ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN AND ADOLESCENTS

ANNA GRZEBIENIAK MSN PMHNP-BC

FOCUS:

- CHILDREN, ADOLESCENTS AND TEENS
- AGES 6 YEARS OLD TO 18TH BIRTHDAY
- DIAGNOSIS AND TREATMENT OF ADHD
- MEDICATION OPTIONS
- SIDE EFFECT MANAGEMENT

BRIEF OVERVIEW OF ADHD

- CHRONIC DISEASE TYPICALLY MANIFESTING IN CHILDHOOD.
- OCCURRING IN ABOUT 5% OF CHILDREN AND 2.5% OF ADULTS
- DIAGNOSTIC CRITERIA INCLUDE SYMPTOMS OF IMPULSIVITY, HYPERACTIVITY, AND/OR INATTENTION OCCURRING IN MULTIPLE SETTINGS.
- SYMPTOMS IMPACT SOCIAL, ACADEMIC, BEHAVIORAL, COGNITIVE, AND EMOTIONAL FUNCTIONING.

ASSESSMENT AND DIFFERENTIAL DIAGNOSIS

Diagnostic Interview

- With parent/guardian and child
- Psychosocial and developmental history
- Behavioral observation

Screening Tools

- Vanderbilt Questionnaires
- Conner's Testing
- Strengths and Difficulties Questionnaire

Goals for treatment

Symptoms should meet DSM-5 or ICD-10 diagnostic criteria and

Cause at least moderate impairment in multiple settings (psychological, social, educational, or occupational) based on interview or observation and

Be pervasive, occurring in two or more settings.

ASSESSMENT AND DIFFERENTIAL DIAGNOSIS

DIAGNOSTIC CRITERIA

314.01(F90.2) **combined presentation** -meeting criteria for both inattention and hyperactivity-impulsivity for the past 6 months.

314.00 (F90.0) **predominantly inattentive presentation** – meeting criteria only for inattention over the past 6 months.

314.01 (F90.1) **predominantly hyperactive/impulsive presentation** –meeting criteria only for hyperactive-impulsive symptoms for the past 6 months.

Specifiers: in partial remission

Level of current severity: mild, moderate, severe

DIFFERENTIAL DIAGNOSIS

- Oppositional Defiant Disorder
- Intermittent Explosive Disorder
- Learning Disorders
- Intellectual Disability
- Autism Spectrum Disorder
- Anxiety Disorders
- Depressive Disorder
- Disruptive Mood Dysregulation Disorder

COMORBID CONDITIONS

- ODD CO-OCCURS WITH APPROXIMATELY HALF OF CHILDREN WITH COMBINED TYPE PRESENTATION AND APPROXIMATELY A QUARTER OF CHILDREN WITH INATTENTIVE PRESENTATION.
- CONDUCT DISORDER CO-OCCURS IN IN ABOUT A QUARTER OF MINORS WITH COMBINED PRESENTATION.
- MOST INDIVIDUALS WITH A DMDD DIAGNOSIS ALSO MEET CRITERIA FOR AN ADHD DIAGNOSIS.
- SPECIFIC LEARNING DISORDER COMMONLY CO-OCCURS WITH ADHD
- ANXIETY AND DEPRESSIVE DISORDERS OCCUR IN A MINORITY OF INDIVIDUALS WITH ADHD BUT MORE COMMONLY THAN IN THE GENERAL POPULATION.

OTHER DIAGNOSTIC CONSIDERATIONS

Genetics

Experience of Trauma?

Medical conditions?

Adequate sleep?

CONSIDERATIONS FOR MEDICATION THERAPY

- Timing of Diagnosis
- Behavioral therapy/ behavioral coaching
- Parenting support
- Home and Classroom Interventions
- OTC supplements, non-prescription medications
- Substance use/abuse
- Sleep problems
- Availability of medication

WHAT ARE YOUR GOALS FOR TREATMENT?

MEDICATIONS

INDICATIONS FOR 6 YEARS THROUGH 18 YEARS OLD

STIMULANTS

AMPHETAMINE (D,L)

- TABLET OR PILL FORMS
  - IMMEDIATE RELEASE (ADDERALL OR EVEKEO)
    - CAN BE CUT OR CRUSHED
    - DURATION OF ACTION 3-6 HOURS
    - SOMETIMES BETTER TOLERATED COMPARED TO EXTENDED-RELEASE VERSIONS
    - OFTEN REQUIRE DOSING 2-3 TIMES PER DAY
  - EXTENDED RELEASE (ADDERALL XR, MYDAYIS)
    - MUST BE SWALLOWED WHOLE
    - DURATION OF ACTION 8-12 HOURS
    - MAY ALLOW FOR ONCE DAILY DOSING

AMPHETAMINE (D,L)

- LIQUID SUSPENSIONS
  - ADZENYS ER, DYANAVEL XR

- CHEWABLE/ORALLY DISINTEGRATING TABS
  - ADZENYS ER, DYANAVEL XR (MAY BE CHEWED OR SWALLOWED WHOLE)

AMPHETAMINE (D)

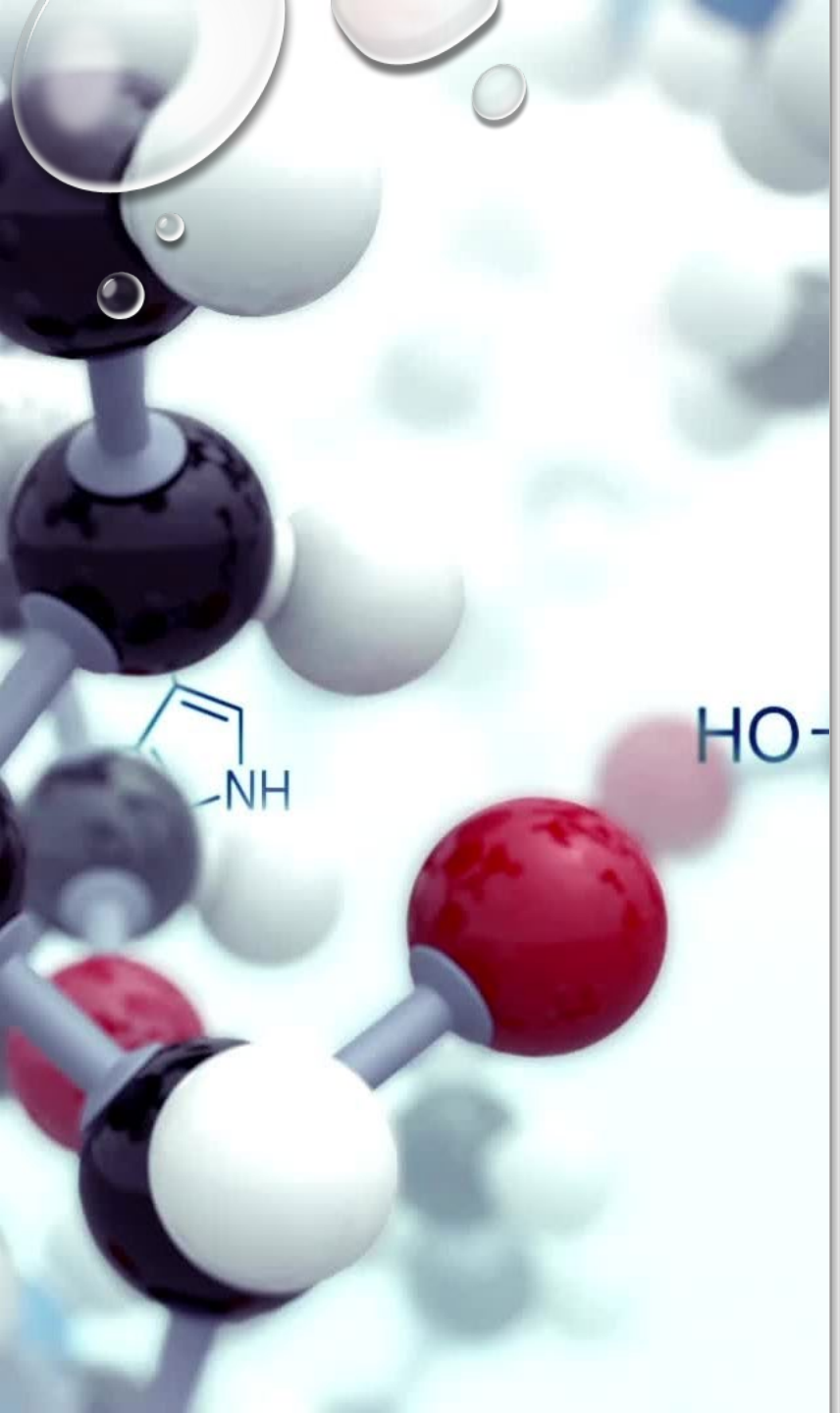
- BRAND NAMES: DEXEDRINE, DEXEDRINE SPANSULES, ZENZEDI, PROCENTRA, XELSTRYM
- DURATION OF ACTION: 3-6 HOURS FOR IMMEDIATE RELEASE FORMULATIONS; UP TO AN 8-HOUR DURATION FOR THE SUSTAINED RELEASE FORMULATIONS.
- LIQUID SUSPENSION (PROCENTRA)-IMMEDIATE RELEASE, APPROVED FOR AGES 3-16 YEARS OLD.
- TRANSDERMAL PATCH (XEISTRYM)-EXTENDED RELEASE; SHOULD BE APPLIED TWO HOURS BEFORE EFFECT IS NEEDED, REMOVE AFTER 9 HOURS. PATCH SHOULD BE ROTATED TO AVOID SKIN IRRITATION. EXPOSURE TO HEAT CAN CHANGE THE RATE OF ABSORPTION OF MEDICATION.

LISDEXAMFETAMINE

- VYVANSE
- PRODRUG OF DEXTROAMPHETAMINE/ NOT ACTIVE UNTIL IT IS ABSORBED IN THE INTESTINE AND CONVERTED TO DEXTROAMPHETAMINE AND L-LYSINE.
- DURATION OF ACTION 10-12 HOURS
- AVAILABLE IN CAPSULE OR CHEWABLE
  - MAY OPEN CAPSULE AND MIX WITH SMALL AMOUNT OF LIQUID TO BE CONSUMED IMMEDIATELY

METHYLPHENIDATE (D)

- FOCALIN IR, FOCALIN XR
- MORE POTENT THAN RACEMIC METHYLPHENIDATE (D,L) OPTIONS SO CLIENT MAY DO BETTER AT LOWER DOSES.
- XR VERSION HAS BEADS THAT RELEASE IN TWO PULSES, IMMEDIATE RELEASE AND THEN DELAYED RELEASE.
- XR CAPSULE MAY BE OPENED AND MIXED WITH LIQUID FOR A CHILD WHO CANNOT TAKE A CAPSULE WHOLE.
- TAKING WITH FOOD MAY DELAY ONSET OF ACTION BY 2-3 HOURS.



METHYLPHENIDATE (D,L)

- IMMEDIATE RELEASE (RITALIN, METHYLIN)
- IMMEDIATE RELEASE CHEWABLE (GENERIC METHYLPHENIDATE)
- IMMEDIATE RELEASE LIQUID SOLUTION (METHYLIN)
- EXTENDED RELEASE (METADATE CD, RITALIN LA)-EARLY PEAK AND 8 HOUR DURATION
- EXTENDED RELEASE CONCERTA, RELEXXII, APTENSIO XR)
- EXTENDED RELEASE (METHYLIN ER, RITALIN SR, METADATE ER) 4-6 HOUR DURATION OF ACTION

METHYLPHENIDATE (D,L)

- EXTENDED RELEASE CHEWABLE (QUILLICHEW ER, COTEMPLA XR) 12 HOUR DURATION
- EXTENDED RELEASE LIQUID (QUILLIVANT XR) 12 HOUR DURATION
- EXTENDED RELEASE EVENING DOSING (JORNAY PM)-TAKEN AT NIGHT FOR DELAYED MORNING ONSET. ADMIN TIME SHOULD BE CONSISTENT.
- EXTENDED RELEASE TRANSDERMAL PATCH (DAYTRANA) 9 HOUR DURATION, SHOULD NOT WEAR LONGER THAN 9 HOURS, ROTATE SITES, HEAT MAY EFFECT ABSORPTION RATE.

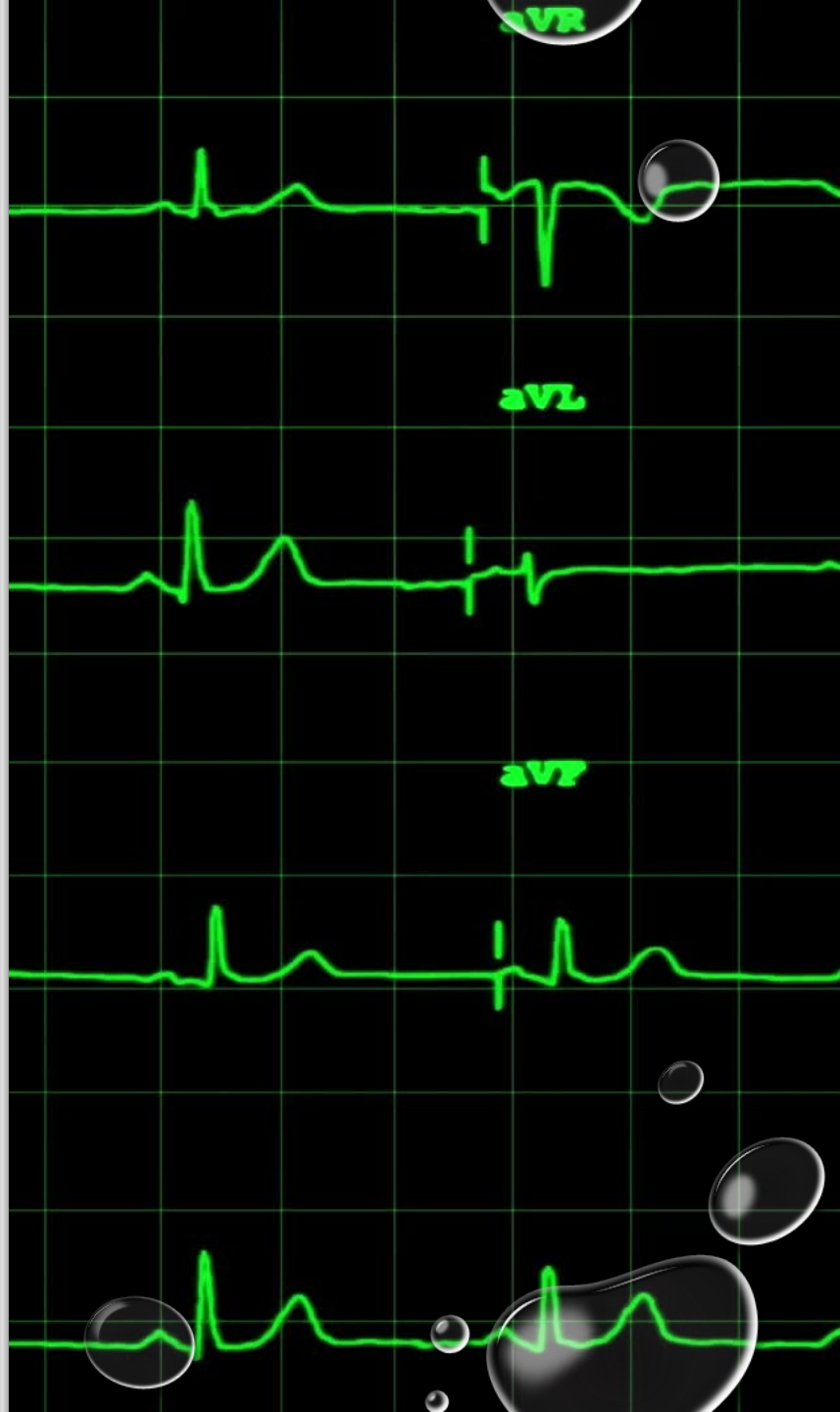
STIMULANT SIDE EFFECTS

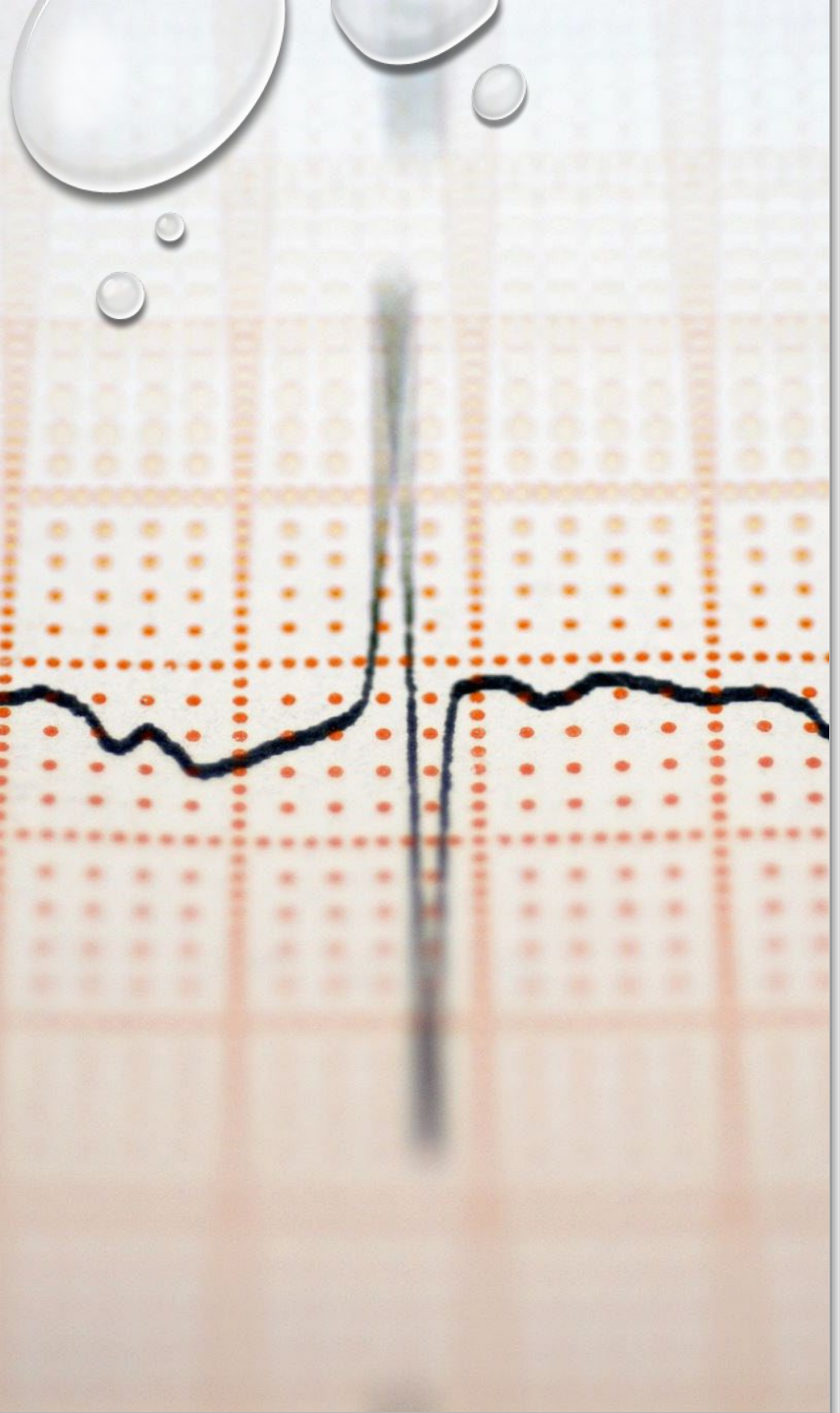
STIMULANT SIDE EFFECTS

- DECREASED APPETITE AND WEIGHT LOSS
  - MONITOR HEIGHT AND WEIGHT EVERY 3 MONTHS
  - TAKE MEDICATION WITH FOOD OR AFTER EATING
  - SCHEDULE AN EXTRA MEAL OR SNACK EARLY IN THE MORNING OR LATER IN THE EVENING
  - ENCOURAGE NUTRITIONALLY RICH HIGH CALORIE FOODS
  - TAKE TIME OFF FROM MEDICATIONS
  - TRY A DIFFERENT MEDICATION

STIMULANT SIDE EFFECTS

- SLEEP
  - DOCUMENT SLEEP HABITS PRIOR TO STIMULANT INITIATION.
  - MONITOR CHANGES IN SLEEP PATTERN
  - ENCOURAGE USE OF A SLEEP DIARY TO MONITOR OVER A PERIOD OF TIME.
  - ADVISE TO HOLD THE DOSE AFTER 10 OR 11AM IF CLIENT SENSITIVE TO IT, ESPECIALLY WITH THE LONG-ACTING FORMULATIONS.





STIMULANT SIDE EFFECTS

- CARDIOVASCULAR
  - MONITOR HEART RATE AND BP AFTER EACH DOSE CHANGE.
  - ECGS ARE NOT ROUTINELY REQUIRED UNLESS THERE IS INDICATION FOR IT.
  - NO ROUTINE BLOOD WORK IS REQUIRED RELATED TO STIMULANT USE.
  - INDICATION FOR REFERRAL TO CARDIOLOGY IS TWO SEPARATE OCCASIONS OF SUSTAINED RESTING TACHYCARDIA, ARRHYTHMIA, OR SYSTOLIC BLOOD PRESSURE GREAT THAN THE 95TH PERCENTILE OR A CLINICALLY SIGNIFICANT INCREASE IN BP.

STIMULANT SIDE EFFECTS

- TICS
  - IS THERE A HISTORY OF TIC DISORDER
  - ARE TICS DIRECTLY RELATED TO STIMULANT USE OR ARE THEY RANDOMLY OCCURRING?
  - DOES THE BENEFIT OF STIMULANT TREATMENT FOR ADHD OUTWEIGH THE IMPAIRMENT BROUGHT ON BY TICS
  - CONSIDER NON-STIMULANT ADHD TREATMENT OPTIONS
  - CONSIDER MEDICATION OR BEHAVIORAL TREATMENT OF TICS

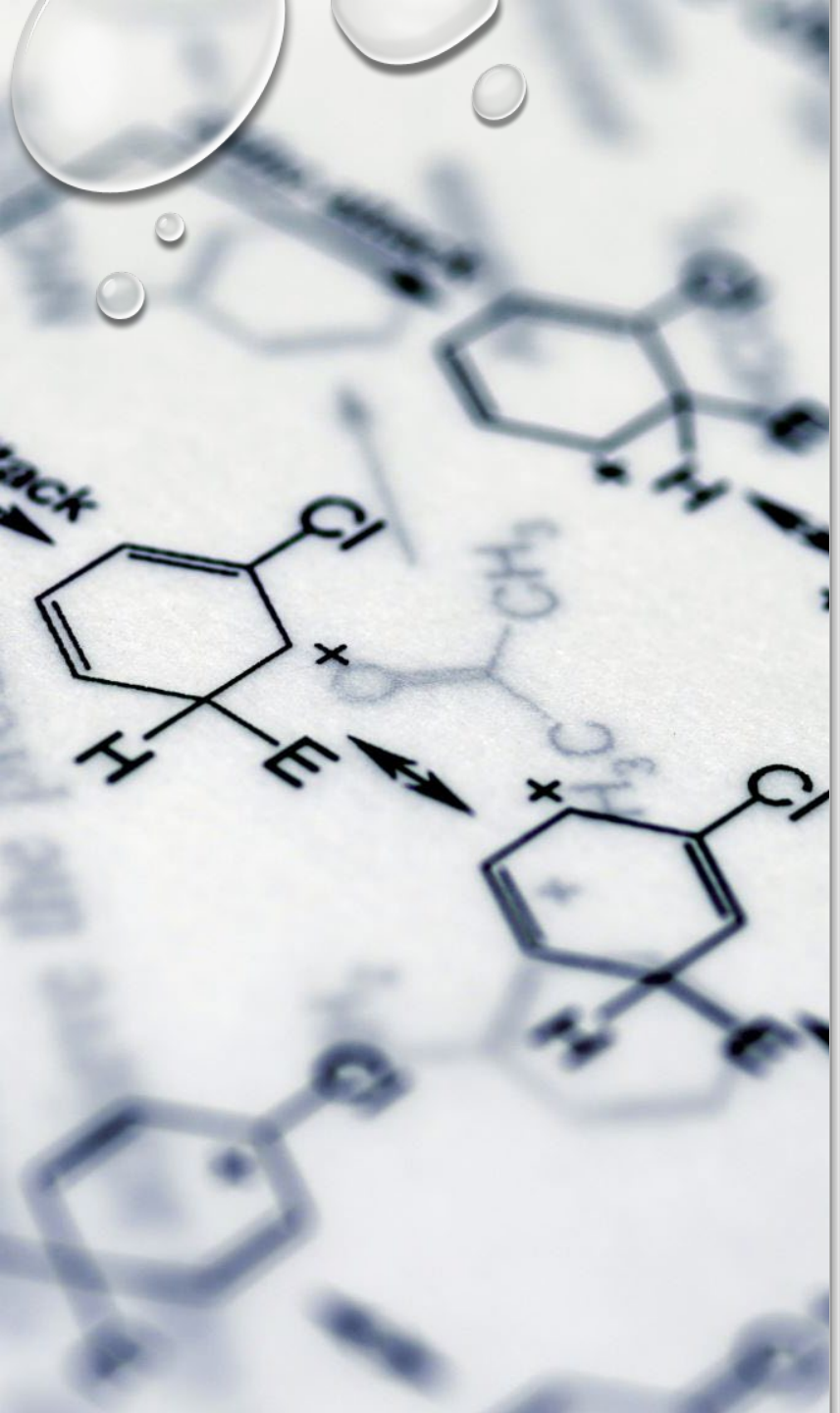

NON-STIMULANT MEDICATIONS

NON-STIMULANTS

- ATOMOXETINE (STRATTERA)
  - SELECTIVE NOREPINEPHRINE REUPTAKE INHIBITOR (NRI)
  - APPROVED FOR 6 YEARS AND UP
  - STARTING DOSE AND INITIAL TITRATION SCHEDULE IS WEIGHT BASED FOR 70KG
  - CARDIAC SIDE EFFECTS ARE STILL POSSIBLE AND THE RISK OF SUDDEN DEATH IN INDIVIDUALS WITH CARDIAC STRUCTURAL ABNORMALITIES IS ALSO PRESENT WITH THIS SO GET CARDIAC CLEARANCE.
  - GI UPSET IS POSSIBLE, START WITH A LOWER DOSE.

NON-STIMULANTS

- VILOXAZINE (QELBREE)
  - SELECTIVE NOREPINEPHRINE REUPTAKE INHIBITOR (NRI)
  - APPROVED FOR 6 YEARS AND UP
  - THIS IS NOT WEIGHT BASED
  - THE CAPSULE MAY BE TAKEN WHOLE OR OPENED AND SPRINKLED OVER APPLESAUCE BUT CANNOT BE CHEWED AND SHOULD BE CONSUMED WITHIN TWO HOURS.
  - CARDIAC SIDE EFFECTS-MAY INCREASE HEART RATE AND BP
  - GI UPSET IS POSSIBLE, START WITH A LOWER DOSE.



NON-STIMULANTS

- GUANFACINE, EXTENDED RELEASE (INTUNIV), IMMEDIATE RELEASE (TENEX)
  - NOREPINEPHRINE RECEPTOR AGONIST (N-RA)/ CENTRALLY ACTING ALPHA 2A AGONIST
  - APPROVED FOR 6 YEARS AND UP
  - OFTEN EFFECTIVE FOR OPPOSITIONAL OR IMPULSIVE BEHAVIOR
  - USUALLY LESS SEDATING THAN CLONIDINE
  - MAY BE USED ALONE FOR TREATMENT OF SYMPTOMS BUT ALSO WORKS WELL IN CONJUNCTION WITH A STIMULANT.

NON-STIMULANTS

- CLONIDINE, IMMEDIATE RELEASE, EXTENDED RELEASE (KAPVAY)
  - NOREPINEPHRINE RECEPTOR AGONIST (N-RA)/ CENTRALLY ACTING ALPHA 2A AGONIST
  - INDICATED FOR AGES 6 AND UP.
  - TENDS TO BE MORE SEDATING SO OFTEN DOSED AT BEDTIME.
  - TARGETED SYMPTOMS: INATTENTIVENESS, HYPERACTIVITY, AND IMPULSIVITY.

TIPS FOR ADHERENCE

USE ALARMS ON PHONE OR DEVICE; REMINDER APPS; A NOTE IN AN OBVIOUS PLACE.

SUGGEST SCHOOL NURSE TO ADMINISTER MEDICATION.

DISPEL ANY MISCONCEPTIONS ABOUT THE MEDICATION.

REINFORCE THAT PARENT OR GUARDIAN SHOULD BE OVERSEEING MEDICATION ADMINISTRATION

INVOLVE THE CLIENT IN THE TREATMENT DISCUSSION AND DECISION AS MUCH AS POSSIBLE.


THE END

REFERENCES

1. AMERICAN PSYCHIATRIC ASSOCIATION. (2013). ATTENTION-DEFICIT/HYPERACTIVITY DISORDER. IN DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS (5TH ED.). HTTPS://NAM10.SAFELINKS.PROTECTION.OUTLOOK.COM/?URL=HTTPS%3A%2F%2FDOI.ORG%2F10.1176%2FAPPI.BOOKS.9780890425596.7145&DATA=05%7C02%7CAGRZEBIENIAK%40AKRONCHILDRENS.ORG%7C428E652FE3CB42C3310F08DCCB77F0B9%7C52716458B9144E1DB5758C1004F3ECE4%7C0%7C0%7C638608963219191039%7CUNKNOWN%7CTWFPBGZSB3D8EYJWIJOIMC4WLJAWMDAILCJQIJOIV2LUMZIILCJBTII6IK1HAWWILCJXVCI6MN0%3D%7C0%7C%7C%7C&SDATA=N1UNZEGT8VYVOHIQRB5J%2FFDV4NJL6IB8%2FNEEHQAPW%2FA%3D&RESERVED=0 (HTTPS://NAM10.SAFELINKS.PROTECTION.OUTLOOK.COM/?URL=HTTPS%3A%2F%2FDOI.ORG%2F10.1176%2FAPPI.BOOKS.9780890425596.7145&DATA=05%7C02%7CAGRZEBIENIAK%40AKRONCHILDRENS.ORG%7C428E652FE3CB42C3310F08DCCB77F0B9%7C52716458B9144E1DB5758C1004F3ECE4%7C0%7C0%7C638608963219199537%7CUNKNOWN%7CTWFPBGZSB3D8EYJWIJOIMC4WLJAWMDAILCJQIJOIV2LUMZIILCJBTII6IK1HAWWILCJXVCI6MN0%3D%7C0%7C%7C%7C&SDATA=F5YCCD5AFB853BHZPKXZ82%2B5V94CMNM8%2BT5JWEMBB7Q%3D&RESERVED=0)

2. ATTENTION DEFICIT HYPERACTIVITY DISORDER: DIAGNOSIS AND MANAGEMENT. LONDON: NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE (NICE); 2019 SEP. PMID: 29634174.

3. BAWEJA R, SOUTULLO CA, WAXMONSKY JG. REVIEW OF BARRIERS AND INTERVENTIONS TO PROMOTE TREATMENT ENGAGEMENT FOR PEDIATRIC ATTENTION DEFICIT HYPERACTIVITY DISORDER CARE. WORLD J PSYCHIATRY. 2021 DEC 19;11(12):1206-1227. DOI: 10.5498/WJP.V11.I12.1206. PMID: 35070771; PMCID: PMC8717033.

4. COHEN CHILDREN'S MEDICAL CENTER NORTHWELL HEALTH. (2021). ADHD MEDICATION GUIDE (SEPT 2021 REVISION).

5. PUNJA S, SHAMSEER L, HARTLING L, URICHUK L, VANDERMEER B, NIKLES J, VOHRA S. AMPHETAMINES FOR ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD) IN CHILDREN AND ADOLESCENTS. COCHRANE DATABASE SYST REV. 2016 FEB 4;2(2):CD009996. DOI: 10.1002/14651858.CD009996.PUB2. PMID: 26844979; PMCID: PMC10329868.

6. STAHL, S. M. (2021). STAHL'S PRESCRIBERS GUIDE: PSYCHOPHARMACOLOGY (7TH ED.). CAMBRIDGE UNIVERSITY PRESS.

7. STAHL, S. M. (2018). STAHL'S ESSENTIAL PSYCHOPHARMACOLOGY: NEUROSCIENTIFIC BASIS AND PRACTICAL APPLICATIONS (5TH ED.). CAMBRIDGE UNIVERSITY PRESS.

8. STOREBØ OJ, STORM MRO, PEREIRA RIBEIRO J, SKOOG M, GROTH C, CALLESEN HE, SCHAUG JP, DARLING RASMUSSEN P, HUUS CL, ZWI M, KIRUBAKARAN R, SIMONSEN E, GLUUD C. METHYLPHENIDATE FOR CHILDREN AND ADOLESCENTS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD). COCHRANE DATABASE SYST REV. 2023 MAR 27;3(3):CD009885. DOI: 10.1002/14651858.CD009885.PUB3. PMID: 36971690; PMCID: PMC10042435.

9. WOLRAICH ML, HAGAN JF JR, ALLAN C, CHAN E, DAVISON D, EARLS M, EVANS SW, FLINN SK, FROEHLICH T, FROST J, HOLBROOK JR, LEHMANN CU, LESSIN HR, OKECHUKWU K, PIERCE KL, WINNER JD, ZURHELLEN W; SUBCOMMITTEE ON CHILDREN AND ADOLESCENTS WITH ATTENTION-DEFICIT/HYPERACTIVE DISORDER. CLINICAL PRACTICE GUIDELINE FOR THE DIAGNOSIS, EVALUATION, AND TREATMENT OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER IN CHILDREN AND ADOLESCENTS. PEDIATRICS. 2019 OCT;144(4):E20192528. DOI: 10.1542/PEDS.2019-2528. ERRATUM IN: PEDIATRICS. 2020 MAR;145(3):E20193997. DOI: 10.1542/PEDS.2019-3997. PMID: 31570648; PMCID: PMC7067282.