



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

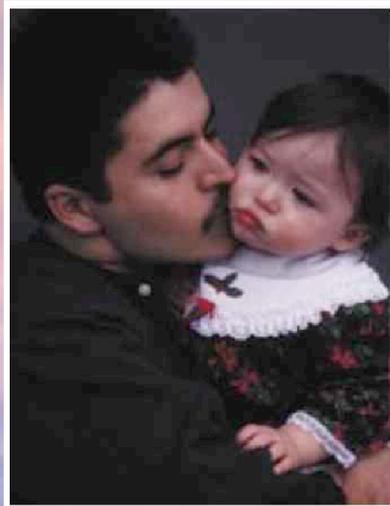
Note:

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 (m)	0-3	4-5	6-11	12-14	15-17	18-23	2	3	4-4.5	4.6-5.11	6-7	7-8																						
Global/Cognitive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																											
Expressive Language and Articulation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																															
Receptive Language	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																															
Fine-Motor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																											
Gross Motor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																											
Behavior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																											
Social-emotional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																											
Self-help	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																											
School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																											
Other	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																															
Count the number of checks in the small shaded boxes and place the total in the large shaded box below.																																		
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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.																																		
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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

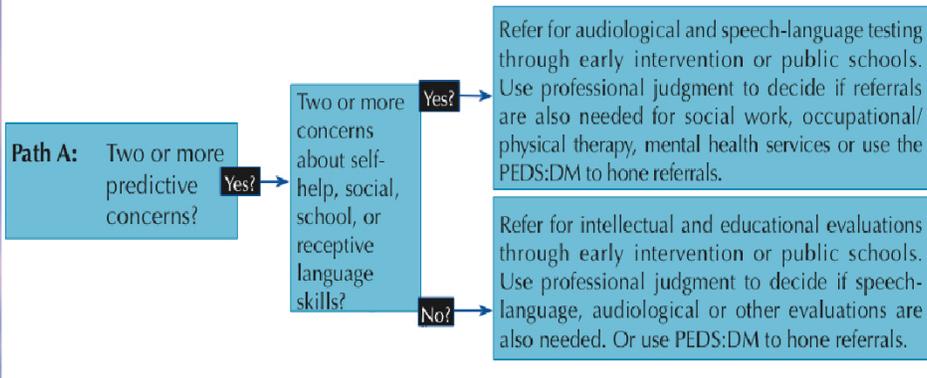
Clearly there was a need to follow Path A, i.e., high risk

Clip from the PEDS Combined Interpretation Form showing Path



A

PEDS Combined Interpretation Form



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.

PEDS:DM at the 20 - 22 month level

Does your child try to scribble with crayons or markers?

No/Never tried
Sometimes
Yes

How many of these body parts can your child point to if you say, "**Where are your eyes?**"... "**Where is your nose?**"... "**feet?**"... "**hair?**"... "**mouth?**"... "**ears?**"

None
1
2 or more

If you asked your child, "**What's this?**" and showed things like a spoon, cup, doll, truck, box, crayon, cookie, chair, or light, how many names for these or other things does he or she say?

None
1
2 or more

Does your child try to jump, even if both feet don't leave the ground?

No
Feet stay on the ground
One or both feet off the ground

When you are dressing your child, does he or she try to put an arm through a sleeve or a leg into pants?

No
A little
Yes

Does your child watch people's faces for clues to how they are feeling? Can he or she tell if someone is mad, sad, or happy?

No
Not often
Yes

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	Talking	Math/Pretmath	Reading/Pretreading	Using arms and legs	Self-help	Getting along with others
7-0 - 7-11 yrs.								
6-1 - 6-11 yrs.								
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.	<input checked="" type="checkbox"/>							
17 - 19 mos.	<input checked="" type="checkbox"/>							
14 - 16 mos.	<input checked="" type="checkbox"/>							
11 - 13 mos.	<input checked="" type="checkbox"/>							
8 - 10 mos.	<input checked="" type="checkbox"/>							
5 - 7 mos.	<input checked="" type="checkbox"/>							
3 - 4 mos.	<input checked="" type="checkbox"/>							
0 - 2 mos.	<input checked="" type="checkbox"/>							

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.

Selected items from the Modified Checklist of 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 |

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.



PEDS:DM

Assessment Version

Dear Parents,

Please tell us what your child can do if you try some of these things with it. If he or she doesn't get something, you may need a pencil or crayon, slates, letters and so forth, or a paper if your child needs it. Be sure extra paper into this booklet.

In each section you can stop after _____

Child's name: _____

Your name: _____

Please use a different colored pen for the test:

Date (second time): Age: _____

Date (fourth time): Age: _____

Date (sixth time): Age: _____

14. Ask your child to write letters of the alphabet starting with "A." How many can he or she write in order?

15. Point to the Δ and say, "Draw this." How did he or she do?

16. Say to your child, "Please write these words" (make sure she can't see them while you are reading and give her time to write each one): **eye... book... hope... tree... add (as in "I will add the numbers").** How many were spelled correctly?

How your child is learning to take care of himself

1. Does your baby open his mouth when he sees a bottle, breast, or pacifier?

2. If you try to give more food than your baby wants, does he keep his lips closed or turn away?

3. Does your baby try to get to toys that are out of reach?

4. Can your baby crawl (not suck) from a cup?

5. Can your child take off his or her own shoes if you undo the laces or buckles?

6. When you are dressing your child, does he or she help by holding out an arm or lifting a foot?

7. When you are dressing your child, does he or she try to put an arm through a sleeve or a leg into pants?

8. Does your child try to help when it is time to put things away?

10. Can your child walk backwards two steps?

11. Can your child stand on each foot for a second?

12. How does your child walk down stairs?

13. Can your child walk three steps putting one foot in front of the other with her/his hand held?

How your child gets along with others: Social-Emotional Skills

1. When you smile at your baby does he or she smile back?

2. Does your baby smile or make speech sounds as a way to get your attention?

3. When you play gentle tickling games with your baby, does he or she enjoy this?

4. Does your baby like to play peek-a-boo?

5. Does your baby look for new things to play with and try to figure out how they work—like busy boxes or squeaking toys?

6. Does your child watch other children do things and then try to copy them?

7. When around other children, does your child try to do things with them, such as feeding or kissing them, or even pushing or taking toys?

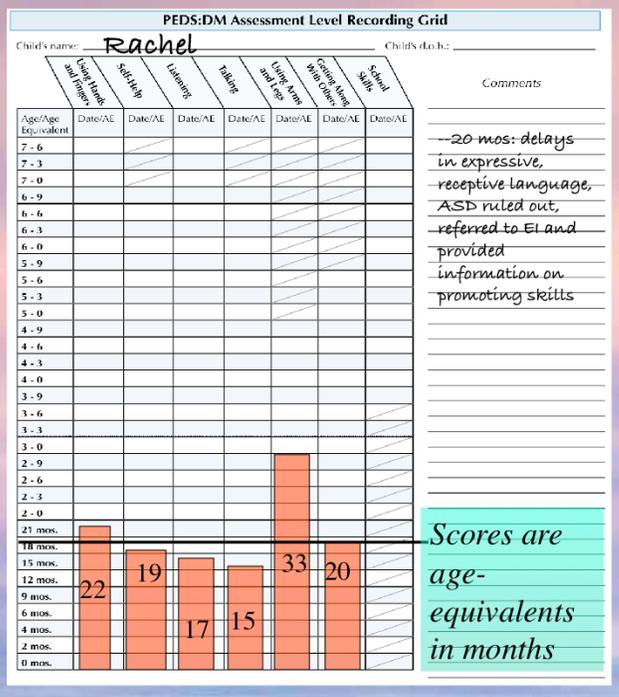
8. Does your child watch people's faces for clues to how they are feeling? Can he or she tell if someone is mad, sad, or happy?

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



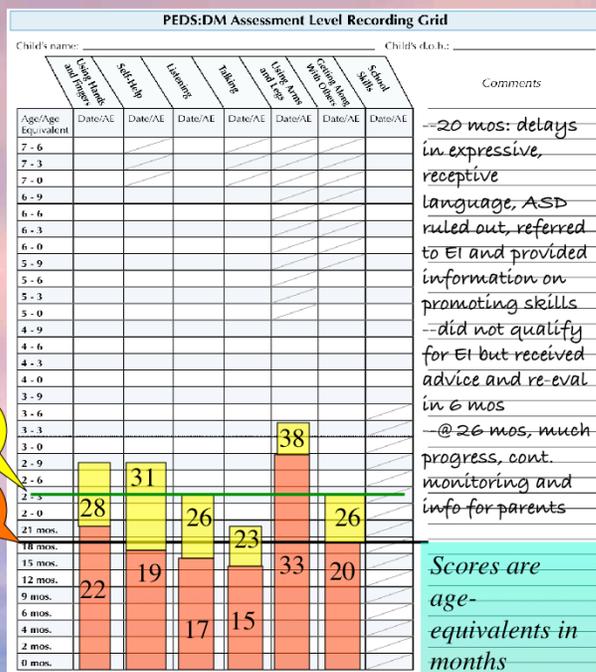
The PEDS:DM Assessment Level showed that Rachel had strengths in fine motor development, was quite advanced in gross motor development, had a marginal delay in listening, self-help, and socialization, and a more substantive delay in expressive language. Her 15 month level performance in expressive language 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.

