THE EFFECTS OF PRENATAL DRUG AND ALCOHOL EXPOSURE OF THE SPEECH AND LANGUAGE DEVELOPMENT OF CHILDREN

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LEARNER OUTCOMES:

- By the end of this session, participants will be able to—
  1. Identify common developmental effects of prenatal exposure to alcohol, tobacco, marijuana, stimulants, and opiates.
  2. Discuss and implement three evidence-based interventions to address speech/language, regulation, and executive function issues in children who have been exposed to drugs and alcohol prenatally.
  3. List two strategies to involve parents, relatives, or foster parents in treatment

MAJOR PROBLEM

- For the period of August 2009, as many umbilical cord samples as possible were collected at 8 regionally diverse hospitals in West Virginia.
  - Tested for amphetamines, cocaine, opiates, marijuana, benzodiazapines, methadone, buprenorphine and alcohol.
- 146 of 759 collected (**19.2%**) were positive for drugs or alcohol.
  - **1 in 5 babies**
- Voluntary reporting on birth certificates and other maternal questionnaires underestimated the prevalence by 2-3 fold.

HOSPITALS PARTICIPATING

- Bluefield Regional Medical Center (BRMC)
- Raleigh General Hospital (RGH)
- Thomas Memorial Hospital (TMH)
- Charleston Area Medical Center (CAMC)
- Cabell Huntington Hospital (CHH)
- Ruby Memorial Hospital (RMH)
- Wheeling Hospital (WH)
- City Hospital Martinsburg (CH)

TERATOGENS

- Substances that have the potential to damage the fetus when exposure occurs during pregnancy (e.g., radiation, thalidomide, alcohol).
- Degree of damage depends on timing and dose of exposure.
- If timing and dose are below the teratogenic threshold, some exposures have little risk of causing issues.

MECHANISMS OF ACTION OF DRUGS ON THE FETUS

- Early in gestation, during the embryonic stage, drugs can have significant teratogenic effects.
- However, during the fetal period, after major structural development is complete, drugs have more subtle effects, including abnormal growth and/or maturation, alterations in neurotransmitters and their receptors, and brain organization.

POLYSUBSTANCE USE

- Because mothers who abuse these and other illicit drugs also frequently use varying combinations of alcohol, tobacco, and other drugs, polysubstance use is a salient part of any discussion of the scientific evidence for adverse effects of in utero exposure to drugs of abuse.

WITH EACH DRUG, WE WILL COVER

1. Mechanisms of action of the drug on a fetus
2. Effects of drug on behavior
3. Effects of drug on cognition/executive functioning
4. Effects of drug on language and achievement

QUICK REVIEW OF EXECUTIVE FUNCTION
COGNITIVE/METACOGNITIVE DOMAIN

- This domain comprises the cognitive and academic elements of executive function that play key roles in the comprehension of information and the planning, starting, and completion of tasks
  - Purposefully attend to important content (even if boring)
  - Select and manage the strategies necessary to both understand and recall content
  - Identify goals for learning and assignments
  - Plan and organize their work before beginning
  - Revise what they are doing as necessary
  - Shift fluidly within tasks and between tasks
  - Manage time so that they can finish things on schedule

QUICK REVIEW OF EXECUTIVE FUNCTION
SOCIAL AND EMOTIONAL DOMAIN

- Behaving in a manner that a polite society finds acceptable
  - Response inhibition/impulse control—the capacity to inhibit angry, destructive, and self-injurious responses to environmental stimuli is key factor for predicting success in school and life
  - Emotional control—self management of emotions. The prefrontal cortex has a large role in the expression of emotion (not the creation of affect though)
    - Children who have less frustration management skills than their peers may struggle profoundly in school
  - Adaptability—a child's ability to adapt to changes in routine and cope with the many curveballs life throws on a daily basis, is important for success in school.

ALCOHOL

MECHANISMS OF ACTION OF ALCOHOL ON A FETUS

- Ethanol easily crosses the placenta into the fetus, with a significant concentration of the drug identified in the amniotic fluid as well as in maternal and fetal blood.
- A variety of mechanisms explaining the effects of alcohol on the fetus have been hypothesized.
  - These include direct teratogenic effects during the embryonic and fetal stage of development as well as toxic effects of alcohol on the placenta, altered prostaglandin and protein synthesis, hormonal alterations, nutritional effects, altered neurotransmitter levels in the brain, altered brain morphology and neuronal development, and hypoxia (thought to be attributable to decreased placental blood flow and alterations in vascular tone in the umbilical vessels)

- "Of all the substances of abuse, including heroin, cocaine, and marijuana, alcohol produces by far the most serious neurobehavioral effects in the fetus."
  – Institute of Medicine Report to Congress

COMMON TERMINOLOGY ASSOCIATED WITH FETAL ALCOHOL SPECTRUM DISORDER (FASD)

Fetal Alcohol Syndrome (FAS)

Fetal Alcohol Effect (FAE)

Alcohol-Related Birth Defects (ARBD)

Alcohol-Related Neurodevelopmental Disorder (ARND)

FETAL ALCOHOL SYNDROME

- Despite public health warnings, a lot of women drink and smoke while pregnant
- An estimated 11.6% of pregnant women reported current alcohol consumption.
- In utero exposure to alcohol, although legal, is extremely hazardous.
- Fetal alcohol syndrome (FAS) is the leading identifiable, nonhereditary cause of mental retardation in the Western world.
  - growth retardation,
  - distinctive mid-facial anomalies, and
  - mental retardation associated with central nervous system (CNS)

FAS GENERAL DIAGNOSTIC CRITERIA

- Growth deficiency
- Distinct cluster of facial anomalies
- **Evidence of central nervous system (CNS) dysfunction and/or structural brain abnormalities**

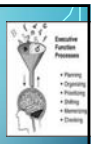
PRIMARY NEUROLOGIC CHARACTERISTICS IN FAS

- Reduction in overall brain size
- Abnormalities of brain shape and symmetry
- Reduction of frontal lobe volume
- Reduction of basal ganglia volume, especially caudate
- Non-uniform reductions of cerebellar volume
- Reduction and shape abnormalities of corpus callosum

ALCOHOL'S EFFECTS ON BEHAVIOR

- Prenatal alcohol exposure is linked with significant attention problems in children as well as adaptive behavior problems spanning early childhood to adulthood.
- Problems identified included disrupted school experiences, delinquent and criminal behavior, and substance abuse

ALCOHOL'S EFFECTS ON COGNITION/EXECUTIVE FUNCTIONING (EF) KODITUWAKKU, KALBERG, & MAY (2001)



- People prenatally exposed to alcohol show impaired performance on both domains of EF (metacognition and emotion regulation).
- Cognition and Emotion EF appears to be reliable and stable predictors of behavioral problems in alcohol-affected people.
  - A deficit in flexible recruitment of brain regions to do complex tasks may underlie the EF deficits in people prenatally exposed to alcohol.

ALCOHOL'S EFFECTS ON LANGUAGE DEVELOPMENT AND ACHIEVEMENT

- Coggins and colleagues examined communication deficits among a large sample (n = 393) of school-aged children with FASD.
- These children completed numerous standardized tests of language performance, which assessed their fundamental language skills, language comprehension, language development, overall language competence, and word knowledge.
- Nearly three-quarters of the children displayed significant language deficits, with 31% scoring in the mildly impaired range and 38% classified as moderately-to-severely impaired.
- It is important to note, however, that many of these children had experienced adverse environmental conditions (e.g., abuse, neglect, unpredictable or negative caregiving, etc.), which m

FASD IN THE CLINIC KEY POINTS TO OBSERVE:

- Strengths:
  - Natural curiosity
  - Appropriate inflection patterns with statements and questions
  - Engaged in activity and with clinician
- Weaknesses:
  - Dysfluencies -Prolongations and Repetitions
  - Simplified sentence structures
  - Speech Sound Disorders
  - Poor phonological awareness

MARIJUANA

MECHANISMS OF ACTION OF MARIJUANA ON A FETUS

- The Ottawa Prenatal Prospective Study (OPPS), the Maternal Health Practices and Child Development (MHPCD) study, and other well-controlled studies have not implicated in utero marijuana exposure in any major fetal growth or physical abnormalities (Day et al., 1992; Fried and Smith, 2001).
- Studies of neonatal neurobehavioral outcomes of prenatal marijuana exposure have observed mild withdrawal symptoms and poor autonomic control, particularly of state regulation

MARIJUANA EFFECTS ON BEHAVIOR

- Prenatal marijuana exposure may have long-term emotional and behavioral consequences.
  - At age 10, children who had been exposed to the drug during their first and third trimester of gestation reported more depressive symptoms than did unexposed controls (Gray, 2005)
  - Inattention and impulsivity also noted at 10 years of age

MARIJUANA EFFECTS ON COGNITION/EXECUTIVE FUNCTIONING

- Prenatal marijuana exposure had persistent negative effects through age 16 on:
  - Problem solving
  - Memory
  - Planning
  - Impulsivity
  - Attention

(Fried, 2002; Fried, Watkinson, and Gray, 2003; Goldschmidt et al., 2008; Richardson, Goldschmidt, and Larkby, 2007).

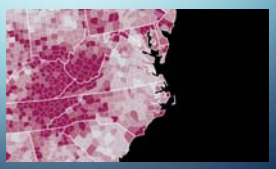
MARIJUANA EFFECTS ON LANGUAGE DEVELOPMENT AND ACHIEVEMENT

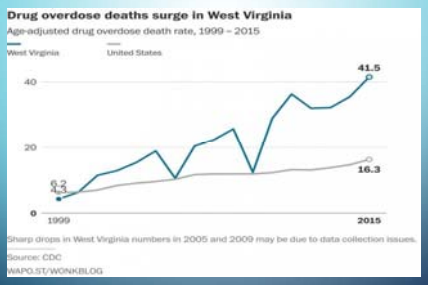
- The OPPS and MHPCD study examined the relationship between marijuana exposure and developmental problems throughout childhood. Children of women who smoked one or more marijuana joints a day during the first trimesters were more likely than controls to exhibit deficits in school achievement, particularly in reading and spelling (Goldschmidt et al., 2004).

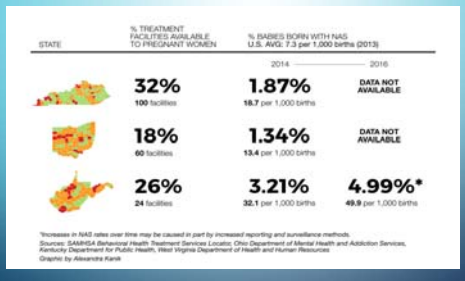
OPIOIDS

HEROIN, METHADONE, AND BUPRENORPHINE

West Virginia's overdose death rate increased nearly eightfold between 1999 and 2014, from four deaths per 100,000 residents to more than 35 – double the national average.







OPIOID ABUSE

- There is no substantive evidence from either preclinical or clinical studies that maternal opioid abuse during pregnancy causes congenital malformations.
- However, detrimental fetal effects of heroin exposure in terms of prematurity and intrauterine growth restriction have long been recognized
- Opiates rapidly cross the placenta, with drug equilibration between the mother and the fetus. Opiates have been shown to decrease brain growth and cell development in animals prenatally.

NEONATAL ABSTINENCE SYNDROME (NAS)

- Signs and symptoms can be different for every baby with NAS. Most appear within 3 days (72 hours) of birth, but some can appear right after birth or within a few weeks of birth. Signs and symptoms can include:
  - Body shakes (tremors), seizures (convulsions), overactive reflexes (twitching) and tight muscle tone
  - Fussiness, excessive crying or having a high-pitched cry
  - Poor feeding, poor sucking or slow weight gain
  - Breathing really fast
  - Fever, sweating or blotchy skin
  - Trouble sleeping and lots of yawning
  - Diarrhea or throwing up
  - Stuffy nose or sneezing

METHADONE AS STANDARD OF CARE FOR PREGNANT MOTHERS WHO ARE ADDICTED

- The National Institutes of Health Consensus Panel considers methadone the standard of care for pregnant opioid-addicted women, but the most desirable dosing schedule continues to be debated.
- In the early 1990s, the Center for Substance Abuse Treatment Consensus Panel recommended that methadone dosing be individually determined to prevent withdrawal in the mother.
- Some investigators advocate a low methadone dosing regimen to reduce or eliminate neonatal abstinence syndrome (NAS), whereas others argue that lower doses may lead to maternal withdrawal, craving, and supplemental use of illicit drugs, thus increasing fetal risk.

BUPRENORPHINE AS TREATMENT OPTION

- An alternative to methadone for treating addicted pregnant women
- Regardless of treatment regimen, pregnant women and their fetuses undergoing opioid substitution therapy should be closely monitored by an addiction specialist and an obstetrician experienced in such care and supported by a multidisciplinary team.

WHY DON'T WE HAVE DATA ABOUT HOW THIS DRUG EFFECTS CHILDREN?

- Limited reports on the long-term effects of prenatal opioid exposure on postnatal growth and neurodevelopment are available.
- Methodological limitations in study design, including small sample sizes, poorly defined comparison groups, and difficulty controlling for important environmental variables, make available results difficult to interpret.
- Moreover, difficulties associated with the studied population, namely high attrition rates and the lifestyle variability that characterizes the drug abuse culture, have further contributed to the paucity

WHAT DO WE KNOW ABOUT PRENATAL OPIATE EXPOSURE

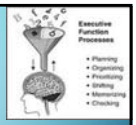
- Available information suggests that infants prenatally exposed to opiates are at an increased risk for neurodevelopmental impairment.
- Furthermore, the home environment plays a significant modulating role in the developmental outcomes of exposed children, although the magnitude of this effect remains unclear.

NAS Explained-Nightline

OPIATE EFFECTS ON BEHAVIOR

- Hyperactivity and short attention span have been noted in toddlers prenatally exposed to opiates, and older exposed children have demonstrated memory and perceptual problems
- Prenatal opiate exposure has frequently been associated with behavioral problems in childhood. One study indicated that opiate-exposed children were more likely to have ADHD or other disruptive behavior diagnoses at 10 years of age (Hans, 1989).
- In summary, studies of prenatal opiate exposure and infants' early cognitive development have yielded mixed results, but there seems to be a pattern linking the exposure to behavioral problems, including increases in ADHD and other disruptive behaviors.

OPIATE EFFECTS ON COGNITION/EXECUTIVE FUNCTIONING

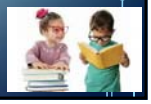


- In a study, 72 children exposed to opioids during pregnancy were compared to a control group of children without exposure at ages 1, 2, 3, 4 ½, and 8 ½
- The main findings of this study were:
  - (i) The difference in cognitive abilities between drug-exposed and nonexposed children was not reduced over time, and lower functioning emerged later for the girls in the exposed group.
  - (ii) The group difference in cognitive abilities at 8½ y was also highly significant when taking into account earlier cognitive abilities.
- These findings indicate continuous negative processes in children born to mothers with opioid and polysubstance abuse.

Nygaard E, Moe V, Slinning K, Walhovd KB. (2015). Longitudinal cognitive development of children born to mothers with opioid and polysubstance use. Pediatr Res.;78:330–5. pmid:25978800

OPIATE EFFECTS ON LANGUAGE DEVELOPMENT AND ACHIEVEMENT

- Some have found evidence of:
  - delayed general cognitive function at 3 years (Wilson et al., 1979)
  - lower verbal ability
  - impaired reading and arithmetic skills (Ornoy et al., 2001)
- Others found no cognitive delay at 6 to 13 years of age (deCubas and Field, 1993)



COCAINE

MECHANISMS OF ACTION OF COCAINE ON A FETUS

- Pharmacologic studies of cocaine in animal models using a variety of species have demonstrated that cocaine easily crosses both the placenta and the blood-brain barrier and can have significant teratogenic effects on the developing fetus, directly and indirectly.
- Cocaine's teratogenic effects most likely result from interference with the neurotrophic roles of monoaminergic transmitters during brain development, which can significantly affect cortical neuronal development and may lead to morphologic abnormalities in several brain structures, including the frontal cingulate cortex

MECHANISMS OF ACTION OF COCAINE ON A FETUS

- It also appears that the development of areas of the brain that regulate attention and executive functioning are particularly vulnerable to cocaine.
  - Thus, functions such as arousal, attention, and memory may be adversely affected by prenatal cocaine exposure.
- Furthermore, insults to the nervous system during neurogenesis, before homeostatic regulatory mechanisms are fully developed, differ from those on mature systems.
  - Thus, cocaine exposure occurring during development of the nervous system might be expected to result in permanent changes in brain structure and function, which can produce altered responsiveness to environmental or pharmacologic challenges later in life.

COCAINE EFFECTS ON BEHAVIOR

- Caregiver reports of child behavior problems in preschool-aged and elementary school-aged children have not been related to cocaine exposure, except in combination with other risk factors. However, in longitudinal modeling of caregiver reports at 3, 5, and 7 years of age, the multisite Maternal Lifestyles Study revealed that prenatal cocaine exposure had an independent negative effect on trajectories of behavior problems.
- There have been teacher reports of behavior problems in prenatally exposed children, although again, findings have not been consistent across studies, and some have been moderated by other risks.
- There also have been reports in this age group of deficits in attention processing and an increase in symptoms of attention-deficit/hyperactivity disorder and oppositional defiant disorder self-reported by the exposed children.

COCAINE EFFECTS ON COGNITION/EXECUTIVE FUNCTIONING

- Problems of attention are particularly worrisome because they relate to poor school achievement and behavior problems.
- Prenatally cocaine-exposed 4- to 7-year-olds performed below standard norms on tests that measure sustained attention (Bandstra et al., 2001) and selective attention (Noland et al., 2005).

COCAINE EFFECTS ON LANGUAGE DEV AND ACHIEVEMENT

- Because cocaine targets the monoaminergic (dopamine, norepinephrine, epinephrine, and serotonin) neurotransmitter systems, which are known to regulate attention, researchers have been interested in the drug's impact on children's capacity for attention.
  - Studies indicate that prenatal cocaine exposure can impair visual attention, visual processing speed, and visual memory in infancy and throughout the first year of life (Jacobson et al., 1996; Singer et al., 1999; 2005).
- Subtle negative effects involving perceptual reasoning have been associated with prenatal cocaine exposure in children 4 to 9 years of age (Singer et al., 2004; 2008). Perceptual reasoning refers to one's ability to envision solutions to nonverbal problems, such as recreating a spatial design with 3D colored blocks.

METHAMPHETAMINES

MECHANISMS OF ACTION OF METHAMPHETAMINES ON A FETUS

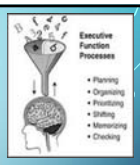
- Methamphetamine is a member of a group of sympathomimetic drugs that stimulate the central nervous system. It readily passes through the placenta and the blood-brain barrier and can have significant effects on the fetus.
- It is possible that the mechanism of action of methamphetamine is an interaction with and alteration of these neurotransmitter systems in the developing fetal brain as well as alterations in brain morphogenesis.

METHAMPHETAMINES EFFECTS ON BEHAVIOR

- Once these babies become school-aged children, they are more likely to be hyperactive or to have ADHD, learning disabilities, and unprovoked fits of anger
- Researchers found that 8-year-olds prenatally exposed to meth displayed aggressive behavior and social adjustment issues, which were positively associated with the amount and duration of methamphetamine exposure in utero

Wouldes, Trecia; LaGasse, Linda; Sheridan, Janie; Lester, Barry (26 November 2004). "Maternal methamphetamine use during pregnancy and child outcome: what do we know?". *The New Zealand Medical Journal*. **117** (1206).

METH EFFECTS ON COGNITION/EXECUTIVE FUNCTIONING



- Higher incidence of ADHD
- Meth-exposed children were more likely to be emotionally reactive, anxious, and depressed at age 3. And they were also more likely to show aggressive behavior and symptoms of attention-deficit/hyperactivity at age 5. That was especially true in children whose mothers were heavy users.

METH EFFECTS ON LANGUAGE DEVELOPMENT/ACHIEVEMENT

- Prenatally exposed children have language skills, athletic abilities, and mathematic skills that are statistically lower than those of their classmates

CHILD WELFARE

QUICK REFRESHER

ADOPTION AND SAFE FAMILIES ACT OF 1997

- This legislation, passed by Congress with overwhelming bipartisan support represented an important landmark in child welfare law.
- It established unequivocally that the national goals for children in the child welfare system are **safety, permanency and well-being.**
- The law reaffirmed the need to forge linkages between the child welfare system and other systems of support for families, as well as between the child welfare system and the courts, to ensure the safety and well-being of children and their families.

IN MOST STATES, THE CASEWORK PROCESS IN CPS CONSISTS OF SEVEN BASIC STEPS:

1. Intake Assessment
2. Family Functioning Assessment
3. Safety planning, if necessary
4. Family assessment
5. Service provision
6. Case evaluation
7. Case closure

- It has been postulated that optimization of the postnatal environment may compensate for the biological vulnerability of these children. The children may for example have a positive trajectory over time if they were brought up in good foster or adoptive homes which compensated for their prenatal vulnerabilities.

WHAT HAPPENS TO CHILDREN ONCE THEY ENTER FOSTER CARE?

- Once the court has decided that a child should be removed from his or her parent's custody and placed in foster care, the birth parents and the child are assigned a social worker.
- Federal law requires that all children have a "permanency goal"—that is, there must be a clearly defined plan for the child to safely leave foster care. The initial goal for almost all children who enter the system is to eventually return to their birth parents' care (i.e. reunification). Approximately 65% of children who enter foster care eventually return to their birth parents after they have completed necessary counseling and treatment.
    - When families are unable or unwilling to make the life changes necessary to ensure they can safely parent their children, other permanent, alternative options are sought. These options usually include adoption, a guardianship with another family member of friend, or remaining in foster care until the child turns 18.

INTERVENTION

IN SUMMARY….WHAT DO YOU SEE THAT MOST KIDS EXPOSED TO DIFFERENT DRUGS OR ALCOHOL HAVE IN COMMON?

ARE THERE SOME SPECIFIC LANGUAGE/SPEECH INTERVENTIONS FOR THESE KIDS?

WHAT ARE YOUR THOUGHTS?

NOPE! YOU WILL DO WHAT YOU DO IN REGARDS TO LANGUAGE…BUT….

ATTENTION TO BEHAVIOR/EXECUTIVE INTERVENTION

BUT I AM A SPEECH LANGUAGE PATHOLOGIST…

PARADIGM SHIFT

- Parents and professionals report a significant shift in their perceptions once they understand that individuals with prenatal drug/alcohol exposure may have a neurologically-based disability.

EFFECTIVE INTERVENTIONS FOR ANYTHING

- RISE principles (Ukrainetz, 2006)
- **R**epeated Opportunities
- **I**ntensive
- **S**ystematic Support
- **E**xplicit

STRATEGIES TO HELP CHILDREN BECOME **READY TO LEARN**

READY TO LEARN

STRATEGY 1: PROVIDE CHILDREN WITH EXECUTIVE FUNCTION WEAKNESSES WITH "SURROGATE PREFRONTAL LOBE" SUPPORT THEY NEED TO SUCCEED

- Become the prefrontal cortex
- When children know what to expect, it reduces anxiety

CREATE ROUTINES IN YOUR THERAPY

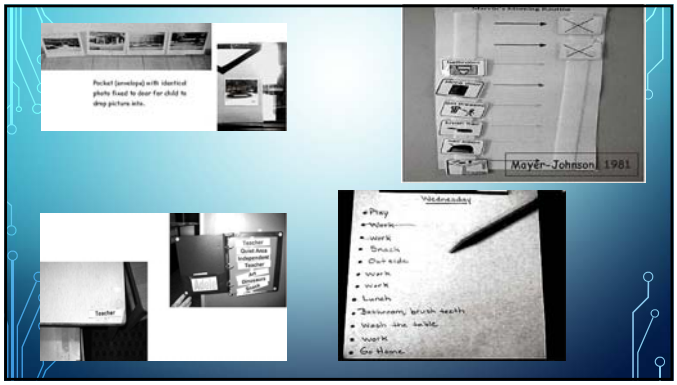
- A book
- A song
- A handshake

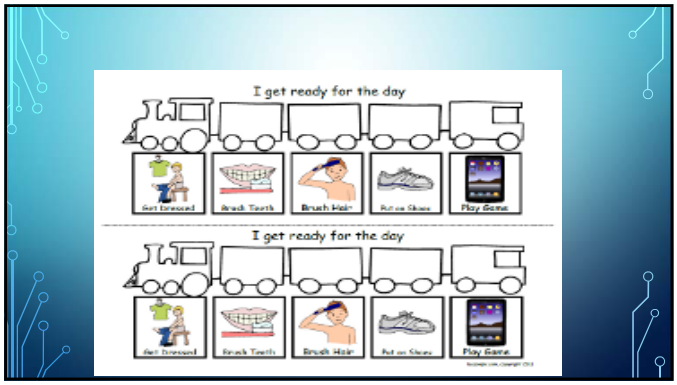
PICTURE SCHEDULES

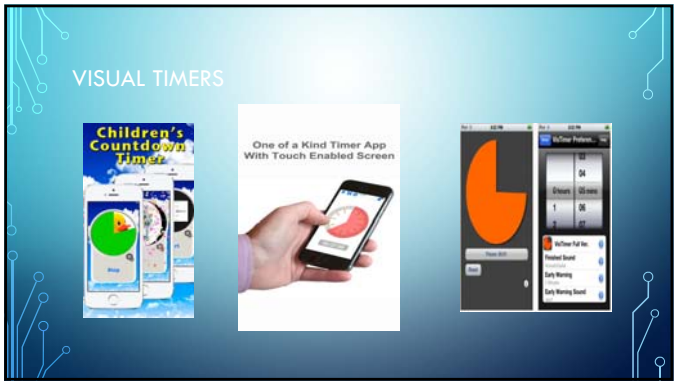
- Using a visual schedule can develop a positive routine of looking for information and thus increase flexibility and the ability to cope with life's ups and downs in the future.
- A visual schedule provides a clear external structure for the school day, and may be physiologically calming for students.
  - Although activities should vary throughout the day and week, the routine of using a visual schedule can provide safety and predictability.
  - Classroom staff is responsible for varying the sequence of events regularly (i.e., math is first on Mondays, Wednesdays and Fridays and reading is first on Tuesdays and Thursdays), while ensuring that the visual schedule is used consistently to provide information to students.
  - Ultimately, the visual schedule can teach students that a change in the sequence of activities is acceptable because the routine of using the visual schedule is consistent and reliable.

CONSIDERATIONS WHEN DEVELOPING PICTURE SCHEDULES

1. Form of representation
2. Length of schedule and presentation format
3. Methods for manipulating the schedule
4. Location of the schedule
5. Initiating use of schedule




I get ready for the day
Get Dressed
Brush Teeth
Brush Hair
Put on Shoes
Play Game
I get ready for the day
Get Dressed
Brush Teeth
Brush Hair
Put on Shoes
Play Game


VISUAL TIMERS
Children's Countdown Timer
One of a Kind Timer App With Touch Enabled Screen


PROACTIVES
SETTING EXPECTATIONS

TELL CHILDREN ABOUT EXPECTATIONS

- We will line up next
- We stand quietly in line
- We will walk to the therapy room
- You are kind
- You are nice.

PROACTIVE, REACTIVE, PASSIVE STATEMENTS

I GOT A BAD GRADE ON A PAPER….

Proactive	Reactive	Passive
I can ask for help.	Rip up the paper.	There's nothing I can do.
I can practice writing	Get angry and take it out on someone else by being mean.	No action.
I have good ideas.	Tell the teacher it's not fair	Go to sleep
I can take more time	Say to myself, "I give up."	I can't do that.
I'll ask the teacher what part of it was a problem so I can work on that specifically	Say to myself, "I'm just not good at this and can never be good at it."	Shrug my shoulders and leave class.

PROACTIVE, REACTIVE, PASSIVE STATEMENTS

"SOMEONE TALKS TO YOU IN A MEAN WAY. HE OR SHE ALSO TELLS YOU THAT YOU TALK TO LOUD, WHICH YOUR PARENTS ALSO TELL YOU"…

Proactive	Reactive	Passive
Walk away but I think about what was said.	Hit	Don't deal with it.
Tell the person in a firm voice that you don't appreciate the mean talk.	Deny the correct part of what was said. You didn't do it.	Look down.
Say, "Sorry if I talk too loud. I'll work on it, but you are being mean about it."	Yell.	Stand firm. Hold your head up and stand firm.

ROLE PLAYING

- Giving a child "voice"
  - Allowing control when you can
- **Using puppets and role-playing is a great way to teach the behavior you want to see in a child** Using it also allows your child to practice the correct behavior you want your child to achieve.
  - Your child will love to take the role of the teacher in these situations and you can misbehave as you take the role of the child. Then, swap parts so everyone has a chance to experience feelings and emotions on both sides.

RE-DO'S

- Try it again, mentality

1. Be consistent – Work on a couple behaviors at a time and request a re-do every time. As a child becomes proficient on a behavior start working on new behaviors. There may be resistance in the beginning but once they get the hang of it a re-do should become a quick and easy fix, like pressing pause in the middle of a conversation to quickly correct a behavior.
2. Respond immediately – To request a re-do Purvis and Cross recommend responding within 3-5 seconds of the behavior, if possible.
3. Stay calm– Use a calm and friendly tone of voice and body posture. Try to keep the interaction playful. Get down to your child's level and keep eye contact. If faced with resistance parents can respond in a firmer voice without being scary. If a child becomes dysregulated an adult will need to help them to calm down before the child can attempt a re-do.

RE-DO'S

4. Practice – Keep at it until they get it right. Model appropriate behavior if needed. Also incorporate re-do's into role plays and pretend play to practice intermittently.
5. Be patient –Learning a new behavior takes time.
6. Praise – Give the child praise for a job well done!
7. Move on – Afterwards press play, continue with daily activities like normal.

STRATEGY #2: TEACH NEW SKILLS AND CONTENT SYSTEMATICALLY AND EXPLICITLY

- Consider when learning to drive a stick shift
- Minimize confusion with new skills by presenting novel skills and content in highly explicit, step-by-step ways that clearly link the unfamiliar to the familiar.

IDEAS FOR STRATEGY 2

- Use the same graphic organizers
- Teach new vocabulary by acting out words and using student volunteers to "perform" the words for the class
- Practice, practice, practice the strategies that you teach
  - Reading comprehension monitoring
  - Graphic organizers
  - Etc.

STRATEGY 3: TEACH STRATEGIES AND EXPLICITLY DEMONSTRATE THE MANNER IN WHICH THEY SHOULD BE APPLIED IN REAL-LIFE LEARNING CONTEXTS

- Teach note-taking strategies
- Explicitly teaching/modeling the use of prereading strategies to build comprehension skills (KWL charts)

STRATEGY 4: MINIMIZE DEMANDS ON WORKING MEMORY (LIMIT SIMULTANEOUS PROCESSING LOAD)

- Clearly separating the stages of the writing process, with students only being required to complete one portion of the process each day
- Supplementing oral directions for assignments with clearly worded written instructions that divide tasks into a series of discrete steps

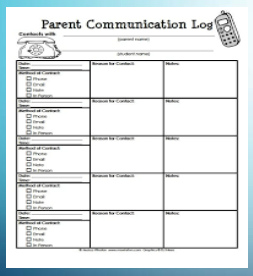
INVOLVING PARENTS

OPEN LINES OF COMMUNICATION

- giving parents opportunities to identify goals for their children
- identifying and clarifying specific parental concerns and helping parents assess their family needs
- being aware of and discussing the parent-child relationship and interactions
- discussing current interventions parents are using.

COMMUNICATION

- A variety of techniques can be used for home-school communication. Communication books can be valuable tools for supporting students, and keeping both parents and teachers up-to-date on relevant issues.
- Completing checklists of agreed-upon behaviors is time efficient and may ensure more objective reporting. Phone contact and e-mails also work for many families.



PARENTS UNWILLING TO PARTICIPATE

- Some parents may initially seem less willing to engage with the school or appear uncooperative. **Usually there are reasons for these parents' reticence and resistance.**
  - One issue may be the parents' own history of negative school experiences.
    - Parents may want to avoid school because they lack confidence in their own ability to deal with teachers.
  - Other parents may have overwhelming health, economic and social difficulties, and limited energy to engage. They may feel that school staff cannot understand their current life circumstances.
  - Cultural and language differences may also influence parental reactions.
  - Some parents may be angry about their children's previous school experiences. They may have lost hope that their children will obtain the education they need.

SCHOOL STAFF MAY USE THESE STRATEGIES TO TRY TO INVOLVE PARENTS WHO SEEM RELUCTANT TO PARTICIPATE

- Continue to invite parents to come to school.
- Try a range of ways to contact them. In addition to letters or phone calls, see if there is a school staff member who could visit the home, such as a liaison worker.
- Ask for the assistance of a parent advocate, family service agency worker or group already involved with the family, such as a health agency or Child and Family Services.
- Offer to meet parents either at their homes or neutral locations, such as community centers or restaurants.
- Suggest parents invite a family member, friend or neighbor to come to meetings with them for support.
- Maintain a positive, understanding approach even when the response is negative.

RESOURCES

- Riley, E.P. & McGee, C.L. (2005). Fetal alcohol spectrum disorders: An overview with emphasis on changes in brain and behavior. Experimental Biology and Medicine, 230 (6), 357-365.
- Astley, S.J., Aylward, E. H., Olson, H.C., et al. (2009). Magnetic resonance imaging outcomes from a comprehensive magnetic resonance study of children with fetal alcohol spectrum disorders. Alcoholism: Clinical and Experimental Research, 33 (10), 1671- 1689. •
http://education.alberta.ca/media/377037/fasd.pdf