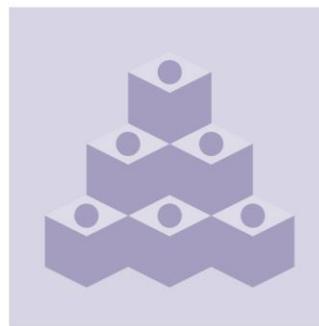


NCRTI Implementer Training Series

Module 3: Multi-level Prevention System



Revised October 26, 2011



National Center on Response to Intervention
<http://www.rti4success.org>



About the National Center on Response to Intervention

Through funding from the U.S. Department of Education's Office of Special Education Programs, American Institutes for Research and researchers from Vanderbilt University and the University of Kansas have established the National Center on Response to Intervention. The Center provides technical assistance to states and districts and builds the capacity of states to assist districts in implementing proven response to intervention frameworks.



National Center on Response to Intervention

<http://www.rti4success.org>

Contents

	Page
Introduction.....	1
What Is RTI?.....	2
Screening.....	3
Progress Monitoring.....	3
Multi-level Prevention System	3
Data-Based Decision Making	4
What Is a Multi-level Prevention System?	5
Levels, Tiers, and Interventions.....	6
Intervention Intensity	7
Selecting Evidence-Based Practices	9
What Is the Difference Between Evidence-Based Interventions and Research-Based Curricula	9
Identifying Needs and Priorities	9
Select Practices That Address Needs	10
Evaluate Evidence Claims	10
Implement Practices With Fidelity	12
Evaluate Effectiveness	12
Additional Resources	14
References.....	16
Appendixes	
Appendix A. NCRTI Instruction Glossary of Terms.....	17
Appendix B. Selecting Evidence-Based Resources.....	19
Appendix C. Case Studies.....	21
Appendix D. Developing an RTI Model.....	22

This manual is not designed as a replacement for high-quality, ongoing professional development. It should be used as a supplemental resource to PowerPoint slides and handouts for the Module 3: Multi-level Prevention System training. Please contact your state education agency for available training opportunities and technical assistance or contact the [National Center on Response to Intervention](#) for more information.

Introduction

The National Center on Response to Intervention (NCRTI) developed three training modules for implementers of response to intervention (RTI). These modules were intended to provide foundational knowledge about the essential components of RTI and build an understanding of the importance of RTI implementation. The modules were designed to be delivered in the following sequence: Screening, Progress Monitoring, and the Multi-level Prevention System.

This training is intended for teams in initial planning or implementation of a district-wide RTI framework as well as those districts transitioning from traditional prereferral models to a district model of prevention. These trainings provide district teams an overview of the essential components of RTI, opportunities to analyze school and district RTI data, activities to apply new knowledge, and team planning time.

Module 1: Screening

Participants will become familiar with the essential components of an RTI framework: screening, progress monitoring, the multi-level prevention system, and data-based decision making. Participants will gain the necessary skills to use screening data to identify students at risk, conduct basic data analysis using screening data, and establish an effective screening process.

Module 2: Progress Monitoring

Participants will apply previously learned skills to evaluate the general effectiveness of the RTI framework and establish progress monitoring and intervention schedules. Participants will gain the necessary skills to use progress monitoring data to evaluate and make decisions about instruction, establish data decision rules, and establish an effective progress monitoring system.

Module 3: Multi-Level Prevention System

Participants will review how screening and progress monitoring data can assist in decisions at all levels, including school, grade, class, and student. Participants will gain skills to select evidence-based practices, make decisions about movement between levels of prevention, and establish a multi-level prevention system.

The Implementer Series should be delivered by a trained, knowledgeable professional. This training series is designed to be a component of comprehensive professional development that includes supplemental coaching and ongoing support. This training module includes the following materials:

- PowerPoint slides
- Handouts
- Videos
- Training manual

What Is RTI?

NCRTI offers a definition of RTI that reflects what is currently known from research and evidence-based practice:

Response to intervention integrates assessment and intervention within a multi-level prevention system to maximize student achievement and to reduce behavioral problems. With RTI, schools use data to identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending on a student's responsiveness, and identify students with learning disabilities or other disabilities. (NCRTI, 2010).

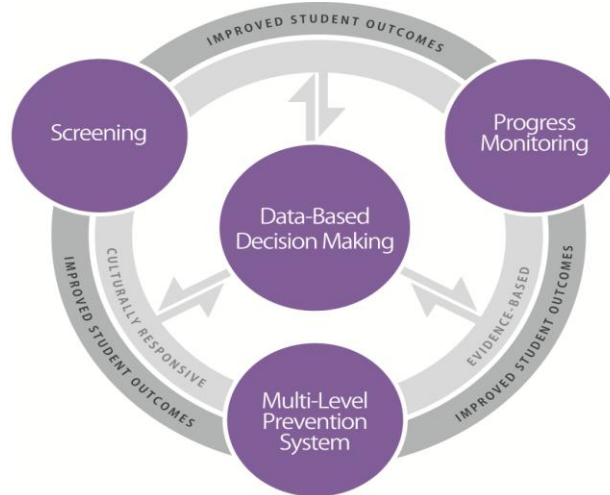
NCRTI believes that rigorous implementation of RTI includes a combination of high-quality and culturally and linguistically responsive instruction, assessment, and evidence-based intervention. Further, NCRTI believes that comprehensive RTI implementation will contribute to more meaningful identification of learning and behavioral problems, improve instructional quality, provide all students with the best opportunities to succeed in school, and assist with the identification of learning disabilities and other disabilities.

This manual and the associated training are based on NCRTI's four essential components of RTI:

- Schoolwide, multi-level instructional and behavioral system for preventing school failure
- Screening
- Progress monitoring
- Data-based decision making for instruction, movement within the multi-level system, and disability identification (in accordance with state law)

Exhibit 1 represents the relationship among the essential components of RTI. Data-based decision making is the essence of good RTI practice; it is essential for the other three components: screening, progress monitoring, and the multi-level prevention system. All components must be implemented using culturally responsive and evidence-based practices.

Exhibit 1. NCRTI Response to Intervention Framework



Screening

Struggling students are identified by implementing a two-stage screening process. The first stage, universal screening, is a brief assessment for all students conducted at the beginning of the school year; however, some schools and districts use universal screening two or three times the school year. For students whose score is below the cut score on the universal screen, a second stage of screening is then conducted to more accurately predict which students are truly at risk for poor learning outcomes. This second stage involves additional, more in-depth testing or short-term progress monitoring to confirm a student's at-risk status. Screening tools must be reliable, valid, and demonstrate diagnostic accuracy for predicting which students will develop learning or behavioral difficulties.

Progress Monitoring

Progress monitoring assesses student performance over time, quantifies student rates of improvement or responsiveness to instruction, evaluates instructional effectiveness, and, for students who are least responsive to effective instruction, formulates effective individualized programs. Progress monitoring tools must accurately represent students' academic development and must be useful for instructional planning and assessing student learning. In addition, in the tertiary level of prevention, educators use progress monitoring to compare a student's expected and actual rates of learning. If a student is not achieving at the expected rate of learning, the educator adjusts instructional components in an attempt to improve the rate of learning.

Multi-Level Prevention System

Classroom instructors are encouraged to use research-based curricula in all subjects. When a student is identified via screening as requiring additional intervention, evidence-based interventions of moderate intensity are provided. These interventions, which are in addition to the core primary instruction, typically involve small-group instruction to address specific identified problems. These evidence-based interventions are well defined in terms of duration, frequency, and the length of the sessions, and the intervention is conducted as it was in the

research studies. Students who respond adequately to secondary prevention return to the primary level of prevention (the core curriculum) with ongoing progress monitoring. Students who show minimal response to the secondary level of prevention move to the tertiary level of prevention, where more intensive and individualized supports are provided. All instructional and behavioral interventions should be selected with attention to their evidence of effectiveness and with sensitivity to culturally and linguistically diverse students.

Data-Based Decision Making

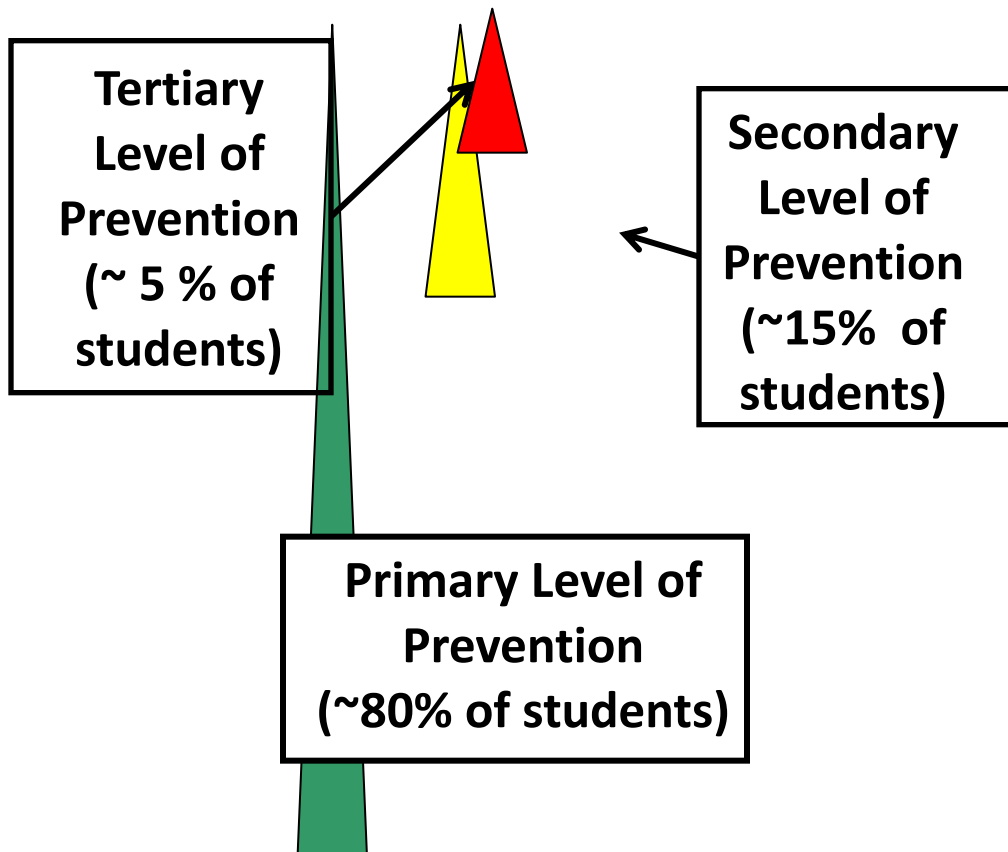
Screening and progress monitoring data can be aggregated and used to compare and contrast the adequacy of the core curriculum as well as the effectiveness of different instructional and behavioral strategies for various groups of students within a school. For example, if 60 percent of the students in a particular grade score below the cut score on a screening test at the beginning of the year, school personnel might consider the appropriateness of the core curriculum or whether differentiated learning activities need to be added to better meet the needs of the students in that grade.

What Is a Multi-level Prevention System?

RTI integrates assessment and intervention within a schoolwide, multi-level prevention system to maximize student achievement and reduce behavior problems. The multi-level prevention system supports increasing the intensity of instruction based on student need while improving the outcomes for all students. The multi-level prevention framework is composed of three levels of increasing intensity: primary, secondary, and tertiary.

Exhibit 2 illustrates the three levels of the prevention system. Each level includes a percentage of students that is expected to benefit from that level in an effective system. For example, in the primary level of prevention, indicated in green, at least 80 percent of the students are expected to benefit from the curriculum and the differentiated instruction provided to all students. Some students, about 10–15 percent, will require supplemental small-group instruction, or secondary instruction, to benefit from the core instruction and curriculum. Very few students, about 3–5 percent, will need tertiary instruction, or specialized, individualized instruction that is more intensive than secondary instruction.

Figure 2. Multi-level Prevention System



Primary Level of Prevention

The focus of the primary level of prevention is on all students. It includes the core curriculum and the differentiated instruction delivered within the general education classroom setting. The core curriculum is the course of study deemed critical and usually mandatory for all students of a school or district. Core curricula are often instituted at the elementary and secondary levels by local school boards, departments of education, or other administrative agencies charged with overseeing education. Such curricula should be research-based and incorporate differentiated instruction. Within the core curriculum, teaching and learning should be well articulated from one grade to another and within grade levels so that students have highly similar experiences, regardless of their assigned teacher.

In primary prevention, teachers use student assessment data and knowledge of student readiness, learning preferences, language, and culture to offer students in the same class different teaching and learning strategies to address their needs. Differentiation can involve mixed instructional groupings, team teaching, peer tutoring, learning centers, and accommodations to ensure that all students have access to the instructional program. Differentiated instruction is NOT the same as providing more intensive interventions to students with learning disabilities.

Universal screening, continuous progress monitoring, and outcome measures or summative assessments are commonly used to inform instructional decisions. Universal screening is used to determine the effectiveness of the core curriculum and identify students at risk for poor learning outcomes. Progress monitoring is used to confirm risk status and monitor the progress of students not receiving secondary or tertiary interventions. Outcomes measures or summative assessments are used for accountability.

Secondary Level of Prevention

The secondary level of prevention supplements and aligns with the core curriculum. Therefore, secondary prevention does not replace primary prevention. Students participating in secondary prevention participate in both the primary (the core curriculum and instruction) and secondary levels of prevention (the supplemental support). It typically involves small-group instruction that relies on evidence-based interventions that specify the instructional procedures, the duration, and the frequency of instruction. The secondary level of prevention has at least three distinguishing characteristics: (1) it is evidence based rather than research based (see text-box on page 3-9 for definitions); (2) it relies entirely on adult-led, small-group instruction rather than whole-class instruction; and (3) it involves a clearly articulated, validated intervention that should be adhered to with fidelity.

The focus of the secondary level of prevention is students identified through screening as being at risk for poor learning outcomes. Progress monitoring and diagnostic assessments are used within a secondary prevention system to match student needs to interventions. Schools or school districts may consider multiple tiers within the secondary level of prevention (e.g., tier IIa and tier IIb) if the performance levels or needs of students receiving secondary instruction vary greatly.

The secondary level of prevention is expected to benefit a large majority of students who do not respond to effective primary prevention. As evidenced by progress monitoring data, students who do not benefit from the interventions provided under the secondary level of prevention may need more intensive instruction, or tertiary interventions.

Tertiary Level of Prevention

The tertiary level of prevention includes intensive instruction individualized to meet each student's need. It focuses on a limited number of students (3–5 percent) who have not responded to the primary or secondary levels of prevention. Decisions regarding whether a student should participate in both primary and tertiary levels of prevention are made on a case-by-case basis. While students often participate in both primary prevention (core curriculum and instruction) and supplemental tertiary interventions, based on student need, in some cases tertiary prevention may replace primary prevention. Regardless, tertiary interventions must support access to the general education curriculum and standards in an appropriate manner for students.

At the tertiary level of prevention, well-trained staff often begin with a more intensive version of the intervention program used in the secondary level of prevention (e.g., longer sessions, smaller group size, and/or more frequent sessions). The interventions used are evidence-based standard protocols or are based on validated progress monitoring methods for inductively individualizing instruction. Diagnostic assessments may also be used to identify appropriate interventions based on student need.

Frequent progress monitoring (i.e., at least weekly) quantifies the effects of the intervention program by depicting the student's rate of improvement over time. Student learning trajectories, based on end-of-year goals, should be set for all tertiary-level students to determine the degree to which a student is making adequate progress and determine if changes in intervention intensity are necessary.

Intervention Intensity

For all three levels of prevention (primary, secondary, and tertiary), data should guide decisions about changing the level of support needed for students to be successful. Changing the intensity can include both increasing and decreasing the level and the intensity of the support given to a student. In cases where students are responding to interventions, teams may consider decreasing the intensity. In cases where students are not responding or making adequate progress, the team should consider increasing the intensity.

There are five main approaches to changing the intensity of an intervention:

1. **Change the intervention.** In cases where the current intervention is believed to be ineffective for a student, the team may consider selecting a different intervention. However, this may not always be necessary. If student data indicate a student is making some progress but not necessarily adequate progress, the data-based decision-making team may decide to change the intensity of support by manipulating one or more factors of the intervention.

2. **Change the duration of the intervention.** Another way to address the intensity is to increase or decrease the duration of the intervention, or how long the student receives the intervention each time.
3. **Change the frequency of the intervention.** The intensity may also be changed by increasing or decreasing the number of times (the frequency) a student participates in the intervention. For example, the delivery of the intervention may increase from three to five times a week or increase the number of times per day.
4. **Change who provides the intervention.** In some cases, the intensity may be modified by changing the interventionist. For example, some schools use paraeducators to deliver supplemental interventions. The intensity of the intervention may be changed by using a content specialist, such as a reading coach, to deliver the intervention. Ideally, the neediest students should receive intervention from the most skilled staff.
5. **Change the group size or configuration participating in the intervention.** Another way to modify the intensity is to increase or decrease the number of students participating in the intervention. For example, the team may consider reducing the group size from five to two to provide students more direct instruction and opportunities to respond.

Selecting Evidence-Based Practices

An essential element of a multi-level prevention system is the selection of appropriate instructional tools. Selecting evidence-based practices involves a multistep process that demands the consideration of needs and priorities and the identification of practices that match those needs and priorities. A critical—and sometimes overlooked—step in this process is a review of existing evidence to ensure that identified practices meet established criteria for being evidence based. After evidence-based practices are selected, the process shifts to implementing those practices with fidelity and evaluating the effectiveness of the practices in improving student outcomes. To select appropriate evidence-based practices, NCRTI recommends the following steps:

- Identify needs and priorities.
- Select practices to address needs.
- Evaluate evidence claims.
- Implement practices with fidelity.
- Evaluate effectiveness.

“What is the difference between evidence-based interventions and research-based curricula?”

We refer to an *evidence-based intervention* in this document as an intervention for which data from scientific, rigorous research designs have demonstrated (or empirically validated) the efficacy of the intervention. That is, within the context of a group or single-subject experiment or a quasi-experimental study, the intervention is shown to improve the results for students who receive the intervention. *Research-based curricula*, on the other hand, may incorporate design features that have been researched generally; however, the curriculum or program as a whole has not been studied using a rigorous research design, as defined by the Elementary and Secondary Education Act.” (NCRTI, 2010)

Identify Needs and Priorities

In selecting evidence-based practices, it is important to have a sense of the needs and the priorities of a school or a district. The first step in determining needs and priorities is gathering a team of key stakeholders in a school or district. The composition of the team may vary, but it is recommended that the team include a diverse group of stakeholders. At least one member should be familiar with data interpretation and evaluating research claims. The team should consider gathering information about needs and priorities from multiple sources, including teachers, parents, administrators, students, and community members. The team should also look at baseline data, including academic data, behavior data, and school climate data to gather a sense of the current context of a school or district and identify any gaps or challenges. It is important to consider the skills and outcomes of interest, the grade level of concern, and the target groups (e.g., English language learners [ELLs], special education students, Title I students, or at-risk students) before selecting evidence-based practices.

The team should consider its priorities carefully before and during the selection process. For example, the team should identify what factors it considers most important, such as setup and ongoing costs, the evidence base of the program, the time needed to implement, effect sizes, or the level of expertise and training needed to implement.

Select Practices That Address Needs

The next step in the process is to identify practices that match the needs and the priorities. Teams have a variety of places where they can search for evidence-based practices, including curriculum websites, peer-reviewed journals, and comprehensive reviews. Navigating this information can be challenging. Several resources, which are listed in Appendix B, were created to help teams more easily identify evidence-based practices. NCRTI published the Instructional Intervention Tools Chart to assist educators and families in becoming informed users who can select instructional programs that best match their individual needs. NCRTI defines instruction as additional or alternative intervention programs to the core curriculum conducted in small groups or individually with evidence of efficacy for improving academic outcomes for students whose performance is unsatisfactory in the core program. Therefore, the chart provides relevant information for selecting secondary interventions. It also provides information on study quality, the effects shown within studies, implementation requirements, and data that support the program. More information on the Instructional Intervention Tools Chart is available at www.rti4success.org.

Evaluate Evidence Claims

Just because a program meets the resource needs of a school or a district does not mean that it is the most appropriate program. It is important to evaluate whether evidence exists for the program's effectiveness. The following should be considered when reviewing evidence: (1) where the evidence comes from, (2) the type of evidence available, (3) the quality of evidence, (4) the outcomes measured, (5) the effects shown, and (6) the population studied.

Where Is the Evidence From?

The evidence for programs can be found on curriculum websites and in various peer-reviewed journals. If these resources are used, it is important for the team to have established review criteria prior to evaluating the evidence. Caution should be taken when evaluating evidence provided by a publisher. Some questions to consider are as follows: Was the study conducted by an independent researcher? Are the results from a rigorous research study? Is the study population similar to the population of interest? What were the outcomes and skills targeted? To assist educators, several resources publish independent reviews of instructional practices using rigorous review criteria.

Type of Evidence

Evidence not only takes different forms (e.g., a research study, a summary of existing research, a technical report, and peer or publisher claims) but also includes various types of research studies (e.g., randomized control trials, single-case design, quasi-experimental design, and quantitative research synthesis). Though not always feasible, randomized control trials are considered to be the most rigorous form of research. Eligible subjects are randomly assigned into groups to

receive or not receive one or more interventions that are being compared. Carefully designed studies with quasi-experimental designs, which do not randomly assign students, attempt to best approximate the effects of randomization that is found in randomized control trials through a number of different methods to minimize selectivity bias. Both types of studies work to ensure that the effects shown for the intervention are not based on extraneous variables or initial differences between the control group and the experimental group but rather are a result of the intervention. Single-case designs are research studies where the researcher attempts to demonstrate an experimental treatment effect using single participants. Quantitative research synthesis uses statistical techniques to combine multiple quantitative research studies. An example is a meta-analysis.

Quality of Evidence

In addition to looking at where the evidence came from and the type of evidence provided, it is important to look at the quality of the information provided and whether it is feasible to implement the program under normal conditions. Some questions to consider in looking at the information provided are as follows:

- Who implemented the intervention?
- Was the intervention described?
- Was there a manual or a script?
- How often did the intervention occur?
- Was fidelity evaluated in the study? If so, how?
- What phase is the research? (exploratory, pilot, efficacy, or scale-up)

It is also important to consider how feasible it would be to replicate what was done in a classroom in a school or district. The following should be considered when thinking about the feasibility of the intervention:

- How complex is the intervention?
- How much staff training will be necessary to implement it?
- How often should the intervention be delivered?
- What was the student-teacher ratio?
- How much does it cost (materials, training, and staff time)?

Outcomes Measured

It is also important to think about what outcomes were measured in the study and whether the outcomes assessed are relevant to your outcomes of interest. In addition, it is important to know what measures were used to evaluate the intervention outcomes and if these measures are reasonable, relevant, reliable, and valid. Additionally, it is imperative to think about the feasibility of implementing the intervention. The measures might include both proximal measures, which assess aspects of competence that the program was directly targeted to improve,

and distal measures, which assess aspects of competence that are related to the skills targeted by the program but not directly taught in the program.

Effects Shown

After considering the rigor of the study, the next step is to evaluate the results. Effect sizes are useful in identifying and comparing programs with greater potential for student gains. The effect size is a standardized measure of the magnitude of the relationship between two variables, or, more specifically in this case, the magnitude of the relationship between the performance of students participating in a particular intervention and an outcome of interest. The larger the effect size, the greater the impact participating in the intervention had on the outcome. Generally, research literature identifies effect sizes of 0.80 or greater as “large” effects, 0.50 as “moderate” effects, and 0.20 to 0.30 as “small” effects (Cohen, 1988).

Population Studied

It is important to review the sample population in the study to determine whether the intervention has been evaluated for students similar to the demographics of the population of interest. For example, teams may be interested in interventions with positive effects for targeted groups of students, such as students with low socioeconomic status, ELLs, or students in special education.

Implement Practices with Fidelity

Selecting practices with a documented evidence base is insufficient to ensure positive results. To achieve similar results to those in published studies, programs should be implemented under similar conditions, or with fidelity. Fidelity of implementation refers to the delivery of instruction in the way in which it was intended to be delivered. Different methods can be used to ensure fidelity, such as self-report data (e.g., questionnaires, surveys, and interviews), observations, and reviews of lessons and logs.

For more information about monitoring fidelity, view Dr. Daryl Mellard’s recorded [webinar](#) focused on fidelity. He provides resources for conducting fidelity checks and creating fidelity of implementation plans.

Evaluate Effectiveness

There is no guarantee that a program or practice will be effective for every population, regardless of the existing evidence. Schools and districts must conduct ongoing analysis to determine the effectiveness of program implementation for both groups of students and individual students. If data indicate that most students respond to the intervention, then teams can be more confident that the implementation of the intervention is effective. Once the effectiveness of the intervention for most students is determined (i.e., data indicate that the intervention is effective), it is easier to use progress monitoring data to identify students who are not responding as result of learning differences, not an ineffective intervention.

Additional Resources

[National Center on Response to Intervention](#)

NCRTI is an Office of Special Education Programs (OSEP) funded Technical Assistance Center. NCRTI's mission is to provide technical assistance to states and school districts and build the capacity of states to assist school districts in implementing proven models for RTI/Early Intervention Services (EIS). NCRTI provides online resources to assist states, school districts, and individual schools in implementing RTI.

[What Works Clearinghouse](#)

An initiative of the U.S. Department of Education's Institute of Education Sciences (IES), the What Works Clearinghouse (WWC) produces user-friendly [Practice Guides](#) for educators that address instructional challenges with research-based recommendations for schools and classrooms.

[Doing What Works](#)

Doing What Works (DWW) is a website sponsored by the U.S. Department of Education. DWW provides an online library of resources that may help teachers, schools, districts, states, and technical assistance providers implement research-based instructional practice. Much of the DWW content is based on information from WWC. Its modules provide summaries of research-based practices, explanations of key concepts, expert interviews, school-based interviews, sample materials, tools, templates, and ideas for moving forward.

[Center on Instruction](#)

The Center on Instruction (COI) creates resources to improve instruction in reading, mathematics, science, special education, and English language learning. COI also provides the [RTI CTRL](#) (Classification Tool and Resource Locator). In addition to guiding states to relevant resources, this online tool will gauge a state's level of RTI implementation in four areas, based on responses to a short series of questions.

[National High School Center](#)

The National High School Center provides information and resources about many high school improvement topics, including dropout prevention transitions, early warning systems, and high school literacy. It has a variety of products that might be useful when implementing RTI in high schools, for example, a suite of products on early warning systems that includes an implementation guide and tool and a brief on tiered interventions in high school.

[RTI Action Network](#)

The RTI Action Network provides resources to guide educators and families in the large-scale implementation of RTI. It provides a variety of resources for RTI, including “virtual visits” to schools implementing RTI, expert interviews, online discussions, forms, checklists, and research

briefs. The RTI Action Network is a program of the National Center for Learning Disabilities and is funded by the Cisco Foundation.

IRIS Center

The IRIS Center (IDEA and Research for Inclusive Settings Center) is an OSEP funded center for training enhancements. It has free online interactive resources that translate research about the education of students with disabilities into practice. They provide modules, case studies, activities, and more. Their modules and videos can be used for professional development.

Center on Positive Behavioral Interventions and Supports (PBIS)

The Center on Positive Behavioral Interventions and Supports is an OSEP (Office of Special Education Programs) Technical Assistance Center that provides resources on implementing positive behavior and supports.

References

- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Gersten, R., Beckmann, S., Clarke, B., Foegen, A., March, L., Star, J. R., et al. (2009, April). *Assisting Students Struggling With Mathematics: Response to Intervention (RTI) for Elementary and Middle Schools* (NCEE 2009-4060). Washington, DC: Department of Education, Institute of Education Sciences. Retrieved September 12, 2011, from http://ies.ed.gov/ncee/wwc/pdf/practiceguides/rti_math_pg_042109.pdf
- Gersten, R., Compton, D., Connor, C. M., Dimino, J., Santoro, L., Linan-Thompson, S., et al. (2009, February). *Assisting Students Struggling With Reading: Response to Intervention and Multi-Tier Intervention in the Primary Grades* (NCEE 2009-4045). Washington, DC: Department of Education, Institute of Education Sciences. Retrieved September 12, 2011, from http://ies.ed.gov/ncee/wwc/pdf/practiceguides/rti_reading_pg_021809.pdf
- National Center on Response to Intervention. (2010, March). *Essential components of RTI – A closer look at response to intervention*. Washington, DC: U.S. Department of Education, Office of Special Education Programs, National Center on Response to Intervention.

Appendix A

NCRTI Instruction Glossary of Terms

Adjusted posttests

Adjusted posttests are posttest means that have been adjusted to correct for any pretest differences between the program and control groups.

“Business-as-usual” control group

A “business-as-usual” control group is one in which students receive whatever intervention or instruction they would normally receive if a research study were not taking place.

Control group

The control group consists of students who do not receive the intervention that is being tested in an experimental study; the control group serves as the comparison of interest.

Differential attrition

Attrition occurs when students who have been recruited to participate in a study leave the study at any point; differential attrition occurs when the level of attrition from the treatment group differs from the level of attrition from the control group.

Disaggregated outcome data

Disaggregated outcome data are outcome data that have been calculated and reported separately for specific sub-populations (e.g., students with disabilities, English language learners, students of different race-ethnicities)

Distal outcome measure

Distal measures assess aspects of competence that are related to the skills targeted by the program but not directly taught in the program. For example, if a program taught word-level reading skill, a distal measure would be answering questions about passages the student reads. If a program taught calculation skill, a distal measure would be solving word problems that require the same kinds of calculation skill taught in the program.

Effect size

The effect size is a measure of the magnitude of the relationship between two variables. For example, the effect size might represent the magnitude of the relationship between participating in a particular intervention and an academic outcome of interest. The larger the effect size, the greater the impact that participating in the intervention had on the outcome.

Evidence-based intervention

An intervention for which data from scientific, rigorous research designs have demonstrated (or empirically validated) the efficacy of the intervention. That is, within the context of a group or single-subject experiment or a quasi-experimental study, the intervention is shown to improve the results for students who receive the intervention.

Fidelity of implementation

Fidelity of implementation refers to the delivery of instruction in the way in which it was intended to be delivered.

Posttest

Posttest refers to data collected *after* implementation of an intervention has been completed.

Pretest

Pretest refers to data collected *prior* to the implementation of the intervention.

Proximal outcome measure

Proximal measures assess aspects of competence the program was directly targeted to improve. Typically, this does not mean the very items taught but rather novel items structured similarly to the content addressed in the program. For example, if a program taught word attack, a proximal measure would be decoding of pseudowords. If a program taught comprehension of cause-effect passages, a proximal measure would be answering questions about cause-effect passages structured similarly to those used during intervention, but not including the very passages used for intervention.

Quasi-experiment

A quasi-experiment is a type of research in which random assignment does not occur, but attempts to best approximate the effects of randomization through any number of methods to minimize selectivity bias.

Random Assignment

Random assignment refers to the process of assigning subjects randomly to a treatment group and a control group when conducting an experimental study. Each subject has an equal probability of being placed in either group.

Reliability

Reliability is the consistency with which an outcome measures an underlying construct, from one administration to the next. A measure is considered reliable if it produces the same results when administered under different conditions, at different times, or using different forms of the instrument.

Research-based curricula

Research-based curricula may incorporate design features that have been researched generally; however, the curriculum or program as a whole has not been studied using a rigorous research design, as defined by the Elementary and Secondary Education Act.

Tiered intervention

Tiered intervention systems offer interventions of increasing levels of intensity to target varying levels of student need.

Primary prevention

High quality core instruction that meets the needs of most students.

Secondary prevention

Evidence-based intervention(s) of moderate intensity that addresses the learning or behavioral challenges of most at-risk students.

Tertiary prevention

Individualized intervention(s) of increased intensity for students who show minimal response to secondary prevention.

Treatment group (or program group, intervention group)

The treatment group consists of students who receive the intervention that is being studied.

Unadjusted posttests

Unadjusted posttests are posttest means that have not been adjusted to correct for any pretest differences between the program and control groups.

Appendix B

Selecting Evidence-Based Resources

[NCRTI Instructional Intervention Tools Chart](#)

NCRTI published the Instructional Intervention Tools Chart to assist educators and families in becoming informed users who can select instructional programs that best meet their individual needs. It provides reviews of secondary (tier II) instructional programs in reading, writing, and mathematics.

[What Works Clearinghouse](#)

An initiative of the Department of Education’s IES, WWC assesses the rigor of research evidence on the effectiveness of [interventions](#) (programs, products, practices, and policies), giving educators the tools to make informed decisions. It provides reviews of programs for adolescent literacy, beginning reading, dropout prevention, early childhood, mathematics (elementary, middle, and high school), students with disabilities, ELLs, and character education.

[Best Evidence Encyclopedia](#)

The Best Evidence Encyclopedia (BEE) presents reliable, unbiased reviews of research-proven educational programs. It provides reviews of interventions in reading (all levels, ELL, technology, struggling readers), mathematics (elementary, middle, and high school), early childhood, and comprehensive school reform.

[IES Practice Guides: RTI for Mathematics and Reading](#)

All IES Practice Guides judge their recommendations as having either a low, moderate, or strong degree of evidence supporting a causal relationship between the recommendations and the desired outcome. The degrees of evidence are listed following each recommendation.

[Assisting Students Struggling With Mathematics](#)

Assisting Students Struggling With Mathematics: Response to Intervention (RTI) for Elementary and Middle Schools (Gersten, Beckmann, et al., 2009). This IES Practice Guide evaluates the effectiveness of eight recommendations for supporting students in learning mathematics within the RTI framework. Because tier 1 mathematics interventions vary depending on the math topic and the student grade level, all but one of the recommendations address tier 2 and tier 3 interventions. Each recommendation includes a brief summary of supporting evidence, instructions on implementation, and a list of possible roadblocks and solutions.

[Assisting Students Struggling with Reading](#)

Assisting Students Struggling With Reading: Response to Intervention and Multi-Tier Intervention in the Primary Grades (Gersten, Compton, et al. February 2009). Each of the five recommendations in this Practice Guide, which are designated for use at a particular tier of RTI

implementation, includes a brief summary of supporting evidence, instructions on implementation, and a list of possible roadblocks and solutions.

[IRIS Center Learning Strategies Modules](#)

The IRIS Center for Training Enhancements has free online interactive resources that translate research about the education of students with disabilities into practice. They provide modules, case studies, activities, and more. There are nine modules related to learning strategies that can be used for professional development.

[Florida Center for Reading Research](#)

The Florida Center for Reading Research was established with the mission of conducting basic research on reading, reading growth, reading assessment, and reading instruction that will contribute to the scientific knowledge of reading and benefit students in Florida and throughout the nation, disseminating information about research-based practices related to literacy instruction and assessment for children in preschool through Grade 12, conducting applied research that will have an immediate impact on policy and practices related to literacy instruction in Florida, and providing technical assistance to Florida's schools and the state department of education for improving literacy outcomes in students from prekindergarten to Grade 12.

[Doing What Works](#)

DWW is a website sponsored by the Department of Education that provides an online library of resources that may help teachers, schools, districts, states, and technical assistance providers implement research-based instructional practice. Much of its content is based on information from WWC. Its modules provide summaries of research-based practices, explanations of key concepts, expert interviews, school-based interviews, sample materials, tools, templates, and ideas for moving forward.

Appendix C

Handout: Developing an RTI Model

This tool is designed to help district and school teams clarify the dimensions of their RTI model. The level of detail included in the tool is for the team to determine. District teams may want to be more general to allow for variations in models implemented at individual school sites. For example, a district may indicate that progress monitoring tools used in secondary and tertiary interventions are valid and reliable for the population without naming specific tools, whereas the individual school may consider identifying the actual tool. School teams may want to include more specific dimensions of each level of prevention to ensure integrity of the implementation schoolwide, whereas the district may include key components to ensure integrity across schools. In the left column, the traits of a multi-level prevention system are in **bold**. Each trait includes several questions to consider; however, feel free to add additional information. Teams may choose to add additional information in the blank section at the end of the handout.

	Primary	Secondary	Tertiary
<p>Tier(s)</p> <ul style="list-style-type: none"> • How many tiers are in each prevention level? • How are they labeled (e.g., tier I, primary, core)? 			
<p>Focus</p> <ul style="list-style-type: none"> • Who are the target students? • Are there cut scores or targets for identification? 			

	Primary	Secondary	Tertiary
<p>Instruction</p> <ul style="list-style-type: none"> • What are the dimensions of the instruction? • Is there a standard protocol? • What is the level of evidence? • What is the content? • What is the frequency? • What is the duration? 			
<p>Setting</p> <ul style="list-style-type: none"> • What is the setting (e.g., general education or special education)? • What types of grouping are being used? • What is the schedule? 			

	Primary	Secondary	Tertiary
<p>Assessment</p> <ul style="list-style-type: none"> • What type of assessment is it— diagnostic, progress monitoring, screening, or outcome? • What are the assessment tools? • How frequently is the assessment to be administered? • Who administers the assessment? 			
<p>Data-Based Decision Making</p> <ul style="list-style-type: none"> • What are the goals? • What is the composition of the team? • What is frequency of data reviews? • What are the criteria for response or nonresponse? • What is the movement between tiers? <p>Is there a special</p>			

	Primary	Secondary	Tertiary
education referral?			
Alignment <ul style="list-style-type: none"> • What is the alignment with other activities and policies? Are there any special groups (e.g., ELL and special education students)?			

Appendix D

Examples 1 and 2

Read the following examples and use the What Works Clearinghouse, Best Evidence Encyclopedia, or the NCRTI Instructional Intervention Tools Chart to select appropriate evidence-based practices.

Example 1: Bell Top Elementary School

Ms. Jones, a third-grade math teacher, has noticed that Jack, Bobby, and Jane seem to be struggling with word problems despite the strong research-based core curriculum. In looking at their scores on the screening measure, Ms. Jones noticed that they are all below the cut score. After monitoring their progress over a number of weeks she continued to see no progress. Can you identify an intervention that might help Jack, Bobby, and Jane improve? Why did you select that intervention?

Example 2: Lake Ridge Middle School

Mr. Morris has identified that Jessica does not have a strong grasp on the basic skills of reading and is therefore struggling in his class. After looking at her screening data and monitoring her progress, he has decided to implement an intervention to help her with basic reading skills. Is there an intervention available that Mr. Morris might use to help Jessica? What questions might he ask in selecting an appropriate intervention?

National Center on Response to Intervention

1000 Thomas Jefferson Street, NW

Washington, DC 20007

Phone: 877-784-4255

Fax: 202-403-6844

Web: <http://www.rti4success.org>

