Screening for Developmental, Behavioural, and Learning Problems in Children

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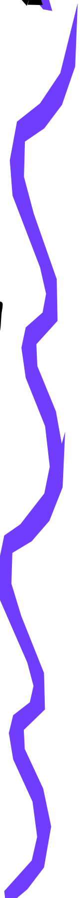
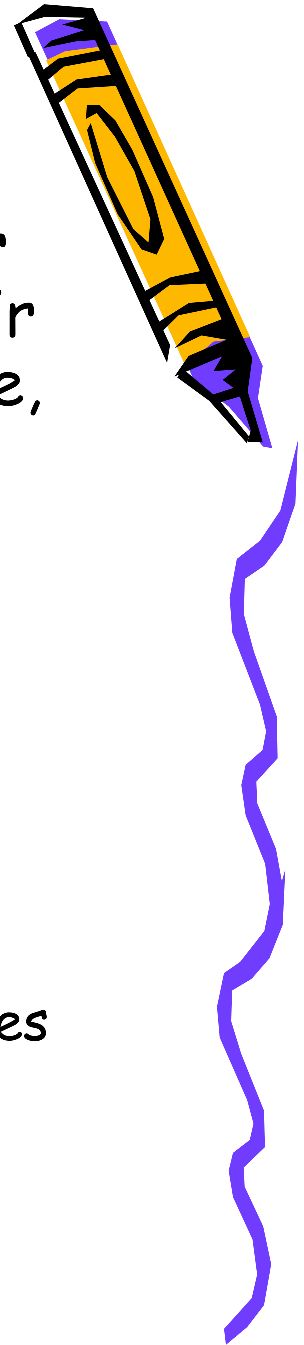
Goals

- Explain the prevalence of developmental, emotional or behavioural problems
  - Why is early screening for developmental problems important?
- Discuss when to begin screening
- Discuss challenges associated with current surveillance practice in identifying developmental-behavioural problems
- Provide information about standardized, parent-assisted, screening
  - Parent Evaluation of Developmental Status
- Provide information about screening for Tourette's Syndrome
- Discuss early, standardized, screening for Autism Spectrum Disorders
  - M-CHAT

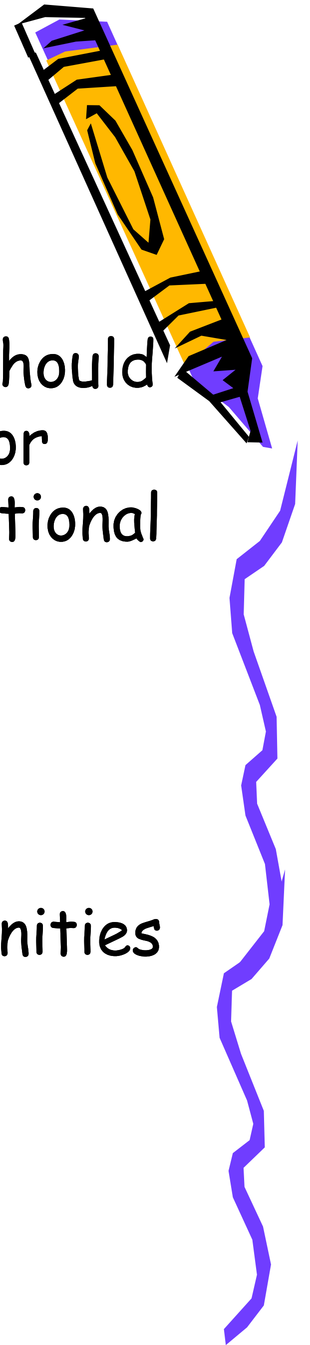


Case #1



- The parents of 18 month old Roberta are in your office. They have noticed that compared to their older children (now 7 and 5 years old) at this age, Roberta:
  - does not play with other children
  - does not play appropriately with toys
  - says only three words consistently
  - is in fact quite silent vocally
  - has difficulty holding a spoon to feed him/herself
  - still prefers a bottle to hard food
  - has just started standing while holding onto furniture
  - the attractive baby is affectionate with hugs and smiles
  - she prefers cuddling to any other activity.

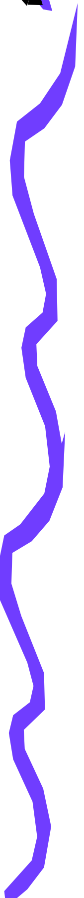
What is Developmental-Behavioural ***Screening***? Why is it important?



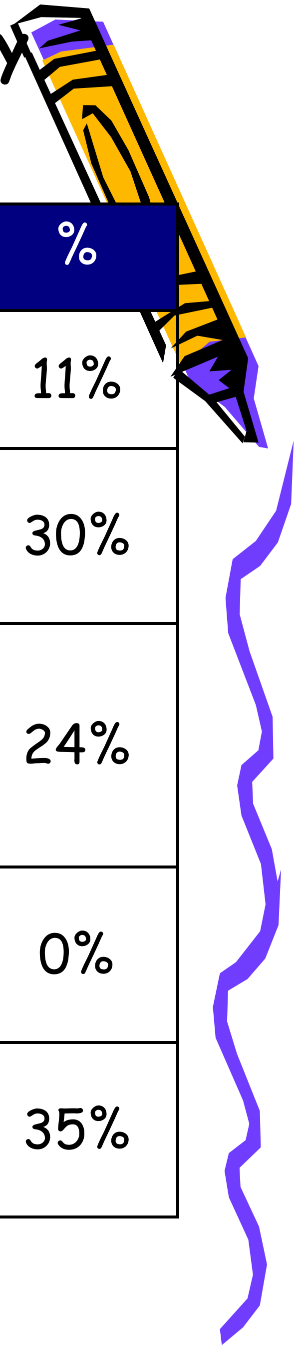
- ***standardized*** methods to identify children who should receive more intensive assessment or diagnosis for potential developmental delays and/or social-emotional problems
  - allows for earlier detection of delays and can improve child health and well-being
- many children with behavioral or developmental disabilities (and their families) miss vital opportunities for early detection and intervention that can ameliorate future disabilities

Prevalence Of Developmental Difficulties

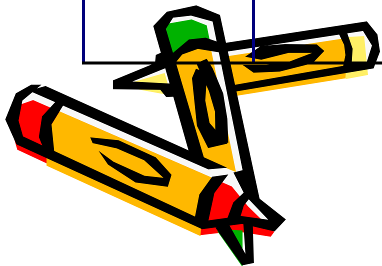
- **17% of children have a developmental or behavioral disability which impacts school readiness:**
  - language delays and disabilities
  - intellectual disability
  - attention deficit/hyperactivity disorder
  - autism spectrum disorder
  - other developmental-cognitive domains (e.g. motor)
- *** at least 1 out of every 10 children should be referred for more in-depth screening or for assessment by a developmental specialist**
  - Developmental pediatrician
  - Speech Language Pathologist
  - Psychologist
  - Physiotherapist
  - Occupational Therapist
- *** 50 - 80 % of children who fail screens are <u>not</u> referred for further assessment before starting school age**
  - significant delays may then be present



Prevalence of Risk for Problems in <u>Low Risk</u> Calgary Children at 3 years of age. (Tough et al., 2009)

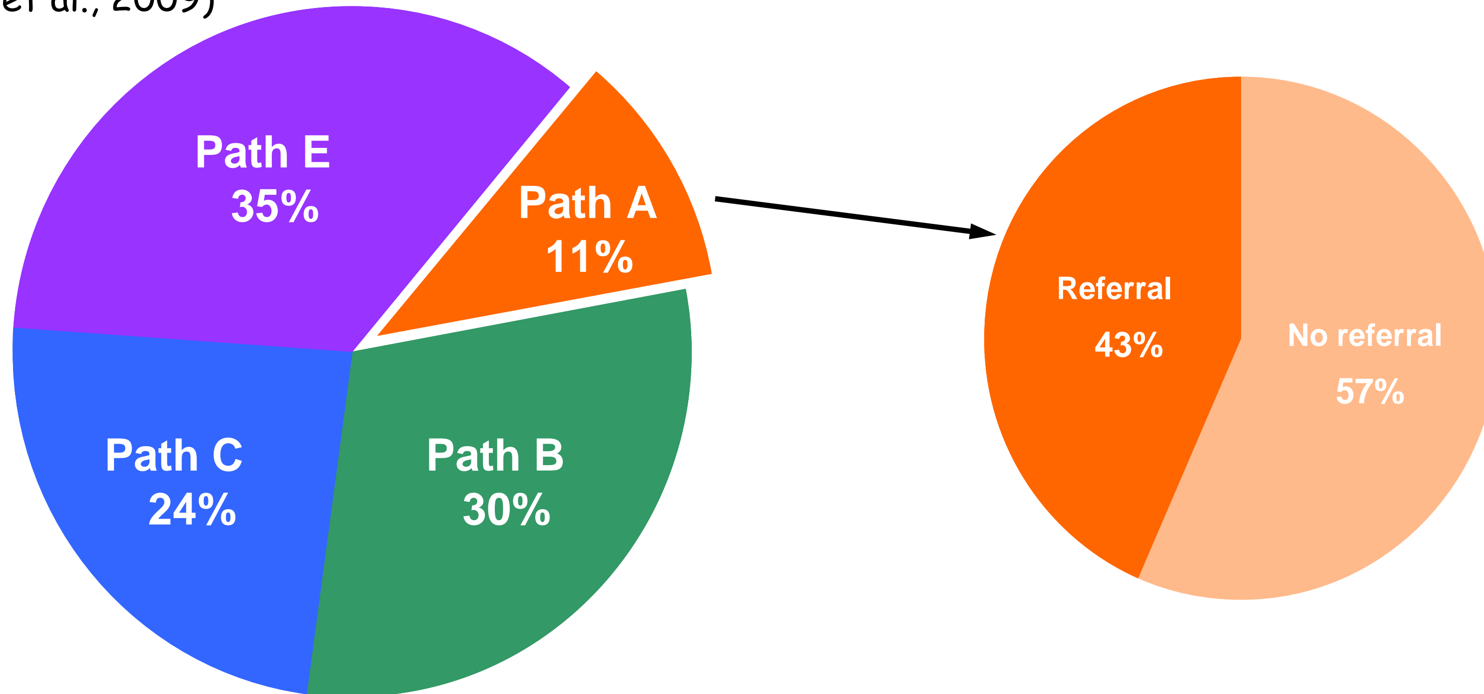


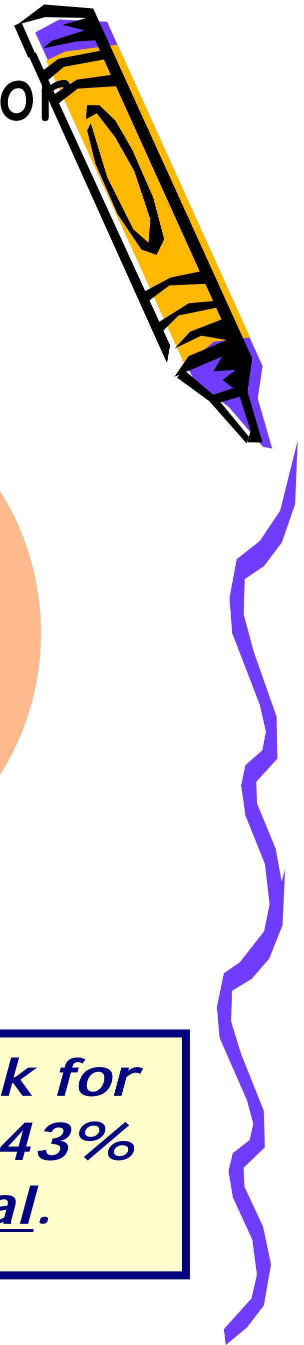
Path	Definition	n	%
A	high risk of developmental disabilities	86	11%
B	moderate risk of disabilities	239	30%
C	low risk of developmental disabilities but elevated risk for social-emotional or mental health problems	186	24%
D	moderate risk of developmental disabilities, problems with parental communication	0	0%
E	low risk	280	35%



Referrals for Calgary Children at High Risk for Problems

(Tough et al., 2009)

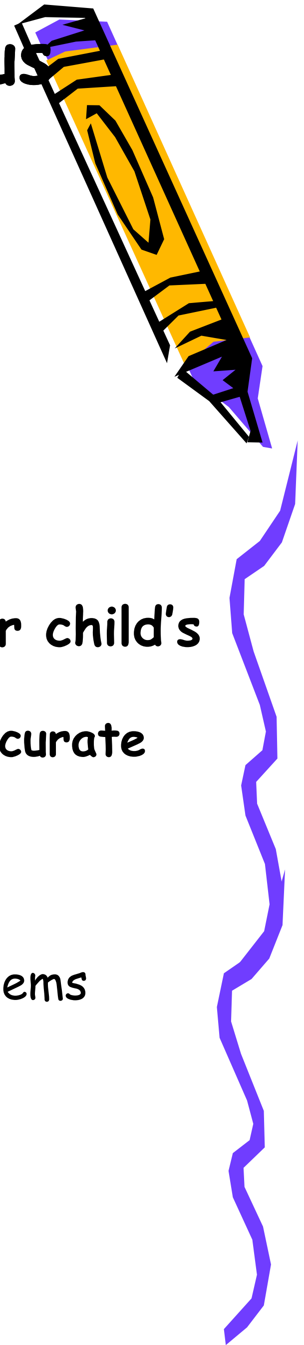




Among the 86 children who screened at high risk for developmental problems (Path A on the PEDS), 43% had a referral and 57% did not have a referral.

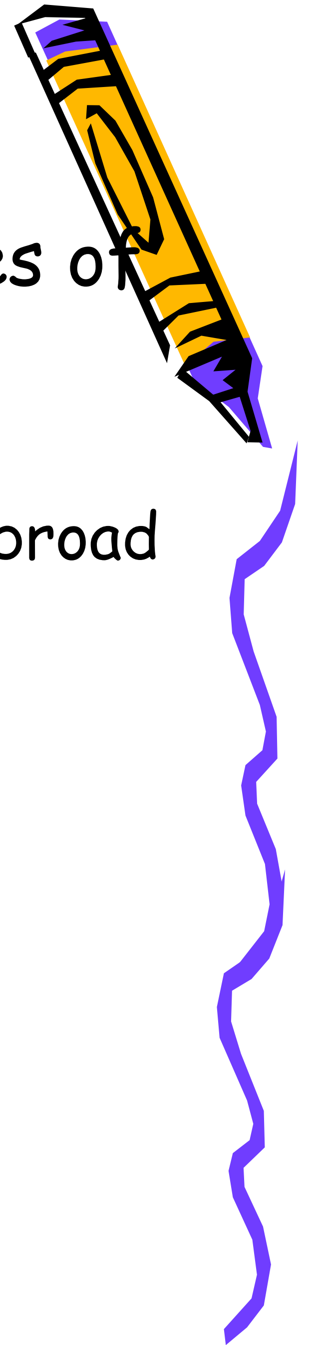
Parental Evaluation of Developmental Status (PEDS)

F. P. Glascoe, Ph.D.



- **Evidence based**
- **Elicits parents' concerns**
- **10 items**
  - **Short administration time**
- **For children ages birth – 8 years**
- **Makes use of parents' concerns or judgments about their child's development and behaviour:**
  - **information from parents is flexible, brief, reliable and accurate**
  - **In coordination with professional judgement**
- **Provides immediate feedback when done online**
- **Assigns paths of risk**
  - high, moderate or low risk of developmental-behavioural problems
- **Available online** (scored within minutes)
  - or can be scored paper-pencil in the office
  - reports and letters can be generated online

How does the PEDS work?

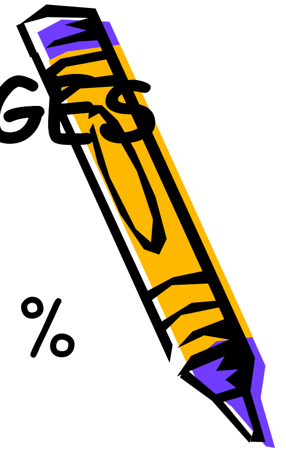


- Parents concerns are assigned probabilities of delays or disabilities and linked to optimal responses from health care providers
  - Helps clinicians/health care providers make a broad range of evidenced based decisions about:
    - The kinds of services to provide
    - When to refer
    - Where to refer
    - When to give advice to parents
    - When to give reassurance
    - When to monitor
    - When more screening is needed

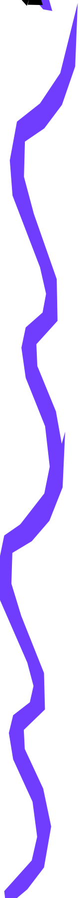
PEDS Reliability

- Test-retest: 88% consistency over time in parents' concerns
- Inter-rater: 88% agreement in categorization of concerns given two different raters
- Coding agreement 83%, weighted kappa = .74

PEDS ACCURACY ACROSS AGE RANGES



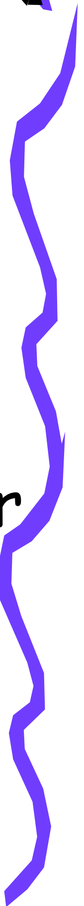
AGES	SENSITIVITY N	%	SPECIFICITY N	%
• 0 - 1 1/2 yrs	3/4	75	66/82	80
• 1 1/2 - 3 yrs	27/34	79	117/149	79
• 3 - 4 1/2 yrs	26/35	74	118/165	72
• 4 1/2 - 8 yrs	42/57	74	172/245	70
• TOTAL	98/130	75	473/641	74



- * Over referrals from standardized screening tests are often children with below average development or psycho-social risk factors

Predictive Concerns by Children's Ages

- **0 - 1 1/2 yrs** global/cognitive, expressive language, social, medical/other
- **1 1/2 - 3 yrs** same as above (except social) + receptive language
- **3 - 4 1/2 yrs** same as above (except social) + receptive language + gross motor
- **4 1/2 - 8 yrs** same as above (except social) + receptive language+ gross motor +fine motor + school



PEDS Response Form

Child's Name____Parent's Name____

Child's Birthday______________________________Child's Age _________________Today's Date ____________________

1. Please list any concerns about your child's learning, development, and behavior.

2. Do you have any concerns about how your child talks and makes speech sounds?
Circle one: No Yes A little COMMENTS:

3. Do you have any concerns about how your child understands what you say?
Circle one: No Yes A little COMMENTS:

4. Do you have any concerns about how your child uses his or her hands and fingers to do things?
Circle one: No Yes A little COMMENTS:

5. Do you have any concerns about how your child uses his or her arms and legs?
Circle one: No Yes A little COMMENTS:

6. Do you have any concerns about how your child behaves?
Circle one: No Yes A little COMMENTS:

7. Do you have any concerns about how your child gets along with others?
Circle one: No Yes A little COMMENTS:

8. Do you have any concerns about how your child is learning to do things for himself/herself?
Circle one: No Yes A little COMMENTS:

9. Do you have any concerns about how your child is learning preschool or school skills?
Circle one: No Yes A little COMMENTS:

10. Please list any other concerns.

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PEDS Score Form

Child's Name Billy Morris Birthday 4/17/94

Find appropriate column for the child's age. Place a checkmark in the appropriate box to show each concern on the PEDS Response form. See Brief Scoring Guide for details on categorizing concerns. Shaded boxes are significant predictors of difficulties. Non-shaded boxes are non-significant predictors.

Child's Age:	0–3 mos.	4–5 mos.	6–11 mos.	12–14 mos.	15–17 mos.	18–23 mos.	2 yrs.	3 yrs.	4–4½ yrs	4½–6 yrs.	6–7 yrs.	7–8 yrs.
Global/Cognitive												
Expressive Language and Articulation												
Receptive Language					✓			✓				
Fine-Motor				✓								
Gross Motor												
Behavior	✓											
Social-emotional												
Self-help						✓						
School												
Other												

Count the number of checks in the small shaded boxes and place the total in the large shaded box below.

	0–3 mos.	4–5 mos.	6–11 mos.	12–14 mos.	15–17 mos.	18–23 mos.	2 yrs.	3 yrs.	4–4½ yrs	4½–6 yrs.	6–7 yrs.	7–8 yrs.
Shaded total	0	0	0	0	0	0	0	1				

If the number shown in the large shaded box is 2 or more, follow Path A on PEDS Interpretation Form. If the number shown is exactly 1, follow Path B. If the number shown is 0, count the number of small unshaded boxes and place the total in the large unshaded box below.

	0–3 mos.	4–5 mos.	6–11 mos.	12–14 mos.	15–17 mos.	18–23 mos.	2 yrs.	3 yrs.	4–4½ yrs	4½–6 yrs.	6–7 yrs.	7–8 yrs.
Unshaded total	1	0	0	1	1	1	0	0				

If the number shown in the large unshaded box is 1 or more, follow Path C. If the number 0 is shown, consider Path D if relevant. Otherwise, follow Path E.

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Child's Name Billy Morris

PEDS INTERPRETATION FORM

Path A: Two or more significant concerns? Yes? → Two or more concerns about self-help, social, school, or receptive language skills?

- Yes? → Refer for audiological and speech-language testing. Use professional judgment to decide if referrals are also needed for social work, occupational/ physical therapy, mental health services, etc.
- No? → Refer for intellectual and educational evaluations. Use professional judgment to decide if speech-language, audiological, or other evaluations are also needed.

Path B: One significant concern? Yes? → Screen or refer for screening.

- If screen is passed, counsel in areas of concern and watch vigilantly
- If screen is failed, refer for testing in area(s) of difficulty.

Path C: Nonsignificant concerns? Yes? → Counsel in areas of difficulty and follow up in several weeks. → If unsuccessful, screen for emotional/ behavioral problems and refer as indicated. Otherwise refer for parent training, behavioral intervention, etc.

Path D: Parental difficulties communicating? Yes? → Foreign language a barrier?

- No? → Use a second screen that directly elicits children's skills or refer for screening elsewhere.
- Yes? → Use foreign language versions, send PEDS home in preparation for a second visit; seek a translator, or refer for screening elsewhere.

Path E: No concerns? Yes? → Elicit concerns at next checkpoint. No? → Use PEDS between checkpoints (e.g. sick- or return-visit).

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Specific Decisions

0–3 mos. counseled re: colic

4–5 mos. happy baby, happy mom, gave info on promoting sleep

6–11 mos. no concerns gave info babyproofing house

12–14 mos. concerns about delayed walking, gave info on wide age range.

15–17 mos. mo concerned re: poor response to "no". Disc limits of memory, child-proofing house

18–23 mos. mo concerned re: sufficient calorie intake. Growth rate normal

2 yrs. progressing well, no concerns. Gave info on tantrums and positive discipline

3 yrs. Sent home with PDI to return 4/28
4/28: passed; counseled mo re: S&L, return

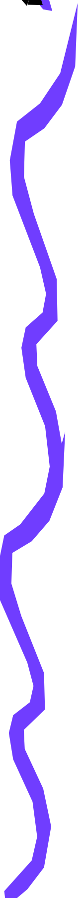
4–4½ yrs.

4½–6 yrs.

6–7 yrs.

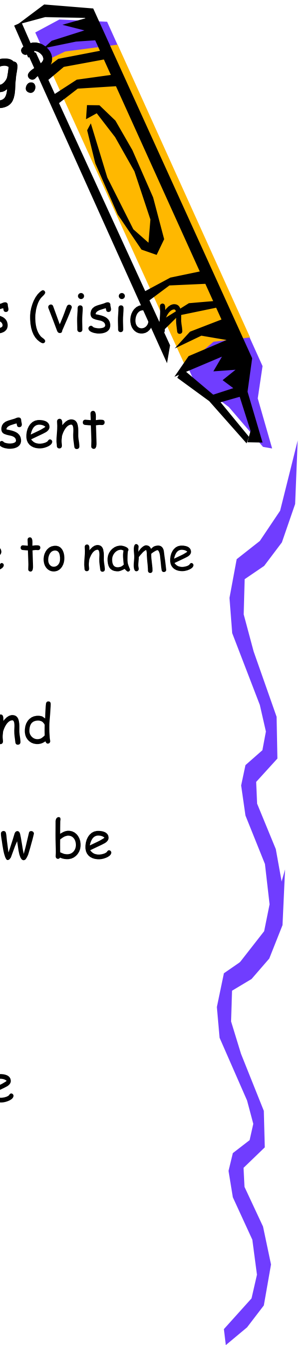
7–8 yrs.

PEDS' Evidence Based Decisions



Path A: high risk of developmental disabilities, shows what kinds of referrals are needed.
Path B: moderate risk of disabilities, need for additional screening, developmental promotion, monitoring
Path C: low risk of developmental disabilities but elevated risk for mental health problems, need for parent education, monitoring, and/ or additional behavioral screening
Path D: moderate risk of developmental disabilities, problems with parental communication and need for hands-on screening
Path E: low risk for either type of disability for which reassurance is the best response

When to begin developmental-behavioural screening? The American Academy of Pediatrics recommends:



By 9 months

- Many motor skills and sensory-developmental issues (vision and hearing) can be reliably identified
- Precursors of serious developmental delays are present
- Early communication skills are emerging:
  - lack of eye contact, communicative pointing, response to name may suggest risks for language delays and/orASD

By 18 months

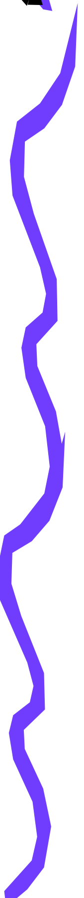
- Delays in communication and language are evident and significant
- Mild motor delays not apparent at 9 months may now be evident
- M-CHAT should be administered for ASD

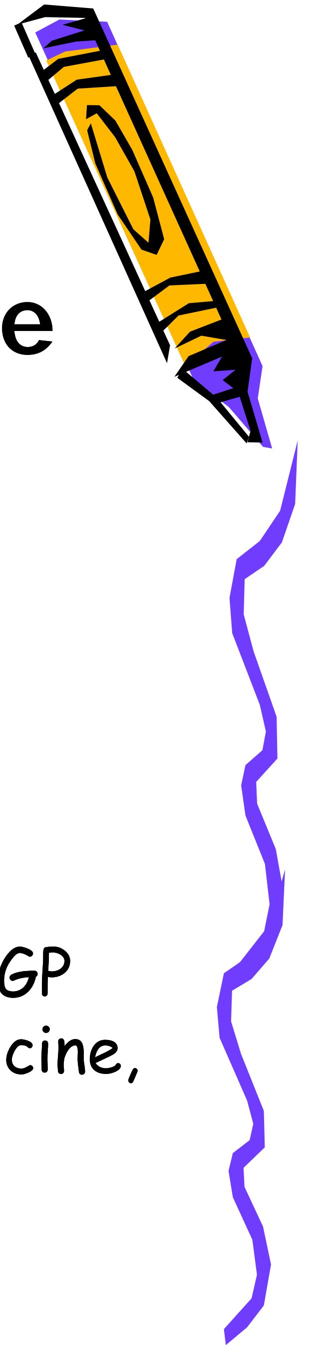
By 30 months

- Most motor, language and cognitive problems can be identified with screening instruments

Case #2

- **Chief Complaints:** Parents of 11 year old John are in your office. When 7 he began to sniff and when family members and schoolmates asked why he gave no reason. The ENT specialist said he is normal. At 8 he began to twitch his eyes repeatedly. The eye specialist said he was normal.
- Parents mention these concerns:
  - **Simple motor tics:** John shrugs his shoulders, snaps his jaw and tenses his abdomen repeatedly.
  - **Complex motor tics:** He makes funny facial expressions and touches both sides of his face repeatedly
  - **Simple vocal tics:** He does a lot of throat clearing, spitting and barking
  - **Complex vocal tics:** He says a lot of repeated phrases in a low voice.
  - **ADHD:** He is very busy all the time, never sits in one place for more than a few minutes, and seems like wound up by a motor. His teachers say he cannot keep still in class and constantly has to be re-directed to do his work. He blurts out answers and interrupts others
  - **Depression:** He seems sad and unhappy much of the time.





Diagnosing Tourette Syndrome
or
Tourette Syndrome with co-morbidities (TS+)

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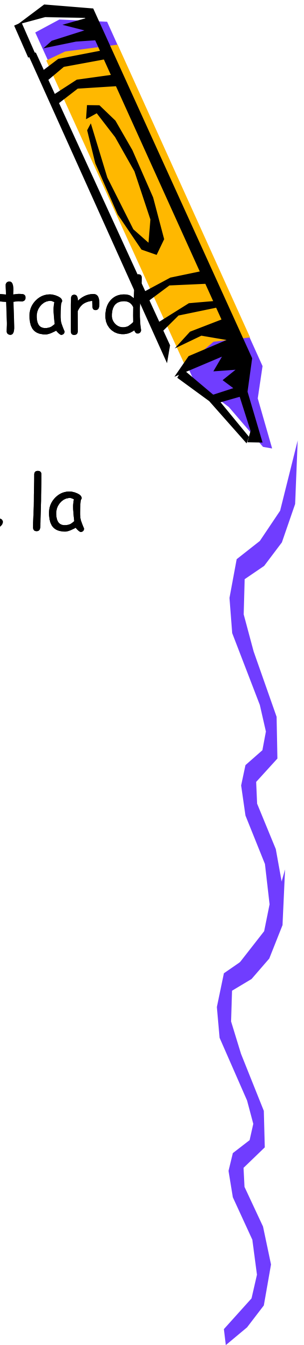
What is Tourette Syndrome?



- First medical description by Dr. Itard 1825;
- 9 cases described by Dr. Gilles de la Tourette 1885
- **definition**:
  - ► multiple motor tics and
  - ► one or more vocal/phonic tics
  - ► duration of > 1 year

❖ average onset 5-7 yrs

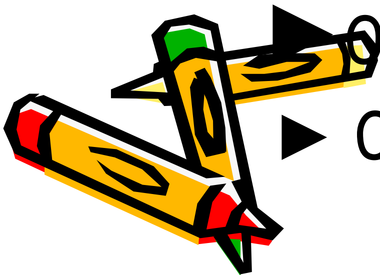
- **normal range IQ's**

How common are tics?

- 20% of elementary school children in Monroe County, NY

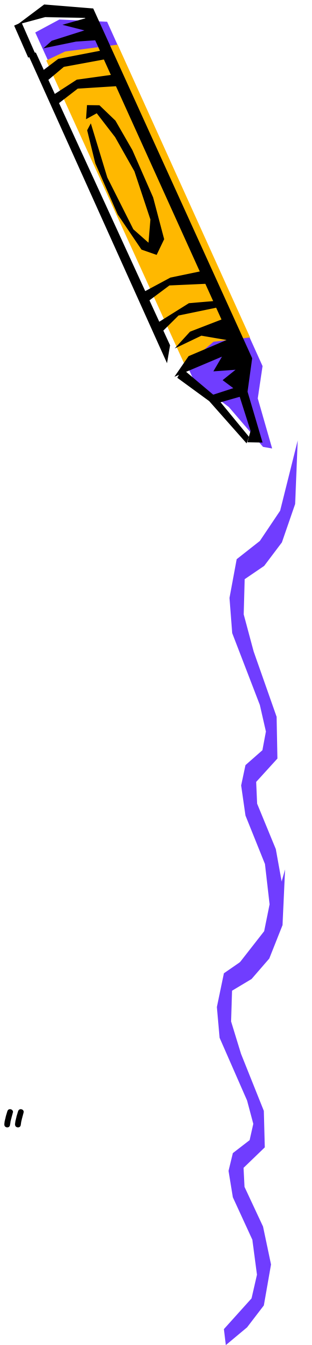
How common is Tourette Syndrome?

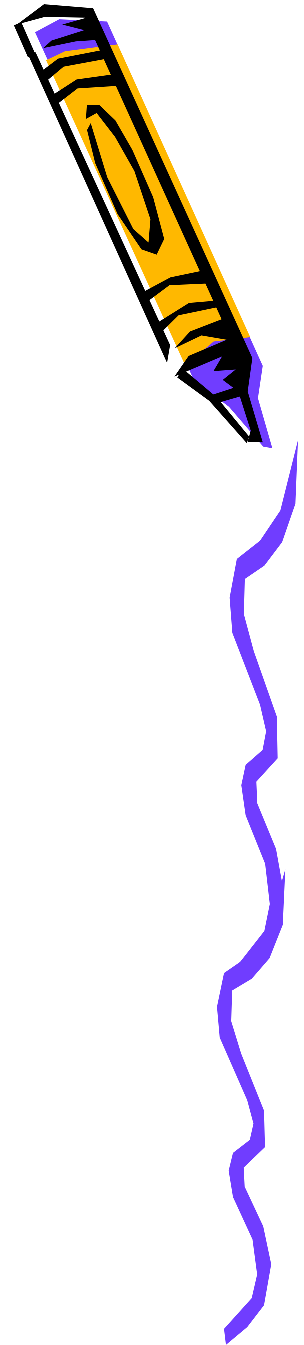
- 1% of samples of 420,312 children assessed worldwide
- worldwide distribution except very rare in subsaharan Africans
- Variability, partly depending on training of assessors
  - ► 3.8% of children in Monroe County, NY
  - ► 1.7% of 11 year old boys in Karlstad Sweden
  - ► 0.75% in K-8 in Los Angeles
  - ► 0.05% of 140,000 children N. Dakota
  - ► 0.04% of army draftees in Israel



Carl/Carla often

- Blinks his/her eyes
- Shrugs her/his shoulders
- Jerks his/her arm and head
- Twirls around
- Touches objects
- Makes funny facial expressions
- Clears her/his throat
- Sniffs
- Barks
- Grunts
- Repeats phrases “shut up” “you're fat” “all right”

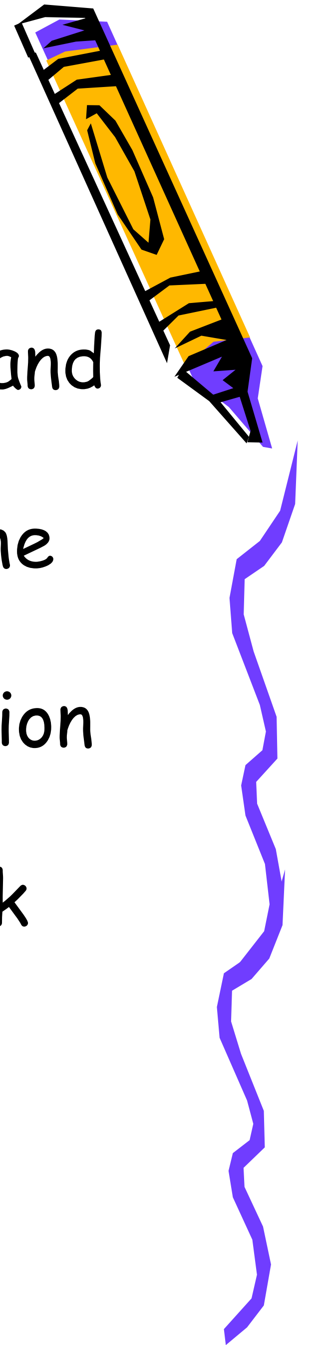




Use the check list to write how many Tourette symptoms Carla/Carl has

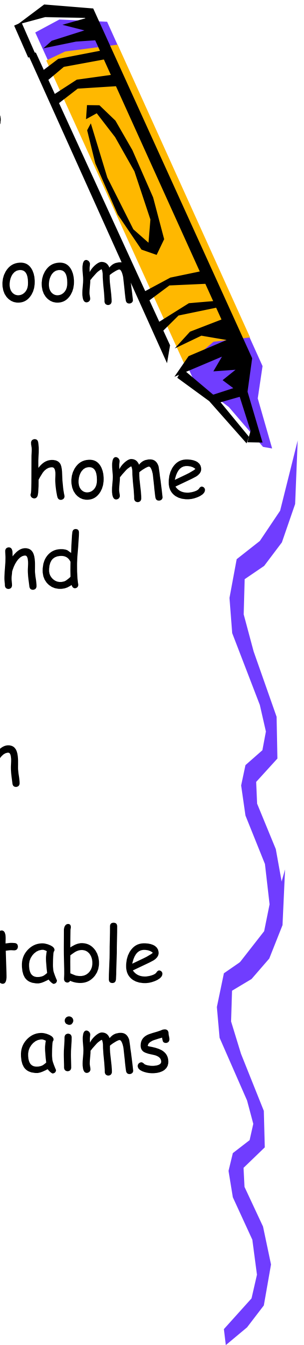
- Simple motor tics ______
- Complex motor tics ______
- Simple verbal tics ______
- Complex motor tics ______
- TOTAL ______

Can children suppress Tourette tics?



- for several minutes, with great effort and some discomfort
- premonitory sensations occur before the tics in 80% of TS patients
- suppression interferes with concentration on schoolwork
- tics wax and wane, affecting schoolwork from day to day

Can children suppress Tourette tics?

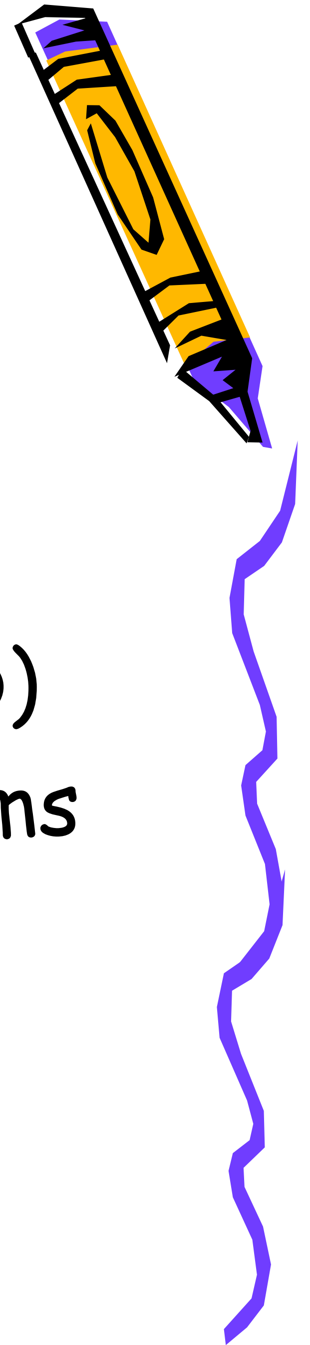


- tics need to be released in a quiet room at school
- if suppressed until the child arrives home it can be a difficult time for child and parents
- tics change over time; some cease in adulthood
- Some tics that are socially unacceptable can be disguised or modified; if one aims to stop tics news ones will appear

12% have Tourette Syndrome; 88% have TS with comorbidities (TS+)

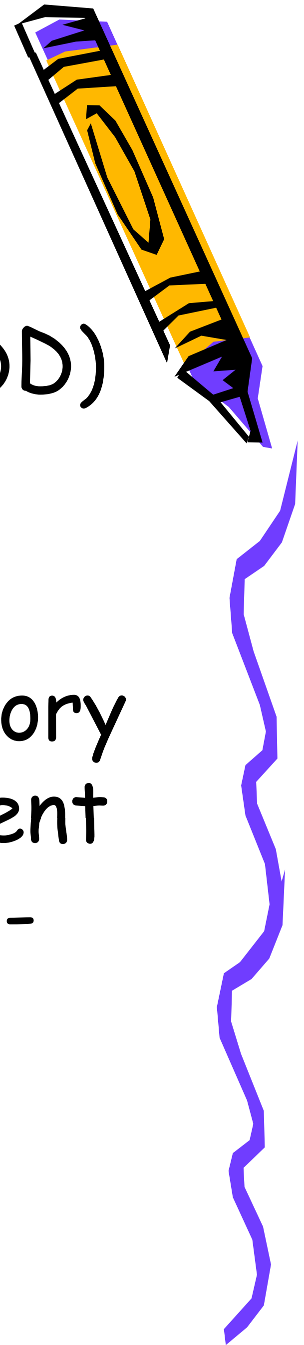
- In a study of 3,500 Tourette Syndrome children in Rochester NY 12% had Tourette Syndrome without comorbidities
- TS+ includes any of:
  - ADD or ADHD or OCD
  - or Anxiety or Depression
  - or Self-Injurious Behaviours

The following can also occur with TS+



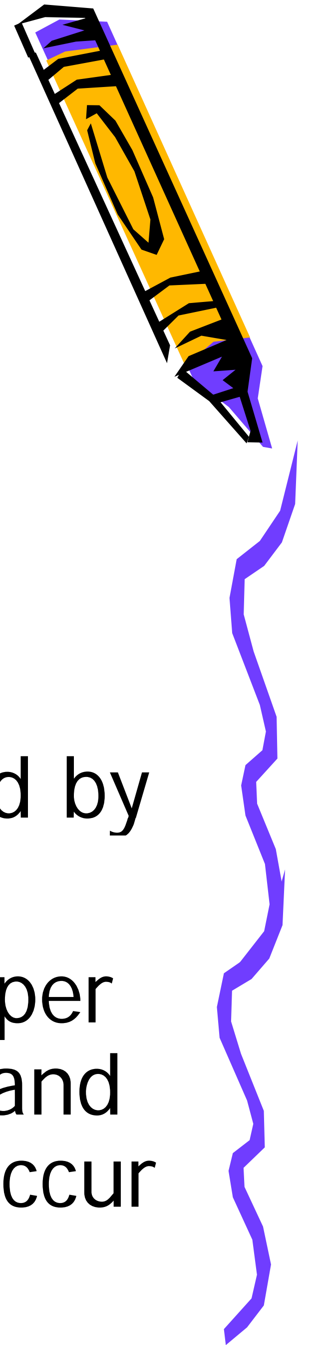
- Mood Disorders
- Deficits in Social Skills
- Sleep Disturbances
- Executive Function Deficits (EFD)
- Graphomotor Disabilities: problems with eye-hand coordination and handwriting
- Neurological Storms

In some cases the following may be present with TS+



- Oppositional Defiant Disorder (ODD)
- Autism and Asperger's Syndrome
- Sensory Integration Dysfunction: tactile, auditory, gustatory, olfactory and vestibular (balance). The student may vary between hyper- and hypo-sensitive

Neurological Storms or Rage Attacks (Explosive Outbursts)



- students with TS+ may have neurological storms, which both parents and teachers find very disturbing
- the student exhibits a loss of emotional control often triggered by a minor event
- neurological storms are not temper tantrums. They are involuntary and non- manipulative. They often occur when the student believes he is alone

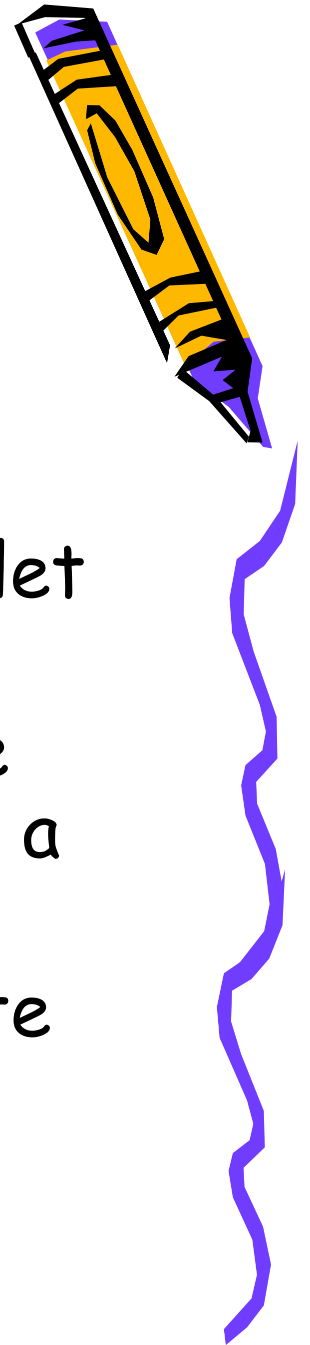
Neurological storms

- teachers should let the neurological storm abate, preferably in the school's quiet room
- students are usually very embarrassed after the storm and often very tired
- students having a storm should be treated with the same caring concern as a child with epilepsy having a seizure

Dr. Mort Doran

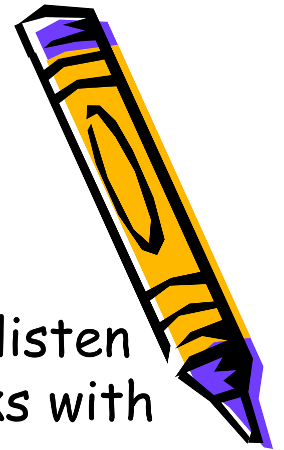
- Dr. Mort Doran of Cranbrook has TS+ He is a retired surgeon & pilot, and won the University of Calgary Gold Medal for teaching anatomy many times
- He likes to tap his children on the head, and touches his face frequently to feel “symmetrical.” He refrained from tics during surgery and sometimes de-programmes with a “storm.” He recommends that observers just walk away

Manage tics

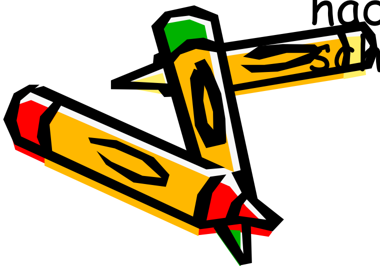


- Develop an individual behaviour plan consistent with the child's abilities
- Become the child's ally
- Signal the child to go to a quiet room to let off tics
- Signal the child to take a message to the office. Have a sealed envelope ready and a prearranged plan with the office
- Signal when a behaviour is not appropriate

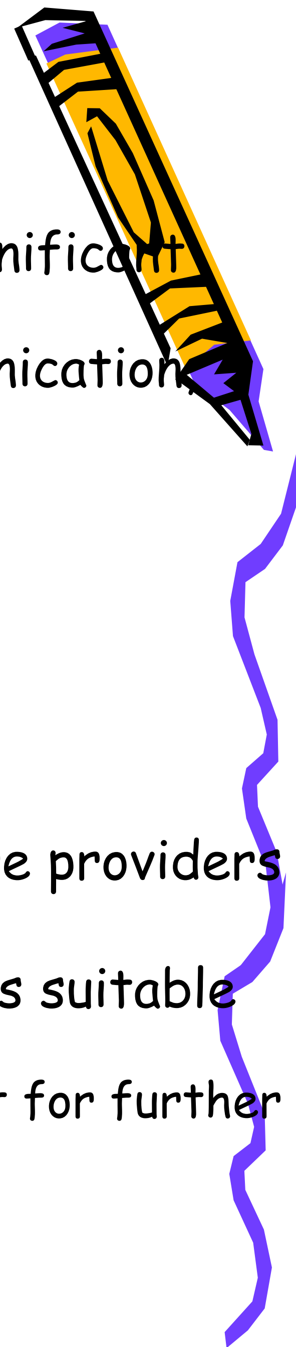
Case #3



- Parents of 3 year old Michaela are in your office. Michaela is a very attractive child, but
  - she does not speak well or often, and does not seem to listen
  - she is in fact difficult to understand because she speaks with 'weird' intonation.
  - she has only a few toys that interest her; these toys have been her favorites for over a year, but her play with them has not changed in that time (she mostly mouths them and rolls them over and over in her hands)
  - Michaela is in a very friendly community play school 3 mornings a week and the teachers there are concerned about her social skills.
    - Michaela doesn't enjoy sharing at the different play stations
    - leaves when other children join her, and
    - gets very upset if her routine is changed or if she's redirected to a different play group.
    - Michaela does not appear to be toilet trained at school as she has had several 'accidents'; though at home you have her on a good schedule for toileting.

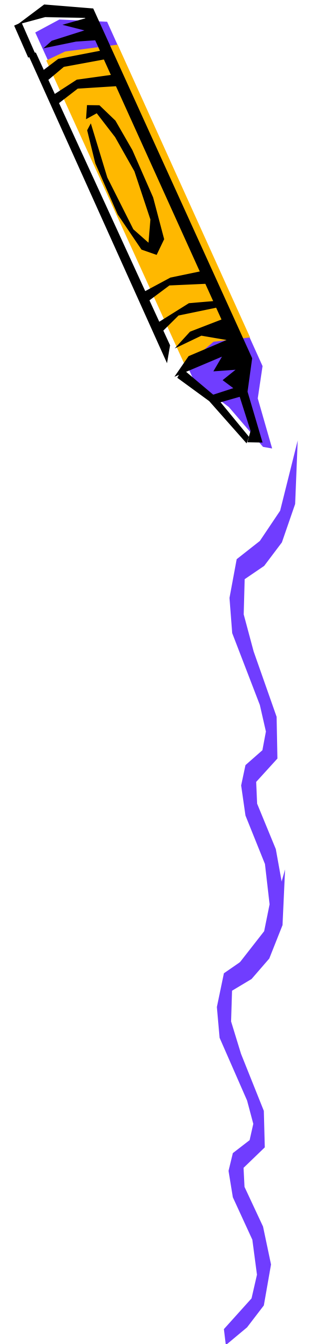


Autism Spectrum Disorder (ASD)



- neurologically based developmental disorders that have significant impact on individuals' life-long functioning
- may involve disturbances in cognition, interpersonal communication, social interactions and behaviour
- Prevalence:
  - estimated to affect 1 in 250 preschool children
  - includes:
    - Autism
    - Asperger Syndrome
    - Pervasive Developmental Disorders (PDD)
      - *(DSM-IV: American Psychiatric Association, 2000)*
- only 4 of 21 children with ASD are identified by health care providers
- developmental surveillance is not adequate to detect ASD
- the Modified-Checklist for Autism in Toddlers (M-CHAT) is suitable for Level 1 screening in primary care:
  - failing the M-CHAT **requires** a referral to a specialist for further screening and/or developmental assessment

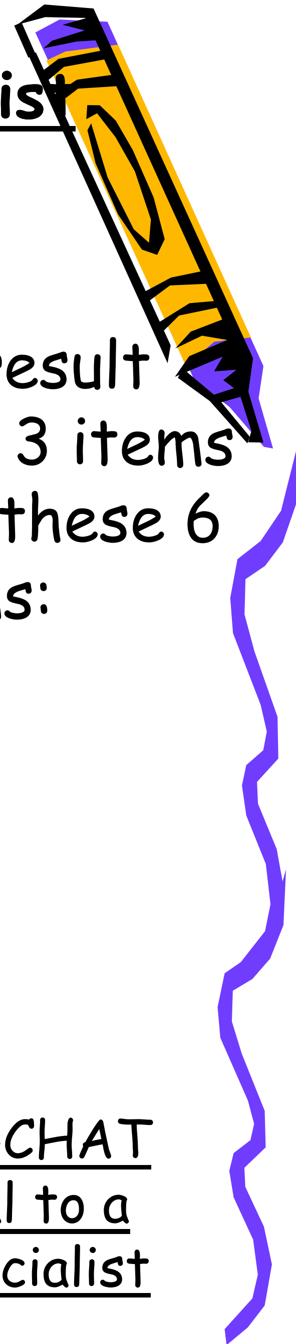
Autism Spectrum Disorder:



Characterized by impairments in 3 areas:

(DSM-IV: American Psychiatric Association, 2000)

1. **Reciprocal social interaction**
   - Attachment
   - Joint attention
   - Social imitation
   - Orienting to social stimuli
   - Processing of facial expressions and affect
   - Expression of emotions symbolic play
2. **Communication**
   - use of verbal and non-verbal language
   - quality of communication and play
3. **Restricted or stereotyped behaviours**
   - non-functional routines or ritual behaviours
   - resistance to changes in environment
   - repetitive motor mannerisms
   - unusual interests and preoccupations
   - visual fascinations



Modified Checklist for Autism in Toddlers

M-CHAT

Please fill out the following about how your child usually is. Please try to answer every question. If the behavior is rare (e.g., you've seen it once or twice), please answer as if the child does not do it.

1. Does your child enjoy being swung, bounced on your knee, etc.? Yes No
2. Does your child take an interest in other children? Yes No
3. Does your child like climbing on things, such as up stairs? Yes No
4. Does your child enjoy playing peek-a-boo/hide-and-seek? Yes No
5. Does your child ever pretend, for example, to talk on the phone or take care of dolls, or pretend other things? Yes No
6. Does your child ever use his/her index finger to point, to ask for something? Yes No
7. Does your child ever use his/her index finger to point, to indicate interest in something? Yes No
8. Can your child play properly with small toys (e.g. cars or bricks) without just mouthing, fiddling, or dropping them? Yes No
9. Does your child ever bring objects over to you (parent) to show you something? Yes No
10. Does your child look you in the eye for more than a second or two? Yes No
11. Does your child ever seem oversensitive to noise? (e.g., plugging ears) Yes No
12. Does your child smile in response to your face or your smile? Yes No
13. Does your child imitate you? (e.g., you make a face-will your child imitate it?) Yes No
14. Does your child respond to his/her name when you call? Yes No
15. If you point at a toy across the room, does your child look at it? Yes No
16. Does your child walk? Yes No
17. Does your child look at things you are looking at? Yes No
18. Does your child make unusual finger movements near his/her face? Yes No
19. Does your child try to attract your attention to his/her own activity? Yes No
20. Have you ever wondered if your child is deaf? Yes No
21. Does your child understand what people say? Yes No
22. Does your child sometimes stare at nothing or wander with no purpose? Yes No
23. Does your child look at your face to check your reaction when faced with something unfamiliar? Yes No

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Please refer to: Robins, D., Fein, D., Barton, M., & Green, J. (2001). The Modified Checklist for Autism in Toddlers: An initial study investigating the early detection of autism and pervasive developmental disorders. Journal of Autism and Developmental Disorders, 31 (2), 131-144.

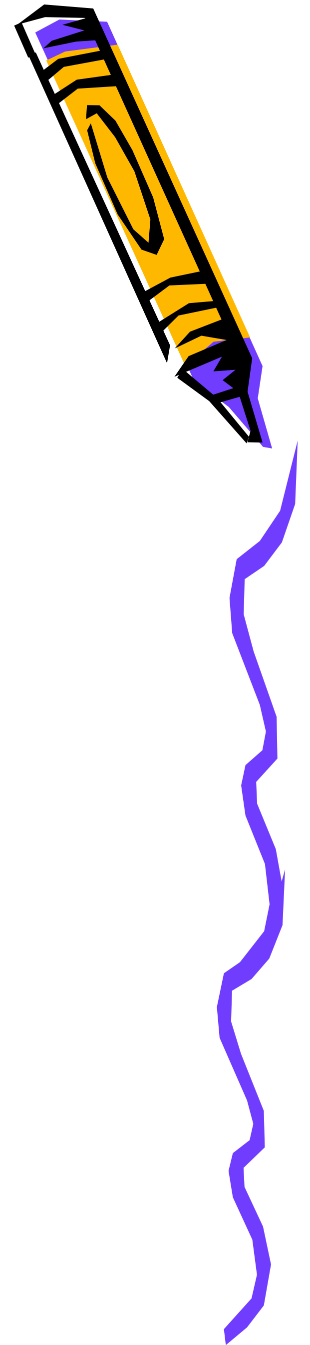
At-risk scores result from failing any 3 items or at least 2 of these 6 critical questions:

- -#2
- -#7
- -#9
- -#13
- -#14
- -#15

NB: Failing the M-CHAT requires a referral to a developmental specialist

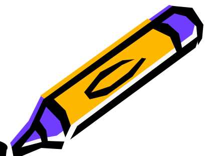
M-CHAT and PEDS

- Can both be performed together, online, at 18 months
  - www.pedstest.com



Take Home Message #1

Prevalence of Risk:
At least 1 out of every 10 children should be referred for in-depth screening or for assessment by a developmental specialist

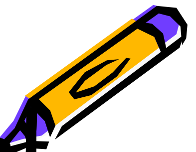


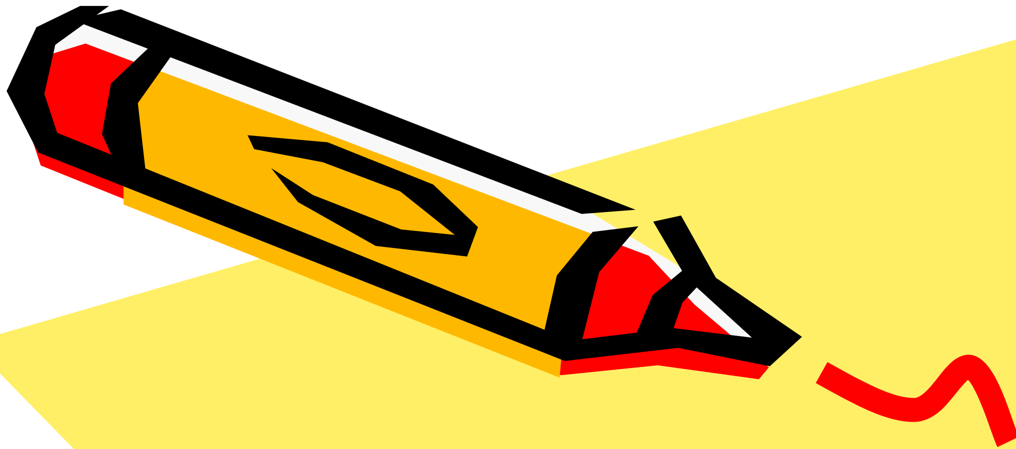
Take Home Message #2

Begin Standardized Screening
ASAP
...but at least by 9 months

Take Home Message #3

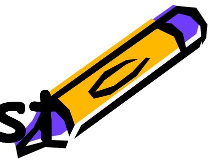
Why ***Standardized*** Screening?
Surveillance (clinical observation) misses many developmental and behavioural problems





Take Home Message #4

Parent report provides unique, highly reliable and congruent information to developmental – behavioural screening. Statistically significant correlations exist between *guided* parent report and standardized assessments.



Take Home Message #5

Screening for ASD should occur at 18 months