious ADHD dangers that occur outside of school
- \* Check in every 1-2 weeks until optimal dose is achieved
- \* Genomind testing if child is unsuccessful on 2 medications
- \* Psychiatry referral if mood stabilizers are necessary



# I know it's not all about medications

- \* Therapy for aggressive behaviors, long standing depression, anxiety
- \* IEPs and 504 plans, IQ and achievement testing through the school
- \* Hit reading instruction hard especially in K-2<sup>nd</sup> grade
  - \* Tier 2 and 3 intervention groups
  - \* Langsford Center
- \* Parent education
  - \* AAP handout on ADHD
  - \* Taking Charge of ADHD by Russell Barkley



# Executive function problems/solutions in ADHD

- \* Appear to have short attention span, but really this is more of a short interest span
  - \* Get bored quickly
  - \* Put forth minimal effort and time to get through boring or unpleasant tasks
  - \* Easily distracted by something more interesting
- \* What can adults do to help?
  - \* Try to make tasks more novel and fun
    - \* Bright colors, music
  - \* Break larger tasks into smaller chunks
  - \* Provide frequent reinforcement
  - \* Give same # of minutes for test, but allow them to stop timer for short breaks
  - \* Reducing distractions actually makes it harder to sustain attention
  - \* Act, don't yak!



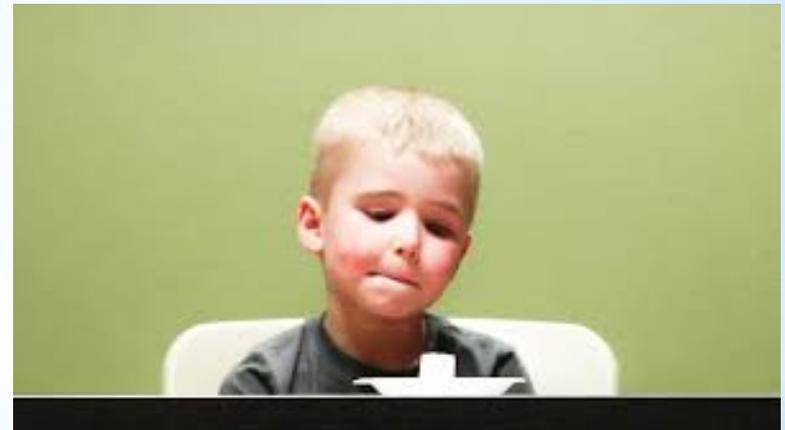
# Executive function problems/solutions in ADHD

- \* Inability to inhibit behavior
  - \* Hyper-reactive
  - \* Blurt out answers
  - \* Excessive, loud talkers
  - \* Start assignments without reading directions
  - \* Even struggle with video games
- \* What can you do to help?
  - \* Use their passion as a strength
  - \* Cue desired behavior with quiet signals and plenty of reinforcement
  - \* Audio and visual reminders (poor working memory)
  - \* Allow for physical movement
  - \* Teach active strategies for responding (humor) rather than passive strategies (ignoring)



# Executive function problems/solutions in ADHD

- \* Lack of foresight/hindsight
  - \* Poor anticipation of consequences
  - \* Don't seem to learn from mistakes
  - \* Struggle with planning/organizing- they just jump into things
  - \* Don't care about delayed gratification- they "live in the moment"
  - \* Have a hard time with transitions
- \* What can you do to help?
  - \* Immediate feedback
  - \* Clear, frequently reviewed rules
  - \* Timers, verbal reminders about upcoming transitions



# General principles

- \* Rules and instructions should be clear, brief and visual.
- \* Rewards, punishments, feedback should be delivered as soon as possible
- \* Consequences should be systematic, planned and externalized
- \* Frequent feedback or consequences for following rules are crucial
- \* Rewards and incentives must be put into place prior to punishment. 2-3 rewards for each punishment
- \* Token reward systems work great, but reward must be changed frequently
- \* Prepare child for transitions
  - \* Review rules before new activity
  - \* Have child repeat rules, including rewards/punishment
  - \* Follow through with this plan



# Parent Principles

- \* Begin with the end in mind
- \* Distinguish battles from wars
- \* Create win/win situations
- \* Become an executive parent
  - \* You are the case manager of your child's life
  - \* We are all advisers
- \* Be a scientific parent
  - \* Seek knowledge
  - \* Evaluate information critically
  - \* Experiment and revise



# \* ADHD Resources

- \* Children and Adults with ADHD (CHADD)
  - \* [www.chadd.org](http://www.chadd.org)
- \* Attention Deficit Disorder Association (ADDA)
  - \* [www.add.org](http://www.add.org)
- \* ADD Warehouse
  - \* [www.addwarehouse.com](http://www.addwarehouse.com)
- \* Books for adults
  - \* Taking Charge of ADHD by Russell Barkley
  - \* Your Defiant Child: 8 steps to better behavior by Russell Barkley

Feel free to contact me by

- \* Text (502-851-4985)
- \* Email ([Stephen.johnson2@nortonhealthcare.org](mailto:Stephen.johnson2@nortonhealthcare.org))
- \* Office phone for referrals (339-0444)
- \* I'm happy to see new patients, but I don't see kids just for mental health issues. If they want to be seen for ADHD concerns, they need to switch over to my practice for all of their pediatric care.

