8 Effective Assessment and Intervention for Children with ADHD in Rural Elementary School Settings

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Attention-deficit/hyperactivity disorder (ADHD) is the most commonly diagnosed neurobehavioral disorder of childhood, with reports indicating that almost one in ten children between the ages of 4 and 17 have been diagnosed with ADHD at some point in their childhood (Visser et al., 2014). Thus, it is likely that every classroom will include one to two children with the disorder. Although ADHD is associated with impairment in a number of domains, impairment in the school setting is often a primary reason for referral to services. Students with ADHD often exhibit behaviors that are counterproductive to academic success, including hyperactive and impulsive behaviors that often lead to difficulty following classroom rules and procedures, and inattention that often leads to difficulties organizing materials, acquiring academic content, and completing work accurately (Abikoff et al., 2002; Atkins, Pelham, & Licht, 1985). In addition, children with ADHD experience interpersonal conflict with peers (Hoza, 2007) and teachers (Greene, Beszterczey, Katzenstein, Park, & Goring, 2002) and have higher rates of grade retention, placement in special education, school dropout, and suspensions and expulsions relative to same-aged peers (Barkley, Fischer, Edelbrock, & Smallish, 1990; Loe & Feldman, 2007). Children with ADHD also commonly present with comorbid learning disorders that contribute to academic difficulties, beyond those that might be expected from ADHD alone (Kessler, Chiu, Demler, & Walters, 2005). Taken together, the symptoms and impairment exhibited by children with ADHD create a significant need for services in the school context and high-quality assessment and intervention to curtail potential negative outcomes.

The symptoms and impairment associated with ADHD are significant for affected students, families, and schools in all geographic and sociodemographic contexts; however, in this chapter, we focus on those issues that arise when assessing and treating ADHD in a rural school context. One way in which school services for children with ADHD may be improved is by examining the fit between evidence-based assessment and intervention strategies and specific contextual settings (e.g., Lyon et al., 2014). Because setting characteristics have the potential to contribute to differences in the effectiveness of assessment and intervention strategies, study of these characteristics and adaptation of assessment and intervention strategies is warranted. Although there is considerable heterogeneity across rural communities with regard to demographic, economic, and cultural characteristics, we focus on the challenges that are common

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among many rural areas and that may affect the application of evidence-based services for children with ADHD.[1] Such challenges include high rates of poverty, stigma associated with mental health services, limited access to services, and a limited number of providers in rural communities (see Smalley et al., 2010 for a review).

Challenges associated with rural settings, coupled with the aforementioned issues associated with ADHD in the school setting, may place students with ADHD in rural school districts at increased risk for negative outcomes. Therefore, providing high-quality assessment and intervention for students with ADHD in rural elementary school contexts is critical for maximizing the students' potential for positive outcomes and educational attainment. In this chapter, we describe evidence-based assessment and intervention strategies for ADHD and offer recommendations for surmounting challenges to their application in rural settings. To create a context for this discussion, we first briefly describe the rural context, as well as two school-based service provision frameworks in which evidence-based assessment and intervention strategies for ADHD may be applied.

Rural Context

School mental health professionals (SMHPs; i.e., school counselors, school social workers, school psychologists) working in a rural setting encounter a unique set of circumstances and considerations (see Owens, Watabe, & Michael, 2013). First, national survey data indicate that 22.9% of children in rural areas live in poverty, compared to 17% of children living in urban areas (US DHHS, 2005). For children, living in a low socioeconomic status (SES) family is associated with higher risk for a range of negative outcomes, including developmental delays, academic and cognitive difficulties, and medical and mental health problems (Evans, 2004). Thus, children with ADHD living in low SES families may face multiple challenges in addition to those associated with ADHD that place them at increased risk for negative outcomes. These additional risk factors add complexity to the assessment and treatment process for SMHPs. Further, lower SES has been associated with lower rates of family participation in treatment (Cunningham et al., 2000) and treatment program completion (Fernandez & Eyberg, 2009), as well as poorer treatment response (Rieppi et al., 2002). Second, several studies document that stigma related to mental health issues may contribute to lower rates of family engagement in services (Owens, Richerson, Murphy, Jagelewski, & Rossi, 2007; Pullmann, VanHooser, Hoffman, & Heflinger, 2010). Families in rural areas may also feel as if help should be sought within the extended family, rather than from an "outsider," or someone unknown to the family. Third, rural living creates challenges with regard to accessing mental health services. The large geographic areas and low population densities coupled with a lack of public transportation that are characteristic of rural settings can complicate receipt of care. Fourth, compared to urban areas, rural areas also have lower rates of community and school-based mental health professionals per capita (Slade, 2003), with 57–76% of rural counties designated as mental health-care shortage areas (Merwin, Hinton, Dembling, & Stern, 2003). Thus, there may be few SMHPs in rural school districts; consequently their responsibilities may be stretched across multiple school buildings and students. The high workload may limit the SMHP's ability to provide services to students in need; to consult with teachers, caregivers, or community-based providers; and to pursue professional development opportunities. As a result, children in rural communities may have fewer options for general and specialized mental health care and for school-based mental health care compared to urban children. The above contextual issues and considerations interact to affect how assessment and treatment for ADHD are conducted in rural school settings. In the next section, we review two school-based service delivery frameworks in which evidence-based services for ADHD may be applied.

[1] In addition to reviewing literature, the recommendations and experiences included herein are written from the point of view of authors located in the Appalachian region (Southeastern Ohio) of the United States.

School-Based Service Delivery Frameworks

In addition to considering issues specific to the rural context, it is important to consider how service delivery frameworks used by school professionals guide the provision of academic and behavioral support services for students. For example, a system that identifies students in need of additional services via teacher referral may need different supports (e.g., training for teachers to identify mental health issues of childhood) than a system that utilizes standardized universal screening procedures (e.g., scoring programs and training in interpreting screening data output). As such, before discussing the application of evidence-based assessment and intervention strategies for students with ADHD in the rural school setting, we highlight two frameworks in which such strategies could be applied: response-to-intervention (RtI; Brown-Chidsey & Steege, 2010) and the life course model (Evans, Owens, Mautone, DuPaul, & Power, 2014).

Increasingly, schools are adopting a multi-tiered RtI approach to guide service provision decisions (Brown-Chidsey & Steege, 2010). To date, there is limited evidence regarding the implementation of RtI with students with ADHD; however, preliminary implementation frameworks are emerging (e.g., Vujnovic, Holdaway, Owens, & Fabiano, 2014). An RtI framework is designed to (a) utilize practices to identify students based on risk, as opposed to deficit, resulting in the early identification of students who are at risk to struggle; (b) provide high-quality supplemental instruction or behavioral support to mitigate risks as soon as difficulties are noted; and (c) use data-driven progress monitoring tools to determine a child's response to intervention and need for additional intervention. Further, an RtI framework can be applied to both academic instruction and behavioral supports (see Table 8.1). An RtI approach for students with ADHD should include the use of a universal screening tool that assesses risk for ADHD (Tier 1) and serves as a pre-intervention baseline, as well as the application of evidence-based universal classroom management strategies (see Epstein, Atkins, Culinan, Kutash, & Weaver, 2008 for review). After students have been identified as at

Table 8.1 Response-to-intervention (RtI) approach for academic and behavioral programming

	RtI component	RtI for academics	RtI for behavior
Tier I	Assessment: universal screening	Brief fluency-based measures administered directly to the student	Behavioral rating scales/direct classroom observations/office discipline referrals/ attendance rates/tardiness
	Universal programming	Research supported core curriculum	Evidence-based classroom management practices and school-wide behavioral supports
Tier II	Assessment: progress monitoring	Monthly or bimonthly brief fluency-based measures administered directly to the student	Direct observations/daily progress reports (e.g., daily report cards [DRC], daily progress reports [DPR]), monthly review teams
	Targeted intervention	Supplemental instruction delivered to a small group of students in the general education classroom	Modifications or extensions of existing behavioral support strategies that can be implemented in the general education classroom
Tier III	Assessment: intensive progress monitoring	Weekly administration of brief fluency-based measures administered directly to the student	Direct observations/daily progress reports (e.g., daily report cards [DRC], daily progress reports [DPR]), monthly review teams
	Individualized intervention	Individualized academic interventions and/or more restrictive learning placements	Individualized behavior support plans and/or more restrictive placements based on functional behavioral assessment data

Note: This table is reproduced from Vujnovic et al. (2014) with kind permission from Springer Science and Business Media

risk, data collection on their response to universal classroom management strategies should guide decisions about the provision of more individualized (Tier 2) or special education (Tier 3) services. In a rural setting, where there may be increased stigma associated with the need for services, utilizing a data-based decision-making framework that reduces subjectivity may be an attractive option. In our own experience, we have found that sharing concrete data about concerning child behavior (e.g., "Walt was out of his seat seven times per day over the last week; the screening tool shows that Walt demonstrates symptoms of ADHD significantly more frequently than other children his age") rather than more subjective reports (e.g., "Walt's teachers report that he is disruptive to the classroom") results in better caregiver and teacher receptivity to considering additional services for the child.

The life course model of care (Evans, Owens, et al., 2014) is a framework that prioritizes the mental health services that are most likely to enhance the development of the skills needed to become an independently functioning adult. Service decisions are guided by a systematic, sequenced approach that prioritizes interventions with the greatest impact on long-term (rather than short-term) outcomes. This framework can be used in combination with a three-tiered RtI framework (see Evans, Rybak, Strickland, & Owens, 2014 for discussion). The life course model is comprised of four layers that are meant to be considered in a sequenced and additive fashion, as well as nine principles of service delivery (Evans, Rybak, et al., 2014). Layer 1 involves assessing the environments in which the child lives (home) and learns (classroom) and providing services as needed to maximize the likelihood that those environments will meet the child's basic needs (e.g., nutrition, sleep hygiene, physical and emotional safety) and promote healthy development. For example, food insecurity may be a problem for a family living in poverty. Lack of food and proper nutrition can affect a child's ability to concentrate at school and make appropriate developmental gains. Thus, strategies in Layer 1 could involve connecting the family with a local food pantry or helping the child's family enroll in programs that provide supplemental food over the weekend.

In Layer 2, the child's primary impairments are identified, psychosocial interventions are implemented, and response to intervention(s) is evaluated. During this process, Layer 1 services should be continued if indicated. Layer 2 interventions could include home-based or school-based services, may involve one or multiple service providers, and could vary in intensity depending on the severity of the behavior. The child's response to the implemented intervention is an important aspect of Layer 2 because services may be adapted or changed within Layer 2 if no response is observed to a given intervention. The rationale behind prioritizing psychosocial interventions before pursuing pharmacological intervention (i.e., Layer 3) is to maximize the provision of services that emphasize *building skills* in the student with ADHD before implementing alternative services (i.e., medication or reducing academic or behavioral expectations via school modifications). Further, there is evidence that parent engagement in psychosocial services is higher when psychosocial interventions are used before pharmacological intervention, relative to when pharmacological intervention is used before psychosocial intervention (Pelham et al., 2008). Layer 3 involves the use of pharmacological intervention in combination with Layer 1 or 2 services. For some children, combined behavioral and pharmacological intervention maximizes success (Swanson et al., 2001), and for other children, this combination produces the same outcomes as medication alone, but enables the child to achieve success in the environment at a lower dose of medication (Carlson, Pelham, Milich, & Dixon, 1992; Fabiano et al., 2007; Pelham et al., 2014). Further, medication may ameliorate some symptoms that are not addressed by psychosocial interventions (MTA Cooperative Group, 1999). For a SMHP in a rural school district, Layer 3 may involve providing education about medication to caregivers, connecting them with a physician with expertise in treated ADHD, and collaborating with the physician and family to maximize compliance and assess response to combined interventions.

Lastly, Layer 4 involves providing accommodations to help the child complete or participate in academic activities with same-aged peers (see Harrison, Bunford, Evans, & Owens, 2013, for review of the state of the science on accommodations). Strategies applied in Layer 4 could include reading tests aloud to the child or reducing the amount of work required. The life course model is designed to prioritize skill development (e.g., practicing effective note-taking) rather than simply reducing expectations (e.g., providing notes to the child). However, some children may need expectations altered (i.e., Layer 4) while they are developing skills through the application of the interventions provided in Layers 1 and 2 or may require accommodations following an inadequate response to Layers 1, 2, and 3. Now that readers understand the context of rural communities and two service delivery frameworks, we discuss evidence-based assessment and intervention strategies for ADHD and their application in these contexts.

Evidence-Based Assessment

Currently there are no identified biomarkers (e.g., genetic markers, brain structure abnormalities, blood-based proteins) that can be used to validly and reliably diagnose ADHD. As such, evidence-based assessment of ADHD involves clinical decision making based on evidence gathered via an interview with the caregivers, completion of standardized rating scales by adults in multiple settings (e.g., home and school), and examination of permanent products (e.g., report cards, discipline reports, developmental records; Pelham, Fabiano, & Massetti, 2005). In many cases a child's clinical diagnosis may be made by a professional external to the school district; however, there are a number of assessment activities that fall under the purview of school professionals that are equally critical to effective identification and intervention of ADHD (Ogg et al., 2013). These assessment activities include proactive screening for mental health problems, providing school-based information to the community mental health provider who is conducting the diagnostic evaluation, and monitoring the child's response to intervention over time.

Screening

Early identification of students likely to exhibit inattentive and disruptive behavior and academic risk factors (e.g., low work productivity, failing grades, or poor performance on standardized testing) offers the potential for early intervention to enhance the likelihood of positive outcomes (Walker et al., 2009; Webster-Stratton, Rinaldi, & Reid, 2010). Teachers are valuable informants of student symptoms and behavior. However, individual teachers have different thresholds for behaviors that warrant a referral for services, and a sizable minority of teachers may not refer children for services because they feel that it is not part of their role, or feel uncomfortable or unqualified to do so (Reinke et al., 2011). In contrast, using universally administered teacher screening procedures ensure that all children are reviewed, reducing the likelihood that children in need go undetected or unreferred (Eklund & Dowdy, 2013). This is particularly important for children whose presentation is primarily inattentive (rather than hyperactive or impulsive), as identification via teacher referral may occur later or not at all, given the limited disruptions and stress that this type of child may create in the classroom.

Given the stigma associated with mental health issues in rural communities, school professionals are encouraged to insert screening tools into natural transition points that already include assessment opportunities (e.g., school readiness assessments at kindergarten entry; Owens et al., 2014). Screening at critical school transitions may address many of the aforementioned challenges in rural communities. Further, screening of social and behavioral functioning, in addition to the traditional screening for academic readiness (literacy skills) and health (vision and hearing), provides school professionals with a profile of functioning across multiple domains for each child, a better understanding of the needs across the entire student body, and the opportunity to

allocate limited resources accordingly based on problem severity. Lastly, screening at natural school transition points may reduce stigma associated with the assessment process and offers SMHPs the opportunity to educate caregivers about their child's strengths and weaknesses and the importance of multiple domains of functioning in achieving school success. There is preliminary evidence that such communication may facilitate caregiver engagement in service seeking in rural communities (Girio-Herrera & Owens, 2011).

For many rural school districts, the cost of many screening systems may be prohibitive. However, a number of free screening instruments that include scales directly related to ADHD symptoms and/or impairment are available, including the Disruptive Behavior Disorders rating scale (Pelham, Gnagy, Greenslade, & Milich, 1992), the Strengths and Difficulties Questionnaire (Goodman, 1997), and the Impairment Rating Scale (Fabiano et al., 2006), all of which have emerging evidence for their use as a screening tool upon kindergarten entry in a rural school district (Girio-Herrera, Dvorsky, & Owens, 2014; Owens et al., 2014).[2] Once a student has been identified via a universal screener, school teams should consider the need for a more comprehensive evaluation and application of early intervention strategies, such as service decisions and strategies in Layers 1 and 2 of the life course model and in Tier 2 of the RtI framework.

Diagnostic Assessment

The SMHP may conduct a diagnostic evaluation for ADHD or may refer the family to an external provider for such an assessment. Either way, evidence-based assessment for ADHD includes gathering information from the student's caregivers, primary teachers, and school records (Pelham et al., 2005). Gathering data from multiple informants and in multiple contexts is critical, as caregiver and teacher reports of the presence and severity of symptoms and impairment often differ based on context-specific behavior and impairment (Achenbach, McConaughy, & Howell, 1987).

Gathering data from school-based informants may be particularly important in rural areas as caregivers may be less informed about their child's school-based behavior and functioning than urban or suburban caregivers. Namely, in studies examining how families interact with schools in rural settings as compared to urban settings, caregivers in rural communities demonstrate lower rates of communicating with their child's teachers, attending caregiver-teacher conferences, and talking with their child about school programming, as well as higher rates of dissatisfaction with their school-based interactions (McBride, Bae, & Wright, 2002; National Center for Education Statistics, 2007; Prater, Bermudez, & Owens, 1997). Therefore, compared with their urban and suburban counterparts, caregivers in rural regions may be less likely to provide information as to the presence and severity of symptoms and impairment in the school context.

The Individuals with Disabilities Education Improvement Act (IDEIA, 2004) specifically notes that a clinical diagnosis is not necessary (nor is it sufficient) to qualify a child for school-based services. Therefore, even if a child has received a diagnosis of ADHD, school professionals will need to conduct an assessment of the child's patterns of strengths and areas of impairment. This type of assessment process is conducted to identify the behaviors that are causing the most disruption in the child's learning and to match these issues to intervention goals and plans. Often, a target behavior interview can be conducted with teachers and school staff familiar with the student to identify *specific* behaviors most impairing to the student's school functioning.[3] This often involves taking broad or vague referral concerns (e.g., "He's out of control, he's so disruptive to the classroom") and distilling

[2]Links to download the Disruptive Behavior Disorders Rating Scale, Strengths and Difficulties Questionnaire and the Impairment Rating Scale are available at http://www.oucirs.org/resources/educator&mhprofessional.

[3]A target behavior interview template is available at http://www.oucirs.org/resources/dailyreportcard.

them into observable, measurable behaviors (e.g., incomplete work, out-of-seat behavior, and impulsive blurting out during instruction). Particularly for students with ADHD, a helpful tool can be found in the recently developed Integrated Screening and Intervention System (ISIS) Teacher Rating Form (ITRF; Volpe & Fabiano, 2013) which includes both a teacher report form with examples of the most common behaviors exhibited by students with ADHD that warrant intervention and an interview guide to help prioritize which of the exhibited behaviors to target in intervention. This type of assessment process, coupled with classroom observations and functional behavior analysis (Gresham, Watson, & Skinner, 2001), is an efficient and effective way to assess student needs in the absence of a clinical diagnostician.

Within both the RtI and life course frameworks, progress monitoring is a core component necessary to make data-based decisions about service provision. In rural communities, where community-based diagnostic evaluations may be less accessible, short-cycle assessments to monitor progress and intervention response may provide necessary information about changes in functioning. For example, our group has utilized a daily report card to monitor targeted problem behaviors (see details in the "Intervention" section below) to guide decisions about when to change intervention intensity, utilize alternative interventions, or refer for medication consultation (Owens, Murphy, Richerson, Girio, & Himawan, 2008).

Local Partnerships for Assessment

Another potential solution to the dearth of available resources within a rural school system is to partner with local agencies to have them conduct services *within* the school context. Advocates of expanded school mental health models (see Weist, Lever, Bradshaw, & Owens, 2014) propose that by leveraging partnerships among schools, community agencies, and families, school professionals can maximize the availability of services across the continuum of care (i.e., mental health promotion, prevention efforts, screening, assessment, early and intensive intervention). In rural communities, this may involve colocating community mental health professionals in the school setting or obtaining professional development training for school-employed SMHPs in assessment and intervention for children with ADHD. Several free workshops and low-cost professional development trainings can be found at the website for the Society for Clinical Child and Adolescent Psychology (i.e., Division 53 within the American Psychological Association).[4] Similarly, school districts may garner additional resources by partnering with nearby universities that could offer psychological assessment and consultation services in the context of their training missions (e.g., services provided by graduate students). Models of this type of partnership in rural communities are emerging (Albright et al., 2013; Owens et al., 2008; Watabe, Stewart, & Owens, 2013) and showing promise that evidence-based services can be integrated into schools and students and school staff can benefit from such partnerships.

Evidence-Based Intervention

The current state of the ADHD treatment literature indicates that there are evidence-based psychosocial (Evans, Owens, & Bunford, 2014) and pharmacological (Conners, 2002; Waxmonsky, 2005) interventions for ADHD. Below, we discuss these interventions and offer suggestions for maximizing their success in rural settings.

Psychosocial Interventions

Behavioral classroom interventions. There are several universal strategies that have substantial empirical support for preventing and managing inattentive and disruptive behavior in the classroom (Eiraldi, Mautone, & Power, 2012; Epstein et al., 2008). These strategies include praise and

[4]Resources can be found at http://effectivechildtherapy.fiu.edu/professionals.

differential attention to reinforce appropriate behavior and decrease inappropriate behavior; brief, specific instructions that are evaluated for compliance; classroom rules that are clearly posted, phrased in positive language, and evaluated consistently; repetition and teaching of classroom rules and routines; consequences for violations of classroom rules; transitional warnings prior to shifts in activities; and elimination of antecedents and consequences that unintentionally maintain negative behavior. In the life course model (Layer 1) or RtI (Tier 1) frameworks, a SMHP could consult collaboratively with teachers to facilitate implementation of these strategies. Such consultation is important because a poorly managed classroom can exacerbate ADHD symptoms and associated impairments, and because these strategies represent the foundation upon which other strategies (e.g., interventions in Tier 2 or Layer 2) are built.

When universal behavioral supports are insufficient to manage the behavior of children with ADHD, more individualized interventions are indicated. Evidence-based interventions that can be applied in Tier 2 or Layer 2 include the daily report card (DRC; Volpe & Fabiano, 2013; Owens et al., 2012), token economies (e.g., Coles et al., 2005), and response-cost programs (e.g., Carlson, Mann, & Alexander, 2000). The DRC contains target behaviors and goals that are specific to the areas in which the child most needs improvement (e.g., reducing interruptions, increasing work completion, reducing aggression), provides incentives and rewards to promote behavior change, and uses a shaping procedure to move the child's behavior into the typical range. The DRC also provides a mechanism for daily home-school communication.

Although evidence-based interventions are available, use of these interventions by teachers remains limited (Martinussen, Tannock, & Chaban, 2011). Thus, school personnel, including administrators and SMHPs, must dedicate time to promoting these interventions and supporting teachers' use of them throughout the year. For example, SMHPs can facilitate teachers' use of a DRC by recommending the strategy at student support team meetings, by providing teachers with resources and templates for this intervention (Volpe & Fabiano, 2013; www.oucirs.org/resources/dailyreportcard), and by offering ongoing consultation to problem solve challenges as they arrive (Watabe et al., 2013).

Given the limited number of SMHPs in a rural school district, administrators could also leverage the expertise and social influence of key opinion leader (KOL) teachers. KOLs are peer-nominated teachers who have social influence in their school and can help support the use of evidence-based interventions for ADHD through the use of their social network. Atkins et al. (2008) found that teachers reported greater adoption and implementation of intervention strategies when working jointly with a KOL and mental health consultant than when working with a mental health consultant alone. Further, teachers report being more likely to adopt DRC procedures when provided with KOL supports, as opposed to standard consultation or in-service opportunities (Holdaway & Owens, 2015). Thus, school administrators could have teachers identify the KOLs who have strengths and expertise in classroom management and invest resources in advanced trainings for these KOLs. The KOLs can work with SMHPs (or colocated community mental health staff) to introduce the interventions to teachers and to obtain buy-in for their use. Then, either the KOL or the SMHP could provide ongoing support to help the teacher maintain the use of the strategy or problem solve when challenges arise.

While KOLs can increase teachers' use of an intervention, caregivers' concern about stigma related to receipt of an individualized intervention could affect whether they support the use of the DRC, or other interventions, for their child and participate in the intervention. SMHPs can help counter stigma by providing psycho-education to the caregivers and child about the etiology of ADHD (particularly the biological nature of the disorder), providing data-based information about the child's response to the universal classroom management strategies, promoting the intervention in a manner that is analogous to supports received for other less stigmatizing problems (e.g., glasses for vision correction, inhaler

for asthma), and explaining how the intervention can help the child build skills needed for both short- and long-term success.

Behavioral parenting programs. Another evidence-based psychosocial intervention for ADHD that can be provided by SMHPs is behavior modification training for caregivers (Evans Owens, & Bunford, 2014). This intervention can be conducted in an individual or a group format, and involves teaching caregivers strategies to improve discipline and interactions with their children and helping them implement these strategies in the home. The strategies include use of house rules, specific praise, effective instruction, differential attention, in addition to the use of privilege systems and prudent consequences.

For some caregivers, group-based parenting workshops facilitated by SMHPs at the child's school can help reduce barriers to obtaining mental health services in rural communities. For example, caregivers may feel less stigma attending a meeting at their child's school than at a mental health clinic, and many caregivers derive social support by participating with other families who are experiencing similar challenges. Further, groups conducted by SMHPs can be provided at no charge to the families, reducing financial barriers to participation. Similarly, groups held at school or a central community location (e.g., recreation center or church) may reduce transportation barriers and enhance access to services, as families may live closer to their child's school or church than to the nearest health or mental health clinic. Lastly, one qualitative study (Owens et al., 2007) suggests that having a caregiver colead the group with the SMHP may further reduce stigma and feelings of distrust for some families in rural communities.

However, group-based services are not preferred by all caregivers (Cunningham et al., 2008), as some caregivers feel uncomfortable sharing information in a group and may feel more stigmatized and fearful in a group format as compared to an individualized format (Koerting et al., 2013). Thus, SMHPs need be flexible in their approach to meet the needs of different families. We recommend offering both group and individual formats, sharing the advantages and disadvantages of each with families. We also recommend considering practical means for reducing barriers, such as offering sessions at various times in the day, providing childcare and food while caregivers attend sessions, and inviting extended family members based on the caregiver's preferences.

In sum, school-based interventions for ADHD present a prime opportunity to enhance access to high-quality, individualized services. School-based interventions also offer the opportunity for SMHPs to connect with children's caregivers to provide behavioral modification training, to which they may not have otherwise had access.

Pharmacological Intervention

Pharmacological intervention is another effective intervention for ADHD. Medications approved by the Federal Drug Administration for the treatment of ADHD include amphetamine stimulants (common trade names: Adderall, Dexedrine, Vyvanse), methylphenidate stimulants (common trade names: Ritalin, Focalin, Concerta), and non-stimulants (common trade names: Strattera, Intuniv). In the life course model, medication is considered within Layer 3. For some families, medication may be preferable to psychosocial intervention because administration of medication requires less time than administration of psychosocial interventions. Additionally, they may find it less stigmatizing than attending a parenting group because medication use can be kept private and connotes a medical response to a biological disorder, rather than a family-based response to a behavior problem. Further, some parents anticipate that medication will help their child improve in academics (DosReis et al., 2009), even though the evidence regarding the impact of medication on academics is mixed and, at best, may provide only small academic gain (Scheffler et al., 2009) with little effect in the long term (Langberg et al., 2011). However, for other families, medication is less desirable than behavioral intervention (Krain, Kendall, & Power, 2005; Waschbusch et al., 2011), for reasons including concerns about side effects,

changes to the child's personality, and potential for future substance abuse (DosReis et al., 2009). Finally, parents and school mental health professionals may consider a combined or sequenced treatment, though stakeholders should consider emerging evidence regarding whether the order of presentation has a significant impact on outcomes (Pelham et al., 2008). Thus, the child's health-care providers and caregivers should consider whether medication, in isolation or in combination with psychosocial interventions, is well matched to the child's needs and the caregiver's preferences.

Although SMHPs typically cannot prescribe medication, they can assist families as they navigate decisions about this intervention and can help to maximize its success. First, SMHPs can provide accurate, up-to-date information about medication. Recommendations about medications for ADHD can be found on the American Academy of Child and Adolescent Psychiatry's website.[5] Second, if a family opts for short-acting medication, the SMHP can work with the school nurse or other staff to organize midday medication dosing. Third, with caregiver consent, SMHPs can be conduits for providing school-based data (e.g., teacher rating scales, daily report card data, office referrals) that could inform the physicians' decision about optimal dose and timing of medication administration. Fourth, in our own communities, SMHPs have accompanied caregivers to medication-management appointments to facilitate communication with the physician and to offer accurate information about the child's presentation at school. Lastly, telehealth (health care through technology) which is on the rise may be particularly useful in rural settings (Duncan, Velasquez, & Nelson, 2013). Using telepsychiatry at schools presents one way to address transportation and access barriers to interventions. Thus, although SMHPs may not be able to prescribe medications for ADHD, there are many ways that they can support medication adherence and assist with access to and coordination of pharmacological care.

[5]American Academy of Child and Adolescent Psychiatry recommendations can be found at http://www.aacap.org/App_Themes/AACAP/docs/practice_parameters/jaacap_adhd_2007.pdf; also see http://ccf.fiu.edu/resources/printable-information/ as a helpful resource for caregivers.

Accommodations and Modifications

If a child's response to psychosocial and pharmacological interventions is inadequate and significant impairment remains, SMHPs can consider working with the child's teacher to provide the child accommodations and modifications. The terms accommodations and modifications are often used interchangeably, but Harrison et al. (2013) define the differences between the terms, with *accommodations* representing changes to procedures that hold a child to grade-level standards but provide a differential boost to reach this standard (e.g., read tests aloud), and *modifications* representing changes to procedures that alter or lower expectations for the child (e.g., reduce difficulty of work). Accommodations are commonly used in individual education plans (IEPs) for children in special education (i.e., Tier 3), and are commonly used for children with ADHD (Spiel, Evans, & Langberg, 2014). However, the authors of the life course model recommend that these strategies be used as a last resort (or in combination with strategies in Layers 1–3) for two reasons. First, neither accommodations nor modifications facilitate the development of age-appropriate competencies or skills; instead, they reduce expectations. While they may remove the problem in the short term, they sacrifice the long-term goal of student self-sufficiency and independent functioning. Second, Harrison et al.'s (2013) review notes that despite available lists of recommended accommodations, there is not empirical support for the effectiveness of any of these strategies for children with ADHD. Thus, until the science behind accommodations is as strong as the science supporting the previously described interventions, we encourage SMHPs to recommend the use of strategies associated with Layers 1, 2, and 3 before promoting accommodations and modifications.

Summary and Future Directions

Assessment and intervention of ADHD within the rural school setting are challenging for reasons specific to both the nature of the disorder and characteristics of the rural setting (e.g., high rates of poverty, a limited number of service providers). Though these challenges can be daunting, there are ways in which they can be mitigated, such as by using free, universal screening measures to assist with identification of children in need, obtaining low-cost professional development training, and allocating resources strategically (e.g., time and location of services, delivery format) to reduce stigma and maximize caregiver participation. We encourage administrators, SMHPs, and educators to systematically attempt to maximize the utilization of evidence-based assessment and intervention approaches most likely to benefit the long-term development of students with ADHD. The research and recommendations included herein can be utilized within an RtI or life course model framework, within general or special education, and can help to guide educators and SMHPs to maximize benefits for students with ADHD, their families, and school professionals in the rural school setting.

For researchers, we recommend continued examination of the effects of specific characteristics within the rural education system on intervention outcome. In particular, we recommend that researchers carefully gather information on potential moderators (associated with the rural context) of intervention response to better identify which characteristics may have an impact on assessment and intervention outcomes and may, therefore, be fruitful areas for targeted adaptation. Though we are unaware of large-scale studies that accomplish this goal for the rural environment, one such review can be found for urban environments. Namely, Farahmand, Grant, Polo, Duffy, and Dubois (2011) examined intervention effectiveness in studies of urban school-based intervention and compared the effects to those in previous reviews for *all* school environments (Rones & Hoagwood, 2000). The authors found that the proportion of school interventions that were deemed effective was smaller in urban environments than that found across all environments (e.g., Rones & Hoagwood, 2000). Further, of those that were effective, the effect sizes were typically smaller. The authors speculated that these discrepancies were driven by particularly ineffective interventions for substance and conduct issues in the urban environment as compared to findings across environments. Unfortunately, mediators and moderators (associated with the environment) could not be calculated due to the design of the study including only low income and urban areas and then compared, non-statistically, to previously reported studies. The results highlight the fact that the positive outcomes found in other reviews (e.g., Rones & Hoagwood, 2000) may not be applicable in low-income urban schools. A similar exploration in a rural context may lead to a better understanding of how contextual factors affect intervention outcomes in rural schools and provide guideposts that inform adaptations to intervention that would ideally increase intervention effectiveness for the intended population. Lastly, utilization of research designs that allow for direct comparison of urban and rural school districts should be a priority for researchers interested in learning more about the specific characteristics of rural environments that impact the effectiveness of assessment and intervention for students with ADHD. Though rural issues such as stigma and a low number of service providers can negatively affect receipt of mental health services, there are ways that SMHPs can work to overcome these barriers.

In this chapter, we have reviewed evidence-based assessment and intervention strategies for children with ADHD in elementary schools, and described how such strategies can be applied within the rural setting. We have extracted ideas and recommendations from the limited literature that is available and from our own experiences to provide strategies for reducing barriers to assessment and intervention for ADHD in rural children. By knowing the challenges and barriers present in their particular setting and the recommendations offered in this chapter, SMHPs can consider how best to integrate the information to suit the needs of their school district, students, and students' families.

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