Progress Monitoring & Data-Based Individualization Within RTI

December 9, 2014

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Shift in Emphasis for This Session

• From broad overview of progress monitoring (PM) in mathematics to
• Major focus on Intensive (Tier 3) intervention

• Rationale: PM in mathematics is undergoing a good deal of change with adoption of Common Core and use of formative assessments
• In earlier webinars, many participants expressed mixed feeling about commonly used measures and a need for change
• Seemed best to address this issue after changes made

AND RESEARCH ON DATA BASED INSTRUCTION IN THE CONTEXT OF TIER 3 (INTENSIVE INTERVENTION IS NEW AND SEEMS TO ADDRESS A PRESSING NEED IN DISTRICTS ACROSS THE STATE
Today...

- Data-based individualization (DBI)
  - Intensive intervention
  - Role of progress monitoring
Molly: Poll Questions 1 and 2 here from last time.
Let’s Review

- **Strong evidence:**
  - Explicit and systematic instruction
  - Instruction on solving word problems using schemas

- **Moderate:**
  - Screening students to identify those at risk
  - Materials with visual representations
  - Fluency building activities
Practice Guide on Progress Monitoring:

• **Level of Evidence: Low**

  *Why?*

1. In effective interventions, no pm was done. Assessment typically done by daily mastery tests or weekly tests.
2. Psychometrics ok for measures but not as strong as for reading measures.
3. Many data points necessary (approx. 12) to ensure slope is reliable. A key concern in data based instruction.
4. Nonetheless, Panel felt that progress monitoring information useful for quickly gauging whether a students’ full instructional program (Tier1, 2 &/or 3) is helping. Especially for borderline students
5. Critical to ensure that progress monitoring measures are valid using data from current state assessments.
What is DBI?

• Within an RTI framework...
  • Students nonresponsive to Tier 2
  • Students nonresponsive to Tier 3

• DBI is designed to address *severe and persistent* learning difficulties.
  • Driven by data
  • Characterized by increased intensity
Poll

What is your current satisfaction with your current progress monitoring system?

   Very satisfied, satisfied, indifferent, not satisfied
Data-Based Individualization (DBI) is a systematic method for using data to determine when and how to provide more intensive intervention:

- Origins in data-based program modification/experimental teaching were first developed at the University of Minnesota (Deno & Mirkin, 1977) and expanded upon by others (Capizzi & Fuchs, 2005; Fuchs, Deno, & Mirkin, 1984; Fuchs, Fuchs, & Hamlett, 1989).
- DBI is a process, not a single intervention program or strategy.
- Not a one-time fix—ongoing process comprising intervention and assessment adjusted over time.
Who needs intensive intervention?

- Students with disabilities who are **not making adequate progress** in their current instructional program
- Students who present with very **low** **math performance**
- Students in a tiered intervention program who have **not responded** to secondary intervention programs delivered with fidelity (i.e., Tier 2 isn’t enough for the student)

Some students may move to Tier 3 quickly because of need.
DBI Steps

1. Progress monitoring
2. Diagnostic assessment (formal or informal) or use of formative assessment
3. Adaptation/ Adjustment
4. Continued progress monitoring, with adaptations occurring whenever needed to ensure adequate progress

DBI often includes Tier 2 intervention, although sometimes smaller groups (within a classroom) is possible. DBI can also be used one-on-one to help with grade level concepts.
Before we begin DBI...

- In most cases, start with a Tier 2 intervention program (if available)
- Progress monitor to evaluate the student’s response to the secondary intervention.
- Look carefully at data from daily mastery probes or other curriculum embedded assessments.
  - NOTE: It can take up to 12 data points to establish slope. With some students, you may want to move quicker to DBI
## Thinking About Intervention Levels/Tiers

<table>
<thead>
<tr>
<th></th>
<th>Primary (T1)</th>
<th>Secondary (T2)</th>
<th>Intensive (T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instruction/Intervention Approach</strong></td>
<td>Comprehensive research-based curriculum</td>
<td>Standardized, targeted small-group instruction</td>
<td>Individualized, based on student data</td>
</tr>
<tr>
<td><strong>Group Size</strong></td>
<td>Class-wide (with some small group instruction)</td>
<td>3–7 students</td>
<td>No more than 3 students</td>
</tr>
<tr>
<td><strong>Monitor Progress</strong></td>
<td>1x per term</td>
<td>At least 1x per month</td>
<td>Weekly</td>
</tr>
<tr>
<td><strong>Population Served</strong></td>
<td>All students</td>
<td>At-risk students</td>
<td>Significant and persistent learning needs</td>
</tr>
</tbody>
</table>
Key Questions About the Secondary Intervention

- Has the student been taught using secondary (Tier 2) intervention program (if available) that is appropriate for his or her needs?
- Has the program been implemented with fidelity?
  - Content
  - Dosage/schedule
  - Group size
- Has the program been implemented for a sufficient amount of time to determine response?
Why start with a standardized, intervention program?

- Teachers don’t need to “reinvent the wheel.”
- They are efficient—teachers can plan instruction for groups rather than individual students.
- Many require only a modest amount of training—often, paraeducators can help with delivery.
- Try to find an intervention with an evidence base.
- Cost considerations often a factor. Some are relatively inexpensive, some are linked to core curricula and thus may also be inexpensive to use.
NCII’s Intervention Tools Chart Provides Reviews of Secondary Intervention Programs

http://www.intensiveintervention.org/resources/tools-charts
Can I still implement DBI if I don’t have a complete menu of standardized programs?

- Yes!
- Use them *when available* and consider augmenting current offerings if there are content areas where you have insufficient resources.
- Also consider—
  - Remediation materials that came with your core program
  - Expert recommendations (if evidence-based programs are not available) from Institute of Education Sciences (IES) practice guides, reputable professional organizations, etc.
  - Standards-aligned materials
- Collect data to determine whether *most* students are profiting.
How to Intensify Intervention?

- Change Dosage or Time
- Change the Learning Environment to Promote Attention and Engagement
- Combine Cognitive Processing Strategies with Academic Learning
- Modify Delivery of Instruction

(Vaughn et al., 2013)
Practice #1: Change Dosage or Time
Practice #1: Change Dosage or Time

Methods for increasing quantity of instruction:

• Minutes per day or per session
• Sessions per week
• Total number of sessions
• Use of technology geared to intervention goals (e.g. facts programs, possibly mathematics games linked to goals, or instructional software)
Practice #2: Change the Learning Environment to Promote Attention and Engagement
Practice #2: Change the Learning Environment to Promote Attention and Engagement

- Reduce group size
- Group students with similar needs
- Change the instructional setting to reduce noise and other distractions and promote academic engagement.
Practice #3: Combine Cognitive Processing Strategies with Academic Learning
What are cognitive processes?

Cognitive processes comprise various mental activities that direct thinking and learning. Students with intensive needs have frequent issues with cognitive processes related to elements of executive function and self-regulation:

- Memory
- Attribution
- Attention
- Strategies to set and monitor learning goals
Practice #4: Modify Delivery of Instruction
Modifying Delivery of Instruction

1. Consider the instructional match & prioritize skills to teach
2. Systematic Instruction
3. Explicit Instruction
4. Precise, simple language
5. Frequent opportunities for student response
6. Specific feedback and error correction procedures
7. Opportunities for practice, development of fluency, and review
Poll

- What’s one way you currently intensify intervention?
  - Dosage
  - Time
  - Environment
  - Cognitive processes
  - Modify delivery
Progress Monitoring and DBI

- DBI requires progress monitoring
- Measures must be reliable and valid
Key Things to Look for:

1. Is content linked to Common Core or relevant foundational skills?
2. Is there any evidence of concurrent validity with current state assessments?

NOTE: This may not be available for another two years or so given all the shifts in standards/assessments.
easyCBM

- www.easycbm.com

- Numbers and Operations
- Geometry
- Measurement
- Numbers Operations and Algebra
- Geometry Measurement and Algebra
- Algebra
- Numbers Operations and Ratios
- Measurement Geometry and Algebra
AAIMS

- www.education.iastate.edu/c_i/aaims/

- Algebra Basic Skills
- Algebra Foundations
- Algebra Content Analysis
mCLASS

- www.mclasshome.com

- Counting
- Missing Number
- Next Number
- Number Facts
- Number Identification
- Quantity Discrimination
- Computation
- Concepts
Progress Monitoring and DBI

• Tools Chart for comparison purposes
Academic Illustration of DBI
Sample Academic Intervention Progression

- Secondary intervention delivered with fidelity
  - Non-Responders
    - Does student need a smaller group?
    - Secondary Intervention with...
      - Smaller group
      - 1:1 intervention
    - Make changes to intervention based on data, including, but not limited to... 
      - Addition of program components
      - Adjustment of language or vocabulary
      - Increased explicit instruction and error correction procedures
      - Addition of speeded practice
  - Does student need more time in intervention?
    - Secondary Intervention with...
      - Additional sessions
      - More sessions per week
      - More minutes per session
      and/or
    - Secondary Intervention with...
      - Strategies to promote attention/engagement
    - Make changes to intervention based on data, including, but not limited to... 
      - Addition of program components
      - Adjustment of language or vocabulary
      - Increased explicit instruction and error correction procedures
      - Addition of speeded practice
  - Does student have problem with attention/motivation?
    - Secondary Intervention with...
      - Strategies to promote attention/engagement
      - Make changes to intervention based on data, including, but not limited to... 
        - Addition of program components
        - Adjustment of language or vocabulary
        - Increased explicit instruction and error correction procedures
        - Addition of speeded practice

Secondary Intervention Program: Student Example - Jason

**Background**: Jason presented serious mathematics problems. His performance is at an early third-grade level at the beginning of fifth grade.

**Intervention program**: Jason’s teacher selected a research-validated program that addressed fraction concepts, word problems, and fluency with number combinations.
Secondary Intervention Program: Jason

Fidelity

- Group size: six students
- Session length: 20-40 minutes per session
- Frequency: 3-4 sessions per week
- Program duration: 7 weeks
- Instructional content and delivery: explicit instruction covering all components laid out in the instruction manual
- Progress monitoring: Numbers and Operations (easyCBM)
Progress Monitoring for Jason

- **easyCBM**
  - 3rd grade materials
  - Numbers and Operations

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**Math Numbers and Operations 3_1**

**Student Name:** ____________________________  
**Date:** ____________

1. How many parts in all?  
   - A. 3  
   - B. 7  
   - C. 9

2. How many parts in all?  
   - A. 2  
   - B. 1  
   - C. 4

3. Which value is least?  
   - A. 5  
   - B. 7  
   - C. 9

4. Sandy eats $\frac{5}{8}$ of a sandwich.  
   Josh eats $\frac{3}{4}$ of a sandwich.  
   Cathy eats $\frac{1}{2}$ of a sandwich.  
   Who eats the most?  
   - A. Cathy  
   - B. Sandy  
   - C. Josh
Progress Monitoring: Does Jason need DBI?

**Reliable and valid tool:** Jason’s teacher implemented formal progress monitoring using Computation assessments that were a match for his mathematics skills.

**Detect improvement:** This progress monitoring tool is appropriate to his skill level, allowing his teacher to detect changes in Jason’s mathematics.

**Rate of progress:** Based on Jason’s progress monitoring graph, he was not progressing at the rate needed to meet his goal.
Progress Monitoring: Jason

Baseline | Initial Instruction | Instructional Change

Problems Correct

0 2 4 6 8 10 12 14 16 18 20

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Progress Monitoring: Determining Jason’s Need for DBI

Secondary intervention delivered with fidelity

Non-Responders

Does student need a smaller group?

Secondary Intervention with...
- Smaller group
- 1:1 intervention

Does student need more time in intervention?

Secondary Intervention with...
- Additional sessions
- More sessions per week
- More minutes per session

Does student have problem with attention/motivation?

Secondary Intervention with...
- Strategies to promote attention/engagement

Qualitative Changes to Intervention based on assessment data, including, but not limited to...
- Change interventionist
- Adjust language/vocabulary use
- Explicit instruction and error correction
- Modified response format

Non-Responders
When appropriate, use data to make adjustments/adaptations to the secondary intervention program to meet the unique needs of the individual. In some cases, however, data may indicate that the student requires a different intervention program or approach.

Consider two types of intervention change:
- Quantitative changes to setting or format
- Qualitative changes to delivery
Try quantitative change(s) first…

- **Increase** intervention frequency, length of sessions, or duration.
- **Decrease** group size.
- **Decrease** heterogeneity of the intervention group.

**Note:** In many cases, quantitative changes may be necessary, but not sufficient, to facilitate progress for students with intensive needs.
Consider qualitative changes second...

**Qualitative** adaptations may be made to the intervention program that alter—

- Instruction based on learner characteristics (e.g., addressing working memory or attention problems)
- Skill level of interventionist
- Content delivery
- How students respond
- The amount of adult feedback and error correction students receive
- Frequency/specificity of checks for retention
- The materials, curriculum, or whole intervention (could be a complete change in program)
Intensify the Secondary Intervention: Begin With Quantitative Changes
Quantitative Intervention Adaptation: Jason

Jason’s teacher intensified his instruction by adding an additional 15 minutes of instruction per session. Despite this change in intervention length, Jason continued to make insufficient progress.
Progress Monitoring: Jason

![Graph showing progress monitoring for Jason with three phases: Baseline, Initial Instruction, and Instructional Change.](image-url)
Diagnostic Assessment: What changes are needed to support Jason?
Informal Diagnostic Assessment

- Progress monitoring assessments help teams determine *when* an instructional change is needed.
- Informal diagnostic assessments allow teams to use available data (e.g., progress monitoring data, informal skill inventories, work samples) to help determine the *nature* of the intervention change needed.
Informal Diagnostic Assessment

Potential data sources:

- Classroom-based assessments
- Error analysis of progress monitoring data
- Student work samples
- Standardized measures (if feasible)
Informal Diagnostic Assessment:

Jason

- To determine the nature of the instructional change needed, Jason’s teacher conducted an error analysis of Jason’s most recent Numbers and Operations data.
- She also administered a computation assessment to determine Jason’s strengths and weaknesses.
Intervention Adaptation: Use Diagnostic Information to Adapt the Intervention
Diagnostic assessment showed that Jason had difficulty with basic number combinations and computation. His teacher applied the following intensive intervention principles to intensify his instruction:

- Incorporated fluency practice, with specified mastery criteria
- Provided explicit instruction and error correction
- Frequently checked for retention with reteaching as needed
Jason’s Intervention Adaptation

Secondary intervention delivered with fidelity

Non-Responders

Does student need a smaller group?

Secondary Intervention with...
- Smaller group
- 1:1 intervention

Secondary Intervention with...
- Additional sessions
- More sessions per week
- More minutes per session

Secondary Intervention with...
- Strategies to promote attention/motivation

Does student need more time in intervention?

Does student have problem with attention/motivation?

Non-Responders

Make changes to intervention based on data, including, but not limited to...
- Addition of program components
- Adjustment of language or vocabulary
- Increased explicit instruction and error correction procedures
- Addition of speeded practice
Ongoing Progress Monitoring

- Is Jason responding to the adapted instruction?
- Is his response sufficient?
Progress Monitoring: Jason

Problems Correct

Baseline | Initial Instruction | Instructional Change

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Evaluation of Jason’s Progress

- Jason’s math is improving but not fast enough to achieve his goal. Another instructional change is needed.
- Jason’s teacher may collect additional diagnostic data if needed to make an informed instructional change.
- Jason’s teacher will continue to collect progress monitoring data and meet with the intervention team to evaluate progress and modify the plan as needed.
Wrap Up

- What is DBI?
- What are methods for intensifying intervention?
- What’s the role of progress monitoring?
  - How to learn information about progress monitoring measures used within intensive intervention?
Thank you!

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