**Developmental-Behavioral Screening and Surveillance: The Best Approach for NICU and Early Intervention**
A Case Example using Parents' Evaluation of Developmental Status (PEDS), PEDS: Developmental Milestones (PEDS:DM) Screening Level, the Modified Checklist of Autism in Toddlers (M-CHAT) and the PEDS:DM Assessment Level

Note:

This case example shows use of PEDS, PEDS:DM Screening Level, and the M-CHAT, all used within a primary health care setting. Due to problematic results, this child was referred to her local early intervention program where the PEDS:DM Assessment Level was administered twice, six months apart. You will see some of the PEDS:DM items (for both Screening and Assessment Level), how the Assessment Level is scored and how the Assessment Level booklets are reused over time with the same child to track progress. Use of PEDS along with the PEDS:DM is called "the Best Approach" because it enables you to know exactly what parents' concerns are, as well as how to rule those concerns in or out.

Third Case Example: Rachel
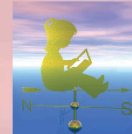
Age 20 months (and late for 18 month visit)
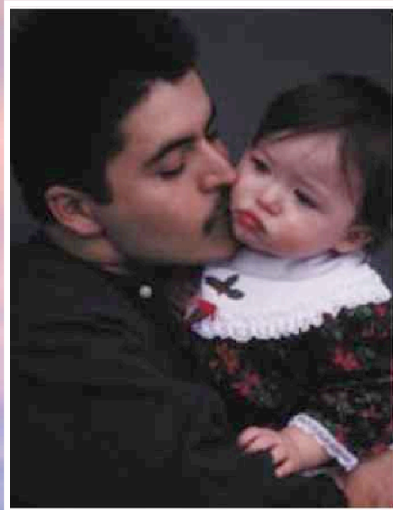
This is Rachel who came to her 18 month well-visit at age 20 months instead. Fortunately the PEDS:DM has a continuous set of forms so if children arrive between the usual well-visit schedule, there always a single set of items to use.

PEDS Response Form

Child's Name _____ Rachel _____ Parent's Name _____

Child's Birthday _____ Child's Age _20 months_ Today's Date _____

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

I'm worried my child might have autism. She isn't talking as well as she should and she just runs around the house all day not really playing with toys

Do you have any concerns about how your child talks and makes speech sounds?

Circle one: No (Yes) A little COMMENTS:

She's not talking as well as my other kids did at that age

Do you have any concerns about how your child understands what you say?

Circle one: No Yes A (little) COMMENTS:

She won't point but does look at things when named

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:

This is what Rachel's dad wrote (as an aside he was an editor and proof-reader currently working with a publisher on a book about autism for parents---which may have sensitized him to the issue of autism).

Clip from the PEDS Combined Score Form, showing the need to follow Path A

PEDS Score Form

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 predictive concerns. Unshaded boxes are non-predictive concerns.

Child's age:	0–3 m	4–5	6–11	12–14	15–17	18–21	2	3	4-4-5	4-6-5-11	6–7	7–8
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.

3

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

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.

Here's how this dad's concerns on PEDS were categorized:

Autism concern: other (as are all named developmental and health conditions)

Expressive language

Receptive Language

Clearly there was a need to follow Path A, i.e., high risk

Clip from the PEDS Combined Interpretation Form showing Path A
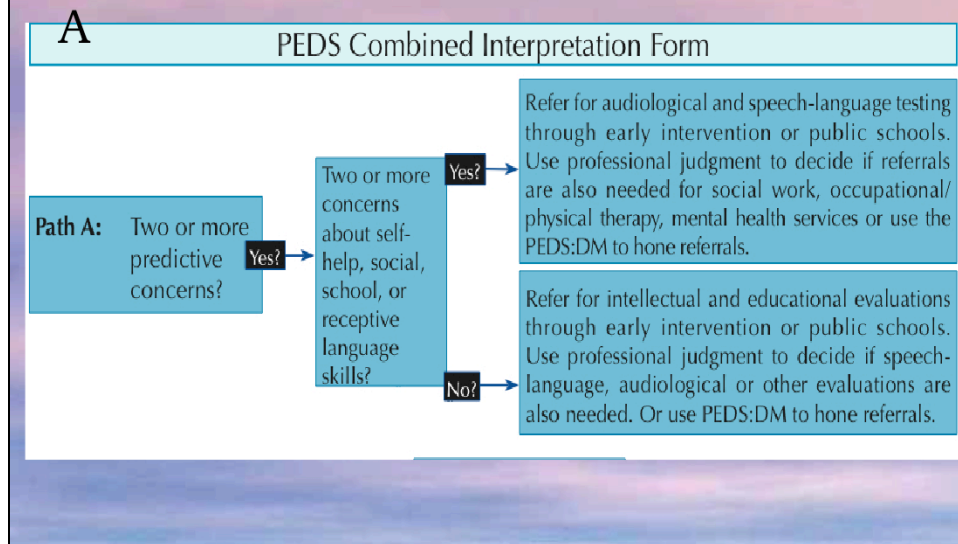
The pediatric clinic Rachel attended used PEDS and the PEDS:DM simultaneously so even though the PEDS:DM isn't really needed with a child at high risk, here's what they found: PEDS Path A, high risk.

Here are the PEDS:DM items at Rachel's age level.

Rachel passed all developmental skills on the PEDS:DM at age level, except expressive and receptive language

PEDS:DM Developmental Growth Chart

Directions: Shade box if passed, — if failed

AGE	Using hands and fingers	Listening	Reading/Prereading Talking	Math/Premath	Using arms and legs	Getting along with others	Self-help
7-0 - 7-11 yrs.							
6-1 - 6-11yrs.							
5-6 - 6-0 yrs.							
4-11 - 5-5 yrs.							
4-6 - 4-10 yrs.							
4-1 - 4-5 yrs.							
3-8 - 4-0 yrs.							
3-3 - 3-7 yrs.							
2-10 - 3-2 yrs.							
2-5 - 2-9 yrs.							
2-2 - 2-4 yrs.							
23 - 25 mos.							
20 - 22 mos.							
17 - 19 mos.							
14 - 16 mos.							
11 - 13 mos.							
8 - 10 mos.							
5 - 7 mos.							
3 - 4 mos.							
0 - 2 mos.							

On the PEDS:DM Screening Level, Rachel did well on almost all tasks at age-level--marked at the top in orange circles (enabling her health care provider who had just started using the PEDS:DM to feel confident completing the PEDS:DM Recording grid in these domains--shown in orange shaded columns). However, Rachel did not pass at age-level in the expressive and receptive language domains, as shown by the black dashes and non-colored columns. The lower levels are not filled in because we don't know the extent of delays when only the age-appropriate items are administered.

Office staff screened her hearing and found it to be normal.

Because AAP policy urges use of an autism-specific screen at 18 and again at 24 months, Rachel's health care provider also administered the Modified Checklist of Autism in Toddlers (M-CHAT).

The PEDS:DM includes (in the Second Section of the Family Book a number of screens helpful for evidenced-based surveillance, including the M-CHAT).

Rachel passed and autism was thus ruled out. Nevertheless because of her performance on both PEDS and the PEDS:DM, a referral was made to the local early intervention service to assess language skills.

The early intervention program administered the PEDS:DM Assessment Level.

This version contains all the items from the screening version but parents (or professionals) administer multiple items in each domain, rather than just 1, in order to get a clearer picture of strengths and weaknesses. Unlike the screening level PEDS:DM that only provides cutoff scores for each domain, the Assessment Level version provides age equivalent scores that can be used to compute percentage of delay. In most States, eligibility for Early Intervention depends on calculating a percentage of delay.

The Assessment booklet is designed to be reused on the same child for detailed progress monitoring. The following slides show the PEDS:DM Assessment Level scores and its progress tracking form.

Completed Assessment Grid for Rachel showing delays in talking, as well as performance in other areas

PEDS:DM Assessment Level Recording Grid

Child's name: _Rachel_   Child's d.o.b.: _____

Age/Age Equivalent	Date/AE	Date/AE	Date/AE	Date/AE	Date/AE	Date/AE	Date/AE	Comments
7 - 6								--20 mos: delays
7 - 3								in expressive,
7 - 0								receptive language,
6 - 9								ASD ruled out,
6 - 6								referred to EI and
6 - 3								provided
6 - 0								information on
5 - 9								promoting skills
5 - 6								
5 - 3								
5 - 0								
4 - 9								
4 - 6								
4 - 3								
4 - 0								
3 - 9								
3 - 6								
3 - 3								
3 - 0								
2 - 9					33			
2 - 6								
2 - 3								
2 - 0								
21 mos.	22							
18 mos.						20		
15 mos.		19						Scores are age-equivalents in months
12 mos.								
9 mos.								
6 mos.								
4 mos.			17	15				
2 mos.								
0 mos.								

The PEDS:DM Assessment Level showed that Rachel had strengths in fine motor development, was quite advanced in gross motor development, had a marginal delay in listening, self-help, and socialization, and a more substantive delay in expressive language. Her 15 month level performance in expressive language represented a 25% delay relative to chronological age (15 months divided by 20 months = 75% of skills mastered: or 100% - 75% = a 25% delay)

The program shared the Assessment Grid profile with Rachel's dad and explained that she was clearly focused on building motor skills and less so on language. Understandably, the early intervention staff emphasized the importance of language development as the single best early predictor of school success.

Because eligibility for early intervention required either two 25% delays or one 40% delay, Rachel was not found to be eligible. However, the early intervention program gave her parents information on building language skills (from the PEDS:DM manual) and agreed to review Rachel's progress in six months.

Note: the above is also an example of how delays are computed, i.e., by dividing Rachel's 15 months attainment in receptive language by 20 months (her chronological age) to produce 75% (percentage of skills mastered) and then subtracting 75% from 100% to reveal the extent of delay, i.e., 25% delay.

Completed Assessment Grid for Rachel, 6 months later, showing progress in all areas, especially talking and listening skills
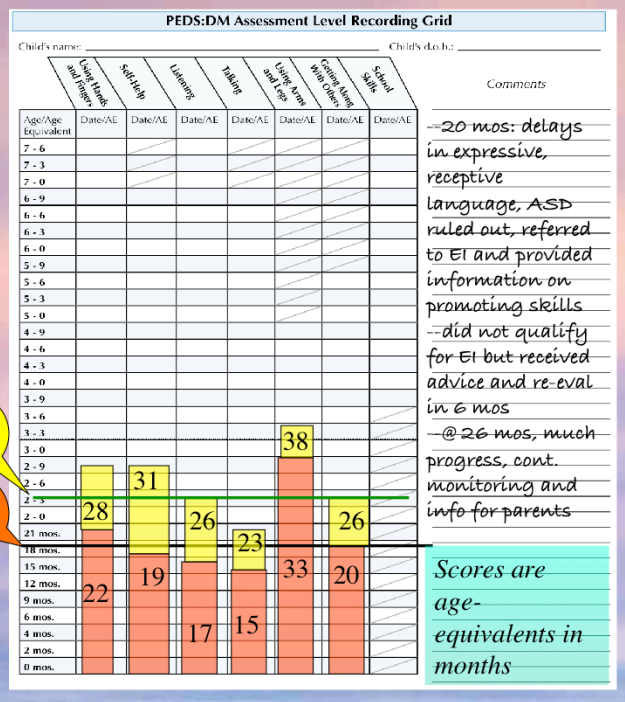
Rachel's parents made use of the information given to them by the EI program on building language skills. They also telephoned their health care provider for additional advice and were given age-appropriate information handouts from the Reach Out and Read program.

They returned to the EI service in 6 months and Rachel was re-administered the PEDS:DM Assessment Level. This slide reveals (in the yellow additions to the original graph) the progress Rachael made. While still slightly behind in expressive language skills, the trajectory of improvement was clear. Rachel's medical provider continued to monitor her progress and promote development.

Summary of Rachel case example

➤PEDS focused the visit (on the need for referral and follow through with AAP guidelines) and prompted for use of the M-CHAT

➤The PEDS:DM (screening level) confirmed delays—Rachel performed below cutoffs in receptive and expressive language

➤The PEDS:DM Assessment Level, used by the local EI (and often in NICU Follow-up) produced age-equivalent scores so that percentages of delay could be determined—while also facilitating a view of areas of strength. Although Rachel did not qualify for services, the PEDS:DM Assessment Level helped monitor progress and focused developmental promotion efforts.