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DOCUMENTING LINES OF COMMUNICATION BETWEEN SCHOOL
PERSONNEL AND PHYSICIANS FOR MEDICATION EVALUATION
PURPOSES FOR STUDENTS WITH ADHD

by

Pamela M. Radford

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DOCUMENTING LINES OF COMMUNICATION BETWEEN SCHOOL PERSONNEL AND PHYSICIANS FOR MEDICATION EVALUATION PURPOSES FOR STUDENTS WITH ADHD

Pamela M. Radford, Ph.D.

Western Michigan University, 2002

The purpose of this study was to document current and desired lines of

communication between school personnel and physicians for the purpose of making

medication decisions for students with ADHD. School-physician communication

practices were assessed utilizing a national survey of primary care physicians who are

members of the American Medical Association (AMA) and school psychologists who

are members of the National Association of School Psychologists (NASP). Specific

information exchange practices that were assessed included: (a) on what student

characteristics is information collected (e.g., academic performance, disruptive

behavior, social interactions), (b) how school-based information is collected (e.g.,

direct observations, rating scales), (c) the format in which information is summarized

and presented (e.g., graphs, numerical summaries), (d) the mode of communication

(e.g., phone call, email, fax), (e) the person who communicates information (e.g.,

school psychologist, teacher), and (f) the frequency of communication (e.g., 2-3 times

per month). Current information exchange practices were documented for three

major decision-making periods during medication evaluations:(a) before medication

is initiated, (b) when medication is evaluated, and, (c) when on-going treatment is

monitored. Findings indicated that schools and physicians lack frequent and direct

contact during medication evaluations. Results of this study extend previous research

by pinpointing specific information exchange practices (i.e., mode of communication,

who communicates school-based information, and the frequency of communication)

that may be impeding direct school-physician contact. This information is needed if

we hope to bridge the gap between research and school-based practices in medication

assessment. Implications for practice and future research are discussed.

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CHAPTER I

INTRODUCTION

Overview

Attention Deficit/Hyperactivity Disorder (ADHD; American Psychiatric Association, 1994) is one of the most commonly diagnosed childhood psychiatric disorders (Barkley, 1998; Reid, Maag,Vasa, & Wright, 1994), with estimates of 3-5% of the school-aged population meeting diagnostic criteria (Barkley, 1998). In other words, 1.4 to 2.3 million students across the nation are diagnosed with ADHD (U. S. Census Bureau, 1998) and the number appears to be steadily increasing (Rappley, Mullan, Alvarez, Eneli, Wang & Gardiner, 1999; Safer & Krager, 1988; Safer, Zito, & Fine, 1996). Typically, children are identified with ADHD between six and nine years of age, resulting in a large percentage of elementary-aged students with ADHD (Safer et al., 1996). Moreover, in a general education classroom, approximately 1 student out of 20 will be diagnosed with ADHD or exhibit ADHD related behaviors (DuPaul & Stoner, 1994).

Children and adolescents with ADHD exhibit behaviors that are characterized by inattention, impulsivity, and hyperactivity. According to the Diagnostic and Statistical Manual for Mental Disorders 4th Edition (DSM-IV; American Psychiatric Association, 1994), ADHD is categorized into three subtypes (i.e., Predominantly Inattentive, Predominantly Hyperactive-Impulsive, and Combined Type). Males with ADHD tend to be identified under Hyperactive-Impulsive and/or Combined subtypes of ADHD. In contrast, females are more likely to be diagnosed under the

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Predominantly Inattentive subtype (Safer et al., 1996; Szatmari, Offord, & Boyle, 1989). However, recently, more females are being referred for exhibiting hyperactive and/or impulsive behaviors and, thus, are receiving subtype classifications of Hyperactive-Impulsive or Combined Type. In general, the manifestation of this disorder tends to be more prominent in males than females with a 5:1 ratio in community-based samples (Safer et al., 1996). The higher prevalence rate for males may be due, in part, to the fact that they are more likely to be referred for other disruptive behaviors (e.g., aggression, noncompliance) (Barkley, 1998; DuPaul & Stoner, 1994). In addition, students with ADHD are at-risk for the development of antisocial behavior, and, subsequently, may meet diagnostic criteria for Oppositional Defiant Disorder (ODD) and/or Conduct Disorder (CD) under the DSM-IV (American Psychiatric Association, 1994).

When core behaviors associated with ADHD (i.e., inattention, impulsivity, hyperactivity) persist at unforeseen rates or intensities, classroom activities or instruction may be compromised (DuPaul & Stoner, 1994). For example, due to difficulties with inattention, students with ADHD may have problems sustaining attention to tasks, task completion, test performance, organization, study skills and following teacher instructions (Barkley, 1998; DuPaul & Stoner, 1994). In addition, students with ADHD may experience problems with poor impulse control that can impede their learning, as well as the learning of others (i.e., their classmates). Impulsive behaviors characteristic of students with ADHD may include inappropriate vocalizations (e.g., talking with peers, calling out answers without raising hand or waiting to be called on), as well as frequent mistakes on academic tasks due to careless responses to questions and/or a failure to review answers. Finally, students with ADHD may exhibit behaviors associated with hyperactivity (e.g., rocking in a

chair, tapping feet, and fiddling with objects) that may interfere with school success (Alto & Frankenberger, 1995; Cantwell & Baker, 1991). The manifestation of core behaviors tends to correlate frequently with academic underachievement, high rates of noncompliance and aggression, and disturbances in peer relationships (Barkley, Fischer, Edelbrock, & Smallish, 1990; Guevremont, 1990). Consequently, students with ADHD are at risk for school failure and limited educational attainment. Not surprisingly, as students with ADHD reach adulthood, several other problems are likely to persist, such as the inability to keep a job, forgetfulness, disorganization, and poor marital relationships (Barkley, 1998).

Under the Individuals with Disability Education Act (IDEA: Department of Education, 1997), a diagnosis of ADHD alone is not sufficient to entitle students with ADHD to special education or related services; however, students with ADHD may qualify for services under existing disability categories. In fact, it has been documented that approximately 50% of students diagnosed with ADHD qualify for special education or related services under the categories of learning disabled, emotional/behavioral disordered, mildly mentally retarded, and other health impaired (Bloomingdale, Swanson, Barkley, & Satterfield, 1991; Reid et al., 1994; Sandoval & Lambert, 1984-85). Despite the fact that students with ADHD may qualify for special services in schools, the majority, if not all, spend most of their time in general education classrooms (Reid et al., 1994).

To date, three empirically-based approaches to treatment for students with ADHD are stimulant medication (e.g., Ritalin, Cylert, Dexedrine), behavior management strategies (e.g., time-out, response cost, punishment) and a combination of the two (DuPaul & Stoner, 1994). All of these intervention strategies have been documented to be moderately effective in reducing symptoms of ADHD, yet,

stimulant medication has been the favored approach (Barkley, 1998; DuPaul & Stoner, 1994). Reasons for the widespread use of stimulant medication may include ease of implementation, relatively quick improvements (dependent on the type of medication), and lack of knowledge and resources regarding other intervention strategies (Reid et al., 1994). Unfortunately, the use of stimulant medication alone has been associated with only minimal improvements in academic performance for students with ADHD (e.g., Alto & Frankenberger, 1995). Individual responses to various treatment modalities and/or a combination of such treatment strategies have been documented (Whalen & Henker, 1991), with a combination of stimulant medication and behavior management found to be the most efficacious treatment approach (Barkley, 1998; DuPaul & Stoner, 1994; The MTA Cooperative Group, 1999).

Because treatments, more often than not, involve three systems (e.g., home, school, and community), communication becomes essential at all levels of intervention. Considering students with ADHD spend approximately one-third of their day in school and are regularly referred for outside evaluations based primarily on behavior exhibited in school (Osman, 1991), it is necessary for schools and physicians to communicate information that will facilitate the development and evaluation of treatments. A lack of efficient communication across systems can impact treatment recommendations for children and adolescents with ADHD (Barkley, 1998; DuPaul & Stoner, 1994), therefore, it is imperative that this issue be addressed. For treatment evaluation purposes for students with ADHD, information exchange practices (e.g., what information is communicated, mode of communication, frequency of communication, who communicates information) across systems have not been systematically documented in the literature. Thus, the

primary purpose of this study is to document gaps in school-physician communication for the purpose of selecting, implementing and monitoring interventions (i.e., stimulant medication) for students with ADHD.

In the following sections, these areas are reviewed: (a) the use of stimulant medication to treat ADHD, (b) pharmacological aspects of stimulant medication, (c) short- and long-term effects of stimulant medication, (d) current medication evaluation models and practices, and (e) lines of communication across parents, educators, and physicians.

<center>Stimulant Medication</center>

Stimulant Medication as a Treatment Modality

Approximately 90% of children diagnosed with ADHD have been treated with stimulant medication at some time (Pelham, 1993). Of the various types of stimulant medication (e.g., d-amphetamine, Dexedrine; pemoline, Cylert; methylphenidate, Ritalin) typically utilized to ameliorate symptoms associated with ADHD, methylphenidate is most commonly prescribed (Barkley, 1998; Pelham, 1993; Safer & Krager, 1988; Safer et al., 1996; Wolraich, Lindgren, Stromquist, Milich, Davis, & Watson, 1990). For students identified with ADHD, the use of medication varies across age, gender, and school placement. For example, stimulant medication appears to be employed most frequently for 8- and 9-year-olds (i.e., third graders), and least often for high school students. Although increasing trends of methylphenidate use for students with ADHD point to a steady rise for all ages, the increase among secondary and middle school students has been considerable (Safer & Krager, 1988, 1994; Safer et al., 1996). According to Safer and colleagues (1996), the use of methylphenidate tends to peak from the second to fifth grades and decrease from grades seven to ten.

Additionally, stimulant medication is more frequently (i.e., 5:1 ratio) prescribed for boys than girls (Safer & Krager, 1988; Safer et al., 1996).

Children who attend public schools, as opposed to private parochial schools, are more likely to be treated with stimulant medications (Brown & Sawyer, 1998; Safer & Krager, 1988). Generally, elementary schools and special education programs have the highest rates of medication use (Gadow, 1993; Safer & Krager, 1988). Yet, more recently, trend data have indicated a slight decline in the number of students with ADHD receiving medication in special education programs (Safer & Krager, 1988; Safer et al., 1996). This slight drop might be attributed to the increase in the number of students with ADHD being served in the general education setting (Reid et al., 1994).

Despite a slight decrease from 1987 through 1990, there has been a steady rise of methylphenidate hydrochloride (MPH) use in the United States since 1981 (Rappley, Gardner, Jetton, & Houang, 1995; Safer et al., 1996). Some scholars propose this observed decrease might have been due to media controversy and the initiation of lawsuits during those times (Safer & Krager, 1992). According to the Drug Enforcement Administration (DEA, 1995), a 6-fold increase in production quotas for MPH in the U.S. was observed from 1990 to 1995. Consequently, there has been a 2.5 fold increase in the prevalence of methylphenidate treatment of youths with ADHD between 1990 and 1995. This observed increase in MPH treatment for ADHD may be attributed to the increased duration of treatment (i.e., the length of time students stay on medication), more females, adolescents and inattentive youths on methylphenidate, and a recently improved public image for the drug (Safer & Krager, 1992; Safer et al., 1996). Nationwide, approximately 1.5 million students diagnosed with ADHD are currently receiving MPH, with an increasing trend

foreseen (Safer, 1997).

Pharmacological Aspects of Stimulant Medication

Methylphenidate and other psychostimulant medications (e.g., *d*-amphetamine, pemoline) primarily work by their ability to increase the arousal or alertness of the central nervous system (CNS) (DuPaul & Barkley, 1990; Pelham, 1993). To date, much speculation exists surrounding the actual locus of action for these stimulants. That is, researchers have not conclusively determined the exact path of action through which psychostimulants operate (DuPaul & Barkley, 1990). What is understood, however, is the fact that psychostimulants have been documented to be effective in reducing symptoms associated with ADHD.

Psychostimulants, such as methylphenidate, *d*-amphetamine, and pemoline, take effect and wear off quickly. In general, psychostimulants are administered orally, absorbed readily, and rapidly eliminated from the body. Behavioral effects of stimulant medication vary for each psychostimulant, but, in general, occur relatively quickly postingestion and persist for hours (e.g., ranging anywhere from 3 to 8 hours, depending on the type of stimulant). To illustrate, the most commonly prescribed psychostimulant, methylphenidate hydrochloride, is typically administered orally with usual dosage levels ranging from 10 mg to 60 mg (average of 20 mg) (DuPaul & Barkley, 1990; Brown & Sawyer, 1998; Wright, 1997). Once MPH is administered, behavioral effects occur within 30-60 minutes and persist for approximately 3-5 hours in length (Brown & Sawyer, 1998; Barkley, DuPaul, & Costello, 1993). Within 12-24 hours postingestion, MPH is entirely excreted from the body (Diener, 1991).

Plasma half-life refers to the amount of time it takes for the body to reduce the amount of drug by 50% (Smith & Darlington, 1996). MPH has a plasma half-life of

approximately 2-3 hours and a peak plasma level between 1-2 hours. In other words, the effects of MPH on a student with ADHD will be greater 2 hours, as opposed to 3 hours, postingestion (with peak effects between 1-2 hours). For example, a student who ingests a pill of MPH in the morning to improve his/her attention span during academic instruction, will have more difficulty sustaining attention by mid-afternoon. Consequently, the longer the plasma half-life, the longer the duration of the behavioral effect.

Because MPH and *d*-amphetamine have relatively short plasma half-lives (i.e., 2-3 hours and 4-6 hours), they are usually administered twice daily (i.e., BID). Pemoline and sustained release methylphenidate (Ritalin SR, 20 mg), on the other hand, have longer plasma half-lives (i.e., 7-8 hours and 2-6 hours) (Brown & Sawyer, 1998; DuPaul & Barkley, 1990), and, thus, peak behavioral effects can occur up to 8 hours postingestion (Barkley et al., 1993; Pelham et al., 1990). Longer duration of behavioral effects allows for pemoline and SR to be administered once per day (Brown & Sawyer, 1998; Pelham, 1993). Due to the substantial inter-individual variability that exists across the different stimulants, these time-response parameters should be interpreted carefully (Barkley et al., 1993; Pelham et al., 1987).

Idiosyncratic Responses to Stimulant Medication

Although the use of stimulant medication has become increasingly popular as the treatment of choice for students diagnosed with ADHD, it is not effective for all children. In fact, medication tends to work for approximately 70-80% of school-aged children with ADHD, and estimates are even lower for pre-school children (Barkley, 1998). For the remainder of students with ADHD (i.e., 20-30%), response to medication treatment results in either no improvement or deterioration in appropriate

behavior (DuPaul & Stoner, 1994). Furthermore, stimulant medication is just as likely to increase sustained attention to tasks for individuals not formally diagnosed with ADHD (DuPaul & Barkley, 1990; Rapoport, Buchsbaum, Zahn, et al., 1978). These individual responses to stimulant medication have been documented throughout the literature (Forness, Swanson, Cantwell, Guthrie, & Sena, 1992; Pelham & Milich, 1991; Rapport, DuPaul, & Kelly, 1989; The MTA Cooperative Group, 1999; Whalen & Henker, 1991). For example, Pelham and Milich (1991) used various measures (e.g., teacher rating scales, observations, performance task, learning task) across functioning domains (e.g., behavior, academics, social interactions) to evaluate the effects of medication for twenty-six boys with ADHD. Results indicated that no single measure was predictive in determining medication responsiveness for students with ADHD and responsiveness to the individual measures varied across children. Not only do children vary to the degree to which they respond to different dosage levels (e.g., 5mg, 10mg, 20mg), but they also respond idiosyncratically across domains of functioning (e.g., Pelham & Milich, 1991; Rapport et al., 1989).

Short-Term Effects. There have been a plethora of studies on the effects of stimulant medication on short-term cognition and behavior for students with ADHD. Studies have indicated that the administration of MPH has improved children's ability to sustain attention to assigned tasks (e.g., Barkley, DuPaul, & McMurray, 1991; Douglas, Barr, O'Neill, & Barton, 1986; Pelham & Milich, 1991) and reduces the occurrence of impulsive behavior (e.g., Brown & Sleator, 1979; Malone & Swanson, 1993; Rapport et al., 1988). Findings across these studies indicated that students with ADHD on MPH were more likely to adhere to classroom rules and teacher directions, exhibit less off-task motor behaviors, and complete more work. Moreover, some

students have attended to classwork to the extent similar to his or her "normal" peers (Abikoff & Gittelman, 1985).

In addition to the documented improved effects on disruptive behavior, stimulant medication has been found to impact social interactions between students with ADHD and their peers, teachers, and parents (Barkley, Karlsson, Strzelecki, & Murphy, 1984; Hinshaw, 1991). Specifically, stimulant medication has been shown to result in reductions in both physical and verbal aggressive behaviors (e.g., Gadow, Nolan, Sverd, Sprafkin, & Paolicelli, 1990; Hinshaw, 1991) and noncompliance towards authority figures, (i.e., teachers and parents) (e.g., Barkley et al., 1984). Students with ADHD who take medication are less likely to engage in aggressive behaviors, more likely to interact with peers positively, and, thus, are accepted more by peers (Gadow et al., 1990; Hinshaw, 1991). Although direct impact on social behavior has not been conclusively determined, studies have demonstrated that MPH can enhance other areas of functioning that may indirectly impact social status (DuPaul & Stoner, 1994). For example, a student with ADHD taking MPH may have improved ability to sustain attention and reduce the degree of off-task motor behaviors during a gym class activity. Improved attention and less inappropriate behaviors may impact social interactions with peers. Moreover, the use of stimulant medication during compliance situations has affected the responsiveness to parent and teacher demands. As a result, parent/teacher demands decreased in frequency and the delivery of positive adult attention contingent upon appropriate child behavior increased (Barkley et al., 1984; Whalen, Henker, & Dotemoto 1980).

Long-Term Effects. To date, research on long-term effects of stimulant medication has not been conclusive. For example, several investigators (e.g., Alto & Frankenberger, 1995; Barkley & Cunningham, 1978; Gittelman, Klein, & Feingold,

1983; Weber, Frankenberger, Heilman, 1992) have concluded that stimulant medication alone has been associated with only minimal improvements in academic performance for students with ADHD. Conversely, other researchers (e.g., Douglas et al., 1986; DuPaul & Rapport, 1993; Gadow, 1983; Rapport, DuPaul, Stoner, & Jones, 1986) have concluded that methylphenidate has been found to moderately impact academic productivity and accuracy. The discrepancies that exist within the literature may be due to methodological practices employed in the research. For instance, earlier studies have often employed standardized academic achievement tests (e.g., Wide Range Achievement Test [WRAT]; Peabody Individual Achievement Test [PIAT]) that have been criticized as being inadequately constructed (e.g., poor reliability and validity) and insensitive to short-term changes in academic behavior. More recent studies have employed measures (e.g., curriculum-based measurement [CBM]; Shinn, 1989) that are sensitive to change and have greater ecological validity (Gulley & Northup, 1997; Northup et al., 1999; Roberts, DuPaul & Benjamin, 1999; Stoner, Carey, Ikeda, & Shinn, 1994). Forness and colleagues (1992) indicated that the use of more sensitive measures might produce less favorable responsiveness to MPH. Some studies that have utilized CBM as measures indicate that only approximately 50% of children respond positively to MPH effects, opposed to the 70% figure often cited in the literature. Determining whether or not a student with ADHD will respond to stimulant medication depends extensively upon the selection of outcome measures utilized (Forness et al., 1992).

Side Effects. Despite potential positive outcomes with the use of psychostimulants to treat children with ADHD, adverse side-effects may occur. Generally, side-effects experienced by those who take stimulants include insomnia, loss of appetite, stomachaches, headaches, mood swings, tics, and behavioral toxicity

(Barkley, McMurray, Edelbrock & Robbins, 1990). Over 50% of children with ADHD taking methylphendiate report insomnia and decreased appetite as the most common side-effects experienced (Barkley et al., 1990; Gittelman & Kanner, 1986). A smaller percentage of children with ADHD experience stomachaches, headaches, and irritability. Despite the fact that a substantial percentage of children with ADHD experience a loss in appetite, a rebound growth effect seems to occur when treatment is terminated and evidence appears to support little appreciable change in adult height and weight (DuPaul & Barkley, 1990; DuPaul & Stoner, 1994). Uncommonly, children with ADHD may experience tics as a result of medication ingestion, which tends to occur in less than 1% of the population (DuPaul & Barkley, 1990).

Two other proclaimed side-effects include behavioral rebound and behavioral or cognitive toxicity (DuPaul & Barkley, 1990; Johnston, Pelham, Hoza, & Sturges, 1987; Pelham & Milich, 1991; Poling, Gadow, & Cleary, 1991). Behavioral rebound refers to the deterioration in behavior (below baseline or placebo conditions) that occurs in the late afternoon and evening following daytime administrations of medication (Johnston et al., 1987). Research has suggested that this phenomenon occurs in about one-third of children taking methylphenidate and the degree to which this occurs varies across days for individuals (DuPaul & Barkley, 1990; Johnston et al., 1987). Behavioral or cognitive toxicity occurs when medication interferes with behavior or impedes cognitive functioning (Poling et al., 1991). Clinical observations have indicated some children with ADHD treated with methylphenidate appear to be "overfocused", thus constricting cognitive functioning (Pelham & Milich, 1991). Students with ADHD may exhibit persistence at a task for an abnormally long period of time, a disregard of peripheral stimuli, delayed reactions to changes in the environment, and/or difficulties with initiating or responding to social interactions.

Adverse side-effects attributed to the ingestion of stimulant medication are dose-related and idiosyncratic (Barkley, 1998). More specifically, approximately 10% of the children with ADHD will experience all, a few, or any of these potential side-effects (e.g., insomnia, loss of appetite, development of tics) (DuPaul & Barkley, 1990). Although several side-effects usually dissipate at the termination of treatment, reducing dosage levels or changing medication type can further ameliorate adverse symptoms. Due to individual responsiveness to side-effects, as well as short-and long-term benefits of pharmcotherapy, it is essential that medication is monitored on an individualized basis for students with ADHD.

Dose-Effects. In addition to the documented individual responses to stimulant medication across behavior, academic and social functioning of students with ADHD, idiosyncratic responses to dosages levels have been noted in the literature (e.g., Hale et al., 1998; Sprague & Sleator, 1977). Sprague and Sleator (1977) were the first to evaluate dose-effects associated with the use of stimulant medications to treat students with ADHD. They assessed the effects of MPH on classroom disruptive behavior and on an academic learning task at two different dosage levels (i.e., 0.3 mg/kg and 1.0 mg/kg). Results indicated that student performance on the learning task peaked at the lower dosage level and declined as the dosage increased. Conversely, teacher ratings on classroom behavior did not peak until the highest dosage level was reached. Sprague and Sleator (1977) concluded that the dosage necessary to improve classroom behavior could be detrimental to classroom learning. Hale et al. (1998) also found similar dose-response effects on cognition (i.e., learning) and behavior.

Idiosyncratic responses to medication dosage levels have been documented throughout the literature (see Solanto, 1991 for a review) with three very distinctive

dose-response patterns (e.g., Rapport, DuPaul, & Kelly, 1988). Specifically, dose-response relations can be: (1) linear (continue to improve with increasing dose), (2) quadratic (improve to a peak effect and then decrease), and (3) therapeutic (improvement which reaches a peak and does not change further with increasing dose) (DuPaul & Barkley, 1993; Hale et al., 1998; Rapport et al., 1988). Research has suggested that dosage levels effective in reducing inappropriate behaviors (e.g., call-outs, playing with objects, talking to peers, out of seat) are higher than dosage levels to improve attention and learning (Northup et al., 1999; Rapport & Kelly, 1991; Sprague & Sleator, 1977). Individual differences exist across the various areas of functioning (e.g., disruptive behavior, social interactions, academic performance), both at the same and different dosage levels (Forness, Swanson, Cantwell, Guthrie & Sena, 1992; Sprague & Sleator, 1977). For example, a student may show a therapeutic dose-response relation with respect to disruptive behavior exhibited in the classroom. However, the same student with ADHD may show a quadratic dose-response relation with regard to academic performance measures (e.g., work completion, accuracy). Thus, the same dosage level may adversely impact one area of functioning (e.g., academic achievement) and greatly improve another area (e.g., classroom behavior). These idiosyncratic responses can significantly impact medication decisions for student with ADHD. Since dose-response relationships vary across children with ADHD, it is imperative that a range of doses be evaluated with each individual child (Barkley et al., 1993).

<center>Current Practices</center>

Management of Stimulant Medication

Considering students with ADHD spend approximately one-third (i.e., about 7

hours) of their day in school and that stimulant medication effects wear off quickly (e.g., methylphenidate, *d*-amphetamine), the administration of stimulant medication in school settings is not uncommon. More specifically, a second pill is often administered during mid-afternoon (i.e., during lunch time). Because Ritalin is classified as a Schedule II drug (i.e., one that can be addictive or misused for "recreational" purposes) by the DEA, several states (California, Hawaii, Idaho, Illinois, Indiana, Michigan, New York, Rhode Island, Washington) have passed laws to regulate and document the use of Ritalin. Michigan guidelines, for example, require schools to consistently and accurately document the management of medication. Methods for documenting include: written permission from parent/guardian to administer medication at school, written instructions from the prescribing physician on procedures for administering medication, storage of medication must be in a locked place, medication must be administered by one adult in the presence of a second adult, and medication administration must be recorded in a daily log (Michigan Department of Education, 1996). However, the extent to which schools are adhering to these legal guidelines has not been systematically documented. Meager management may impact the evaluation of medication effectiveness for students with ADHD.

Evaluating the Effects of Stimulant Medication

For decades, the administration of stimulant medication (e.g., Ritalin) has been somewhat controversial in the community, with parents and educators frequently disagreeing on the appropriateness of medication to treat students with ADHD. "One of the more controversial issues in the use of pharmacotherapy for children with hyperactivity [ADHD] pertains to the way in which the treatment regimen is

evaluated and therapeutic progress is monitored in real world settings" (Gadow & Nolan, 1993, p. 118). To date no physiological, neurological or psychological measures of functioning have been systematically supported as reliable predictors of responsiveness to pharmacotherapy (Pelham, 1993). Methods commonly utilized to monitor medication response in children with ADHD vary widely in content and quality (Copeland et al., 1987; DuPaul & Stoner, 1994; Solomons, 1973; Wolraich et al., 1990; Wright, 1997). Typically, optimal medication dosage is determined through a trial and error process (i.e., start with a low dose and work upward) with little or no procedural recommendations for monitoring medication effects (Barkely, 1998; Osman, 2000).

Physician Practices. Ordinarily physicians attempt to titrate and monitor stimulant medication for students with ADHD through routine office visits. In general, information obtained during office visits (e.g. physical exams) is useful in the evaluation of stimulant medication (e.g., side-effects). However, some practices, such as obtaining medication blood levels, do not provide beneficial information in determining a therapeutic response (Barkley et al., 1993; Swanson, 1988). In addition to the ordinary office visit practices, physicians have employed various methods to solicit information about their patient's behavior across treatment settings (i.e., home and school).

For example, Copeland et al., (1987) surveyed a national sample of 290 pediatricians to assess common assessment and treatment practices for children with ADHD. Results revealed that pediatricians primarily relied on parental report (i.e., verbal report, behavior rating scales) to evaluate and monitor medication effects despite the fact that parents rarely saw his/her child while the drug was active (i.e., during school hours). In addition to parental report, more than half of the

pediatricians reported soliciting information from teachers via teacher rating scales for periodic reevaluation of treatment effects (Copeland et al., 1987). Conversely, teachers reported they were not typically solicited for information through standardized rating scales (Copeland et al., 1987; Gadow, 1983).

Other methods utilized by physicians to evaluate medication effects have included recommending drug holidays or drug-free periods and using drug-placebo trials (Gadow, 1983); yet, the latter is less likely to be used to evaluate treatment (Copeland et al., 1987). In addition, Copeland and colleagues (1987) indicated that pediatricians reported the frequent use of psychoeducational reports as a source of school-based information. In sum, parents and teachers are the most common source of information regarding medication effects outside the physician's office. Yet, teachers tend to be solicited for information through behavior rating scales more often than parents (Copeland et al., 1987; Wolraich et al., 1990). Because parents and teachers often do not agree on the efficacy of medication for students with ADHD, it is essential that information be collected across home and school (Gadow, 1983).

Problems with Current Physician Practices. In practice, physicians typically make medication decisions (e.g., treatment effectiveness, dose-response effects, medication type) based on information that is subjective in nature (e.g., self-report, behavior rating scales). Decisions based primarily on subjective data are problematic because the validity (i.e., the degree to which the information or data measures what it was intended to) and treatment utility of the information collected are questionable (Wolraich et al., 1990). According to Copeland et al. (1987), pediatricians heavily rely on parental report when making medication decisions. Parents frequently play a pivotal role in the management of medication (i.e., administering medication, evaluating behavioral effects, monitoring potential side-effects) with little guidance

from psychiatrists and prescribing physicians (Wright, 1997). This is problematic due to the fact that drug holidays are common practice and that peak behavioral effects tend to wear off by time students go home. Therefore, parents/guardians are at a disadvantage to monitor the effects of medication since they may have a distorted view of how their child is actually performing while taking medication, and, consequently, a child may inadvertently be under- or over-medicated based on parental observations.

The use of more sensitive measures (e.g., CBM, direct behavioral observations) may provide more valuable information with regards to responsiveness to stimulant medication (Northup et al., 1999; Roberts et al., 1999). It should be noted that, "more often, the doctor has neither the time nor the commitment required to obtain the information from sources outside the family that is necessary to arrive at an objective decision regarding either the diagnosis or the initiation of drug therapy" (Solomons, 1973, p. 337). Because sensitive measures may be more cumbersome and time-consuming for physicians to access, physicians may be more likely to make medication decisions based on information collected through readily available measures (e.g., teacher and parent self-report, behavior rating scales).

According to Barkley (1998), as a result of meager management, psychostimulants are frequently improperly prescribed and monitored by practicing physicians. Thus, the traditional approach of monitoring medication may result in children with ADHD receiving medication that is not necessary, at an incorrect (e.g., too high or too low), or harmful (e.g., side-effects, behavior is worsening) dosage (Pelham & Milich, 1991; Reid et al., 1994). To address some of these concerns, research has focused on evaluating measures and developing models that may predict and monitor responsiveness to stimulant medication.

<u>Clinic and School-Based Medication Evaluation Models</u>. Typically,
medication evaluation models prevalent in the literature have (a) relied on subjective
measures (e.g., behavior rating scales), (b) assessed only one area of functioning (e.g.,
disruptive behavior), (c) utilized specific performance tasks as measures of treatment
effects (e.g., Continuous Performance Test; Rosvold, Mirsky, Sarason, Bransome &
Beck, 1956), (d) employed double-blind placebos, and (e) assessed for potential side-
effects. In addition, several clinic-based models have utilized between-group
statistical analyses to determine the sensitivity of measures between placebo and
medicated groups (e.g., Wilkison, Kircher, McMahon & Sloane, 1995).

Other clinic-based models have included a multimethod protocol of
assessment (e.g., Barkley, Fischer, Newby & Breen, 1988; Fischer & Newby, 1991)
to determine responsiveness to stimulant medication. For example, Fischer and
Newby (1991) utilized a multi-method clinical protocol to assess the MPH effects for
161 children diagnosed with ADHD. Utilizing a double-blind, placebo design, MPH
effects were evaluated across measures of multiple parent and teacher ratings and
clinic observations of specific laboratory tasks and restrictive academic situations.
Results indicated medication responsiveness across most measures, in addition to
documented individual differences between low and moderate doses. Although these
clinical models provide promising information regarding treatment effects, they lack
generalization to natural settings (e.g., schools) where children with ADHD typically
exhibit behaviors of inattention, hyperactivity, and/or impulsivity that impact their
school performance.

Despite the alarming number of students taking medication, a practical model
to evaluate the effectiveness of medication in school settings is atypical. School-
based models documented in the literature (Gadow, Nolan, Paolicelli & Sprafkin,

1991; Gulley & Northup, 1997; Northup et al., 1999, Roberts et al., 1999) have included multimethod protocols that have assessed all areas of functioning (i.e., social, behavioral, academic). For example, Gulley and Northup (1997) examined the utility of a school-based model in the evaluation of MPH for two students with ADHD by utilizing a double-blind, placebo-controlled, multi-element design. Measures employed in the study included CBM of reading and math fluency, direct observations of disruptive behavior in the classroom, direct observations of social interactions with peers during unstructured activities, teacher ratings, and side-effects ratings. Results indicated idiosyncratic responses to various dosage levels of MPH across areas of functioning for both participants. In addition to employing a wide range of measures across domains of functioning, some studies (e.g., Northup et al., 1995) have evaluated the combination effects of medication and behavior modification.

Problems with Current Models. As previously noted, the majority of models documented in the literature have primarily relied upon the use of subjective data to evaluate the effects of MPH. Information gathered via subjective measures is problematic; for example, observer (informant) bias may influence the raters' perceptions and items evaluated by raters may be ambiguous (i.e., raters interpret the item differently than what it was intended) or technically inadequate (Stoner et al., 1994). To illustrate, Gulley and Northup (1997) demonstrated the utility of direct observation and CBM to document MPH effects across behavior, academics, and social functioning for two boys with ADHD. However, teacher ratings corresponded with data collected on classroom behavior for only one participant. That is, the teacher rated one participant's behavior as most improved during placebo conditions, whereas observational data indicated his disruptive behavior was most improved

during 10mg of Ritalin and social behavior during 15mg of Ritalin. This finding is consistent with previous research (Shapiro & Kratochwill, 1988; Stoner et al., 1994), in that, teacher ratings can be subject to informant bias and are often technically inadequate. Although the employment of laboratory performance tests may provide more objective data (e.g., outcomes can be compared to norms), how that information translates into predicting individual responsiveness to medication in natural settings has not been systematically determined.

Another problem with these models is for some; support has been derived from between-group statistical analyses (e.g., Wilkison et al., 1995), thus failing to take into account idiosyncratic responses to medication documented throughout the literature (Pelham & Milich, 1991). The use of single-case designs may be more appropriate in identifying individual responsiveness to stimulant medication (Gulley & Northup, 1997). It is essential that medication decisions be made on an individual basis and not on between-group differences. Furthermore, few studies have included a sufficient range of dosages to evaluate dose-response relations (Gulley & Northup, 1997). Northup and colleagues (1999) evaluated a preliminary practical model to assess medication effects in schools; however, the investigators did not evaluate responsiveness across different dosage levels. This limitation may be attributed to the fact that it was not practical to assess medication effects across various dosages in school settings. Several studies that have included an adequate dose range have failed to evaluate all areas of functioning that may be affected by medication treatment (e.g., Gadow et al., 1991; Roberts et al., 1999).

Previous medication evaluation models have typically relied on subjective information obtained from parent and teacher self-reports and have failed to examine academic progress (e.g., Gadow et al., 1991), and social interactions with peers (e.g.,

Fischer & Newby, 1991; Northup et al., 1999; Roberts et al., 1999). It is important to assess all areas of functioning because dose-response relations across doses and domains of functioning have been documented in the literature (Barkley et al., 1993; Hale et al., 1998; Sprague & Sleator, 1977). In addition, inherent in all these medication evaluation models is the fact that there is no consensus on the criteria for therapeutic improvement (Gadow et al., 1991). Specifically, the dosage selection rules for medication decisions are rarely operationalized in an objective manner.

Despite positive outcomes posed by these potential medication evaluation models, practical and acceptable issues are a growing concern. It is not practical to conduct a comprehensive individual assessment protocol that includes all the recommended components in applied settings (Gulley & Northup, 1997). For example, because placebos can be unusually expensive, hard to obtain (i.e., requires a prescription), and pharmacists may be resistant to preparing them, the use of double-blind, placebo designs to evaluate medication effects in schools may not be practical given limited time and resources (Northup et al., 1999). In schools, it may be more appropriate for school personnel to compare treatment effects to simply "not taking a pill" given potential placebo effects (Northup et al., 1999). Furthermore, school-based models (e.g., Gadow et al., 1991; Gulley & Northup, 1997; Northup et al., 1999) have primarily relied on investigators or trained data collectors to gather information and draw conclusions regarding medication effectiveness. It is unlikely that these assessment protocols would have been carried out in schools without the support of external consultants. However, Roberts and colleagues (1999) recently evaluated a school-based medication evaluation protocol to determine a more practical model that is less time- and resource- intensive to conduct in schools. Specifically, the study included a comprehensive multi-method protocol that included

reliable and valid measures (e.g., CBM, direct observations) in predicting individual responsiveness to medication. Based on the information collected, Roberts et al. (1999) concluded that reading and math CBM, on-task behavior via direct observations, and the total score on a behavior rating scale appeared to be the best measures for indicating a student's optimal dosage level. Even though the investigators and trained data collectors gathered the information throughout the study, Roberts et al. (1999) attempted to define a preliminary model that school personnel could complete in a relatively brief time period (i.e., approximately 8 days) with little or no support from external consultants. Measures (CBM, direct observations, rating scales) utilized in this study are familiar to school personnel and are relatively easy to collect (Roberts et al., 1999). This preliminary model may be relatively inexpensive in terms of both time and resources as compared to other models documented in the literature (e.g., Gadow et al., 1991).

Despite empirical support for these preliminary medication evaluation models, a gap still exists between research and practice. Even when the necessary measures (e.g., CBM, direct observations) are employed to collect information to determine medication responsiveness, in order to impact treatment recommendations, the information must be communicated to the appropriate person making medication decisions. Based on previous research, we know that primary care physicians (e.g., pediatricians, family/general practitioners) commonly prescribe MPH for students with ADHD (Rappley et al., 1995; Safer, 1997), therefore, it is essential that information gathered through medication evaluation models be communicated to prescribing physicians. Nonetheless, lines of communication between home, school, and physicians have been noted to be poor for decades (e.g., Brulle, et al., 1983; Gadow, 1983; Solomons, 1973; Weithorn & Ross, 1975; Wright, 1997).

If we are to successfully develop and implement medication evaluation models in applied settings, such as schools, then we need to assess (a) what outcome variables are important to measure (e.g., academic, social interactions, disruptive behavior, side-effects), (b) how to measure adherence to medication regimen (i.e., document medication management, monitoring and evaluation), (c) who should collect the information, (d) how to summarize the information gathered to make medication decisions, (e) what is the best method (e.g., fax, letter, phone call) to communicate information across settings (i.e., school, home, doctor's office), and (f) how often to communicate information for determining medication responsiveness and monitoring short- and long-term effects.

Communication Across Parents, Educators and Physicians

It is imperative that frequent and open lines of communication exist between home, school and physician. Despite the fact that difficulties (e.g., behavior, academic, social interaction) in school are one of the primary reasons parents seek medical intervention for their children's treatment (Gadow & Nolan, 1993), communication between schools and physicians is inadequate (Solomons, 1973). In fact, several studies have indicated that communication is non-existent or exists at a minimum (Brulle, Barton & Foskett, 1983; Reid et al., 1994; Solomons, 1973; Weithorn & Ross, 1975; Wright, 1997).

For example, Weithorn and Ross (1975) surveyed school personnel to determine the extent of contact between schools and prescribing physicians. Results indicated that direct contact between teachers and physicians occurred in only 18% of the cases wherein children with ADHD were medicated. Relatively more communication (i.e., 39%) was documented through an intermediary source such as a

guidance counselor, school nurse, or school psychologist. The remaining cases either had no documentation between school and physician (i.e., 27%) or were unclear if communication existed (15%). In most cases, school personnel initiated communicated contacts with the prescribing physicians. Teachers who had communicated with the physician reported they felt adequately informed about the nature of medication and what to expect to see behaviorally. In addition, children whose teachers communicated with the prescribing physicians were rated to engage in more appropriate behaviors in class as compared to those children whose teachers reported no communication or communication via an intermediary. This finding may be attributed to the fact that communication across systems (i.e., school and doctor's office) may lead to more appropriate treatment decisions for students with ADHD. However, what information (e.g., academic performance, side-effects, disruptive behavior) was communicated across these two systems was not documented. Given these findings, Weithorn and Ross (1975) concluded that there is not enough communication through which adequate monitoring of medication could take place for students with ADHD in school settings.

Solomons (1973) study documented practices of private physicians in the state of Iowa and noted that 55% of students with ADHD receiving stimulant medication were "adequately" monitored. Adequate monitoring was defined as parent-physician contact occurring at least twice in a 6-month period, or three times in a 12-month period either by phone or visit. Almost half (i.e., 42%) of the parents reported that the physician allowed them to alter the frequency and dosage based on their own judgment and those parents were less likely to make physician contact.

The lack of effective communication across this triad (i.e., parents, educators, and physicians) is problematic and one might argue that poor monitoring may be

attributed to this lack of direct communication (Gadow, 1983; Weithorn & Ross, 1975; Wright, 1997). Infrequent communication between school and physician can stifle appropriate recommendations made by physicians regarding the medication status for students identified with ADHD. Specifically, decisions made on medication dosage (e.g., increase mg/kg), type (e.g., change from Ritalin to Cylert) and/or effectiveness (e.g., behavior change, academic improvements, side-effects) as an intervention strategy alone may be compromised.

Parent Perceptions

Because parents play a pivotal role in the administration, management, and monitoring of medication effects for students with ADHD, several studies have attempted to determine parental perceptions related to medication evaluation practices (Gadow, 1983; Wright, 1997). For example, Wright (1997) interviewed parents of students with ADHD who were receiving medication (i.e., Ritalin). In several cases, psychiatrists recommended that parents manage medication, however, parents were not given guidelines (e.g., measures) on how to monitor medication effects and determine optimal dosage. Consequently, parents reported that they would have liked more guidance from the psychiatrist, in addition to more frequent follow-up visits. According to Gadow (1983), parents indicate a preference for more contact with prescribing physicians to obtain information about medication, therapeutic progress, and other treatment alternatives.

Parent-physician contact appears to occur approximately 1-3 times per year via office visits and by 1-2 telephone calls per year (Barkley, 1998; DuPaul & Stoner, 1995; Gadow, 1983; Solomons, 1973). This limited contact makes it difficult to effectively monitor the effects of medication for individual children diagnosed with

ADHD. Furthermore, research has suggested that parents' knowledge of ADHD and treatment options can influence acceptability ratings of medication interventions (e.g., Ritalin) (Bennett, Power, Rostain & Carr, 1996), and, may impact adherence to medication regimen (e.g., monitoring medication, communicating with educators and physicians).

Additionally, parents have expressed concern regarding the amount of information provided to them on the length of treatment and potential long-term effects (Wright, 1997). Given that research has not conclusively determined potential long-term effects of MPH use, medication monitoring issues are a growing concern. For example, if MPH tends to lose its efficacy as students with ADHD reach adulthood or adolescence, then it is imperative that continuous and frequent monitoring of medication effects be executed. However, there is little documented evidence of systematic monitoring of medication effects beyond the typical checks on weight, height and dose-related side effects (Wright, 1997).

Educator Perceptions

Although physicians often query parents regarding their child's behavior, they primarily rely on the information received from school staff in deciding whether or not to medicate children (Barkley, 1998; Copeland et al., 1987). Because school personnel are the most important informants to physicians when classroom performance is the primary concern, teachers play a pivotal role in the evaluation of medication effects (e.g., side-effects, improved attention span). Physicians report they gather information from school personnel, yet teachers report they are infrequently solicited for information (Copeland et al., 1987; Gadow, 1983). In lieu of this discrepancy, teachers are interested in participating in medication evaluation

procedures for students with ADHD and often question the appropriateness of the medication dosage (Gadow, 1983). However, schools often do not always collect data that may facilitate participation in medication evaluations. This may be a result of the limited time and resources available to school personnel or the lack of knowledge regarding what information to collect (Weithorn & Ross, 1975). Likewise, teachers report that they are often inadequately informed regarding potential side-effects of medication (e.g., headaches, stomachaches, loss of appetite, behavioral toxicity), potential positive drug effects on behavior and academics, and changes in medication regimen (Gadow, 1983; Weithorn & Ross, 1975).

Recently, members of the National Association of School Psychologists (NASP) were surveyed to assess current school practices in the assessment of ADHD. Based on responses from 189 school psychologists, school psychologists were identified (by 90% of the respondents) to be the most likely school staff member to be involved in the assessment of ADHD (Miles, 2000). According to the respondents, the following school personnel also were noted to participate in the assessment process: general education teachers (78%), special education teachers (52%), school counselors (32%), and school nurses (19%). School administrators/ principals (4%) and social workers (3%) were even less likely to be involved. School psychologists reported methods typically utilized in the assessment process included: teacher and parent checklists, informal observations, parent and teacher interviews, intelligence tests, educational tests and standardized behavioral observations.

Once medication therapy is initiated, physicians weigh educators' ratings of a child's drug response in determining a proper dose (Barkley, 1998). However, an inadequate line of communication between educators and physicians impedes the adequate evaluation and monitoring of medication effects. Teachers have reported

that the lack of communication with physicians posits a barrier for instructional programming for students with ADHD (Reid, Vasa, Maag, & Wright, 1994). Greater communication will not only facilitate appropriate medication management practices, but also assist teachers in meeting the needs of students with ADHD. Unfortunately, we are still left with unanswered questions as to what and how much information to collect and communicate, how to present that information (e.g., written reports, verbal descriptions, graphs), and through what mode of communication to send information (e.g., phone calls, letters, fax, e-mail).

Physician Perceptions

Safer (1997) reported that the number of psychiatrists prescribing stimulant medication for students with ADHD has decreased over the years. Despite this decline, the amount of methylphenidate consumption per capita is increasing steadily in the U.S. (e.g., Rappley et al., 1995; Safer et al., 1996; Safer & Krager, 1988). This observed increase may be a result of the growing number of primary care physicians prescribing medication (Rappley et al., 1995; Safer et al., 1996). Specifically, in Michigan, the majority (i.e., 84%) of MPH prescriptions are written by primary care physicians (i.e., pediatricians, family physicians, and general physicians) (Rappley et al., 1995), however, a wide range of prescribing practices exists among physicians (Copeland et al., 1987). Despite this variance in practice, a common thread in the evaluation and monitoring of medication effects is the poor communication across home, school and physician.

Although physicians ordinarily rely on parent and teacher report to monitor response to stimulant medication, more objective information is preferred. According to Brulle and colleagues (1983), physicians favor more objective information

regarding the students' in-school behavior (e.g., disruptive behavior, social interactions with peers and adults), as well as school performance (e.g., academic improvement) to assist in the monitoring of drug therapy. However, information that is communicated from schools to physicians are primarily subjective in nature (e.g., teacher self-reports, behavior rating scales), with little or no objective information (direct observations, percent correct on academic assignments) (Brulle et al., 1983). As previously noted, school practitioners do not necessarily possess the knowledge regarding what information physicians desire. In addition, physicians may not know how to ask teachers to report information on classroom behavior in concrete, observable terms (Weithorn & Ross, 1975). Thus far, information that has been communicated across home, school, and physician have primarily been done so through written forms, phone calls, and letters sent via mail have (Brulle et al., 1983; Fried, 1991; Solomons, 1973).

In summary, parents desire more frequent contact with prescribing physicians, as well as more information regarding medication effects (academic performance, side-effects, behavior change), monitoring, and evaluation. Teachers prefer to be involved in the medication evaluation process, in addition to being informed regarding potential side-effects and changes in medication regimens. School psychologists are the most likely school staff members to collect and provide information to prescribing physicians before the initiation of medication therapy (Miles, 2000). Physicians reported they favor more objective information from schools regarding students' academic performance (e.g., percent correct on academic assignments) and in-school behavior (e.g., percent on- and off-task) to evaluate medication effects.

Implications of Poor Communication

According to Copeland et al. (1987) and Wolraich et al. (1990), physicians rely primarily on information related to them by parents to make medication decisions. Because parents have the most contact with prescribing physicians and often serve as liaisons between school and physicians, it is important that they provide reliable and valid information. However, utilizing an intermediary (e.g., school counselor, parent, school psychologist) to relay information is problematic because the accuracy of the information may be compromised. For example, a parent may purposely report information based on what outcome they desire (e.g., continue or discontinue medication, increase or decrease medication dosage). Parents may also misrepresent information to physicians accidentally due to forgetfulness. Hence, reliance on others to relay information regarding student performance may result in poor monitoring of medication effects.

Further, it has been noted in the literature that physicians may not always solicit information from schools to determine how medication affects school performance (Gadow, 1983). Since educators can play a pivotal role in documenting student performance in school (e.g., behavior, academics), physicians need to solicit objective information from educators to evaluate and monitor medication effects across settings (e.g., school). When physicians make decisions based on relatively minuscule amounts of information or subjective information that may not be an accurate reflection of the "true" behavior, then medication recommendations may be inappropriate or even harmful (Barkley, 1998). For example, a physician may recommend increasing the dosage level of medication based on anecdotal reports from what the teacher communicated to him/her by the parent. Reduction in the frequency of disruptive behavior (e.g., call-outs, out-of-seat, playing with objects)

may be observed, however, academic performance may worsen despite improved effects on behavior. Thus, the student may not only be overmedicated, but also academic performance at school has further dropped as a result of medication treatment. In sum, if information regarding behavior, academics, social interactions, and side-effects is not clearly and frequently communicated to prescribing physicians, then medication recommendations may be compromised.

Inherent in the literature are the potential detrimental effects that may occur as a result of poor management and evaluation of medication for students with ADHD. Because preliminary studies (e.g., Brulle et al., 1983; Reid et al., 1994; Solomons, 1973; Weithorn & Ross, 1975; Wright, 1997) documenting communication lines across systems have occurred over a 30 year span, it unlikely that the results from these studies can be generalized to reflect current pediatric and family/general practitioner practice. Thus, future research needs to document communication issues (i.e., what is occurring and what is preferred) in order to facilitate incorporating school-based medication evaluation models for students receiving stimulant medication.

Strengthening Communication Across Systems

The efficacy of stimulant medication, such as Ritalin, to treat students with ADHD cannot be fully evaluated unless medication is monitored. Yet, monitoring cannot be adequately executed unless the persons involved (i.e., prescribing physician, school personnel, parents) communicate on a frequent basis. In order to facilitate lines of communication, "physicians should prescribe medication only when they are satisfied that both home and school are aware of the need for relevant, periodic feedback on behavior and learning, and are prepared to make a commitment

to provide it" (Weithorn & Ross, 1975, p. 61). Furthermore, Fried (1991) suggests that prescribing physicians need to allot time to communicate with parents and school personnel to effectively monitor medication therapy. However, physicians do not always possess the time involved to effectively monitor medication effects. Instead, DuPaul and Barkley (1990) recommend that school personnel attempt to initiate communication with physicians, regardless if they ask for it or not. However, schools do not necessarily know what information physicians would find useful in making treatment decisions. According to Weithorn and Ross (1975), the most effective means of providing relevant feedback related to medication effects for students with ADHD is direct teacher-physician contact. However, this frequent one-to-one contact may not be practical over long periods of time.

As suggested in the literature, utilizing structured written report forms designed to elicit information relating to behavioral change and progress in learning, may facilitate school-physician communication (Brulle et al., 1983; DuPaul & Stoner, 1994; Weithorn & Ross, 1975). A structured format may facilitate teachers to provide the information desired by physicians, as it would for physicians to gather information from the teachers. However, such forms have not been empirically validated to determine if they can impact communication lines. If we are to develop models to facilitate effective and efficient lines communication across systems for the purpose of designing, implementing and monitoring interventions for students with ADHD, then we need to specifically identify current gaps in communication.

Summary

The effect of stimulant medication on the functioning of children with ADHD has been the most widely researched area than any other treatment modality for any

childhood disorder (Barkley, 1990). In the past decade, research surrounding the use

of medication has focused on the evaluation of models to assess medication effects

(e.g., Fischer & Newby, 1991; Gadow et al., 1991; Gulley & Northup, 1997; Northup

et al., 1999; Roberts et al., 1999), diagnostic procedures typically utilized (e.g.,

Copeland et al., 1987; Wolraich et al., 1990), idiosyncratic responses to medication

(e.g., Pelham & Milich, 1991), and documenting trends in the use and administration

of stimulant medication (e.g., Rappley et al., 1995; Safer & Krager, 1988; Safer et al.,

1996). Based on previous research, we know that medication management of

children and adolescents with ADHD is poor and that communication between

parents/guardians, school personnel and prescribing physicians is meager, at best

(e.g., Brulle et al., 1983; Gadow, 1983; Solomons, 1973; Weithorn & Ross, 1975;

Wright, 1997). Because this lack of efficient communication can impact treatment

recommendations for children taking medication, it is important that we address this

issue.

Despite attempts to further understand medication and ADHD, more research

is needed to develop models of medication evaluation that are practical and increase

the lines of communication across home, school and the physician's office. However,

to date, research has failed to identify necessary components to facilitate

communication between school and physicians regarding information to make

decisions on medication effectiveness. Although many recommendations for "best

practices" are apparent in the literature, there has been a lack of focused research in

the area of facilitating school-physician communication. Specifically, more

information is needed to assist in the development of a potential model to facilitate

lines of communication (e.g., desired methods of communication). This information

is needed if we hope to bridge the gap between research and school-based practices in

medication assessment. Practiced lines of communication between schools and physicians can help to facilitate data-based decision making in the monitoring of medication for students with ADHD. Because primary care physicians are most likely to prescribe medication for students with ADHD, assessing their beliefs and attitudes surrounding medication evaluation procedures is necessary. In addition, since school psychologists are more likely to collect and communicate information to parents and/or physicians on the academic, behavioral, and social performance of students with ADHD, it is also important to assess school psychologists beliefs and attitudes. Thus, the primary purpose of this study was to document current lines of communication between school personnel and physicians to initiate, titrate, and monitor medication effects for students with ADHD and to determine desired methods of communication to facilitate school-physician communication. Specific communication practices assessed in this study were: (a) the student characteristics about which information is collected (e.g., academic performance, disruptive behavior, social interactions), (b) how school-based information is collected (e.g., direct observations, rating scales), (c) the format in which information is summarized and presented (e.g., graphs, numerical summaries), (d) the mode of communication (e.g., phone call, email, fax), (e) the person who communicates information (e.g., school psychologist, teacher), and (f) the frequency of communication (e.g., 2-3 times per year).

Research questions addressed specific communication practices in the following areas: current information exchange practices, satisfaction with current information exchange practices, desired information exchange practices, and barriers to and suggestions for school-physician communication. More specifically, the following research questions were addressed:

1. What are the typical current information exchange practices for school-physician communication?

2. How satisfied are physicians and school psychologists with current information exchange practices?

3. What are the desired information exchange practices for school-physician communication?

4. What are perceived barriers to school-physician communication, as reported by school psychologists and prescribing physicians?

5. What are potential ways to facilitate school-physician communication, as reported by school psychologists and prescribing physicians?

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CHAPTER II

METHODOLOGY

General Procedures

To document school-physician information exchange practices for medication evaluation purposes for students with ADHD, this study was conducted in two major phases (i.e., Phase 1 and Phase 2). In Phase 1 of this study, preliminary surveys were field-tested with local groups of physicians and school psychologists. In Phase 2, revised surveys were mailed to a national random sample of physicians and school psychologists. Participants, dependent measures, and general procedures for both phases are described in this section.

Participants

Participants are described for Phase1 and Phase 2 of this study. For both Phases, participants included a group of primary care physicians and a group of school psychologists. Participation was voluntary.

Phase 1 participants. Pilot participants included 24 primary care physicians and pediatric residents from Bronson Methodist Hospital and Michigan State University-Kalamazoo Center for Medical Studies and 22 school psychologists from urban and rural school districts (i.e., Kalamazoo, Van Buren, and Allegan Counties). Both groups have experience in working with children and adolescents diagnosed with ADHD. Demographic information is summarized for the physicians in Table 1a and for the school psychologists in Table 1b.

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Table 1a

Phase 1 Physician Demographics

	Percentage (Number)	Mean (Range)	Standard Deviation
Specialty (n=24)			
Pediatrician	66.7% (16)		
Other (e.g., Pediatric Neurologist)	4.2% (1)		
Years in Practice (n=24)		11 (1-50)	13.15
Year Completed Residency (n=22)		1989 (1957-2003)	13.51
Average Number of Patients (n=22)		21.6 (6-50)	10.72

Note: All data indicate the percentage (and number) of participants, mean rating, (range), and standard deviation.

Of the 24 physician respondents, 68% reported they were pediatricians, 4% general/family practitioners, and the remaining 29% other (i.e., med/peds, pediatric neurologist). Mean years in practice was 11 (range 1-50, SD = 13) and mean year completed residency was 1989 (range 1957-2003, SD = 13.5). The average number of patients seen per day was 21.6 (range 6-50, SD = 11). Physician respondents indicated that 6-10% of the children and adolescents that they serve are diagnosed with ADHD (i.e., 54% of the respondents) and that approximately 91-95% are receiving stimulant medication as a part of their treatment (i.e., 25% of the respondents).

Table 1b

Phase 1 School Psychologist Demographics

	Percentage (Number)	Mean (Range)	Standard Deviation
Setting (n=22)			
Public School	86.4% (19)		
Public and Private School	4.5% (1)		
Public and Other School	4.5% (1)		
Other (i.e., special education school for behavior disorders, psychiatric practice, pediatric practice, state agency)	4.5% (1)		
Years in Practice (n=22)		14 (1-26)	9.11
Year Completed Training Program (n=22)		1985 (1972-2000)	9.59
School Enrollment (n=21)		1492 (40-4000)	1191.54
Caseload Size per Year (n=20)		120 (38-500)	116.72

Note: All data indicate the percentage (and number) of participants, mean rating (and range), and standard deviation.

Of the 22 school psychologist respondents, 86% reported that they worked in a public school setting, 5% worked in a special education school for children with behavior disorders, 5% worked in both a public and private school, and 5% worked in a public special education school for behavior disorders. The average number of

school enrollment was 1492 (range 40-4000, SD = 1192). The mean number of years

school psychologist respondents have been practicing was 14 (range 1-26, SD = 9)

and the mean year they completed their training program was 1985 (range 1972-2000,

SD = 10). School psychologist respondents indicated that approximately 6-10% of

students are diagnosed with ADHD (i.e., 14% of the respondents) and that

approximately 86-90% of the students with ADHD are taking stimulant medication as

a part of their treatment (i.e., 18% of the respondents).

Phase 2 participants. Participants included primary care physicians who are

members of the American Medical Association (AMA) and all school psychologists

who are members of the National Association of School Psychologists (NASP). A

randomized national sample of 1000 primary care physicians and 500 school

psychologists were asked to participate in this study. Participant sampling procedures

were conducted by the professional organizations in which potential participants were

selected (i.e., AMA and NASP). Specifically, professional organizations provided a

random national sample of names and addresses from their membership database that

were stratified by state to ensure a balanced geographic distribution. The response

rates for primary care physicians and school psychologists were 17.6% (i.e., 176

surveys were returned out of 1000) and 39.2%(i.e., 196 surveys were returned out of

500), respectively. Demographic information is summarized for the physicians in

Table 2a and for the school psychologists in Table 2b.

Of the 176 physician respondents, 98.9% reported they were pediatricians and

the remaining 0.6% other (i.e., pediatric neurologist). Mean years in practice was 20

(range 1-49, SD = 10) and mean year completed residency was 1980 (range 1950-

1999, SD = 11). The average number of patients seen per day was 29 (range 1-125,

SD = 12). Physician respondents indicated that 1-10% of the children and

adolescents that they serve are diagnosed with ADHD (i.e., 79.5% of the respondents) and that approximately 81-90% are receiving stimulant medication as a part of their treatment (i.e., 26.1% of the respondents).

Table 2a

Phase 2 Physician Demographics

	Percentage (Number)	Mean (Range)	Standard Deviation
Specialty (n=175)			
Pediatrician	98.9% (174)		
Other (e.g., Pediatric Neurologist)	0.6% (1)		
Years in Practice (n=175)		20 (1-49)	10
Year Completed Residency (n=175)		1980 (1950-1999)	11
Average Number of Patients (n=22)		29 (1-125)	12

Note: All data indicate the percentage (and number) of participants, mean rating, (range), and standard deviation.

Of the 196 school psychologist respondents, 88.3% reported that they worked in a public school setting, 2.6% worked in a private school, 0.5% worked in a charter school, 1.0% worked in a private practice, 0.5% worked in both a public and private school, 1.0% worked in both a public and other setting, 0.5% worked in a both a private and other setting, and 4.1% worked in other (e.g., a public special education school for behavior disorders). The mean number of years school psychologist

respondents have been practicing was 14 (range 1-39, SD = 8.00) and the mean year

they completed their training program was 1986 (range 1967-2000, SD = 8.41). The

average school psychologist to student ratio was 1:1398 (range 20-7000, SD =

896.01). School psychologist respondents (n=193) indicated that approximately 1-

10% of students are diagnosed with ADHD (i.e., 53.1% of the respondents) and that

approximately 1-10% of the students with ADHD are taking stimulant medication as

a part of their treatment (i.e., 26.0% of the respondents).

Table 2b

Phase 2 School Psychologist Demographics

	Percentage (Number)	Mean (Range)	Standard Deviation
Setting (n=193)			
Public School	88.3% (173)		
Private School	2.6% (5)		
Private Practice	1.5% (3)		
Public and Private School	0.5% (1)		
Public and Other School	1.0% (2)		
Private and Other	0.5% (1)		
Other (e.g., special education school for students with behavior disorders)	4.1% (8)		

Table 2b—Continued

	Percentage (Number)	Mean (Range)	Standard Deviation
Years in Practice (n=193)		14 (1-39)	8.00
Year Completed Training Program (n=193)		1986 (1967-2000)	8.41
School Psychologist to Student Ratio (n=177)		1398 (20-7000)	896.01

Note: All data indicate the percentage (and number) of participants, mean rating (and range), and standard deviation.

Experimental Design

In order to document information exchange practices, the beliefs and attitudes of primary care physicians and school psychologists were assessed utilizing survey research. This study was conducted utilizing a two-group, post-only research design to report on current and desired information exchange practices between physicians and school psychologists. The experimental design was the same for Phase 1 and Phase 2 of the study.

Dependent Measures

Dependent measures are described for Phase 1 and 2 of the study. Information exchange practices between schools and physicians were documented through the use of a survey. Two versions of the survey (i.e., physician and school survey) were administered to the participants for each Phase. Phase 1 dependent measures included a preliminary physician survey, preliminary school survey, and a feedback form.

Based on survey results and information from the feedback form, the preliminary surveys were revised. The revised physician survey and revised school survey were the dependent measures in Phase 2.

Preliminary physician survey. This survey was designed to assess physician perceptions of both current and preferred information exchange practices between schools and physicians pertaining to medication evaluations for students with ADHD (see Appendix A). Survey questions focused on three major decision-making periods during medication evaluations: (a) before medication is initiated, (b) during titration of medication, and, (c) monitoring of an effective dosage._

For each of these three decision-making periods, physicians were asked to report on which student characteristics they typically receive school-based information on (e.g., classroom deportment, social interactions, cognitive ability, academic performance, and adverse reactions). In addition, they were asked to report how that information is typically collected (e.g., rating scales, direct observations, standardized tests, global impressions, incident reports, report cards/grades) and in what manner it is presented (i.e., written reports, verbal descriptions, numerical summaries, graphic representations). Next, physicians were asked to report through what mode of communication the information is typically exchanged (e.g., fax, e-mail, phone call, letter, intermediary), how often (e.g., frequency per week, month, or year), and by whom (e.g., parent/guardian, school psychologists, teacher, principal, school nurse).

Physicians were then asked to rate what information they find most useful in making medication decisions and to respond to questions regarding their satisfaction with current information exchange practices. Following this section of the survey, physicians were asked to report desired information exchange practices. Finally,

questions regarding barriers to effective information exchange practices and recommended solutions were included.

Preliminary school psychologist survey. This survey was designed to assess school psychologist perceptions of both current and preferred information exchange practices between schools and physicians pertaining to medication evaluations for students with ADHD (see Appendix B). Survey questions mirrored the physician survey and focused on the following decision-making periods: (a) before medication is prescribed, (b) when medication is evaluated, and, (c) when on-going treatment (i.e., medication) is monitored.

Feedback form. This semi-structured feedback form was designed to ascertain the time required to complete the survey, any ambiguity in wording of questions or choice options, and if the directions and format of the survey are easy to read and understand (see Appendix C). In addition, the form was designed to assess possible incentives for potential participants to complete and return the survey.

Revised physician survey. Based on feedback from Phase 1 participants, the preliminary physician survey was modified (see Appendix D). General differences in the revised survey from the preliminary form include minor changes in format, wording, and content. Directions were provided in more detail to facilitate accuracy in completing the survey. Based on preliminary findings from Phase 1, little variability existed across decision-making periods for questions asking desired school-physician communication practices. As a result, questions asking desired communication practices were not broken down into the three different time periods (i.e., before medication is prescribed, when medication is evaluated, and when on-going treatment is monitored), except for the question addressing the frequency of

contact. Changes in content of the survey included modifying choice options and removing one question. The choice options provided for questions were reworded in an attempt to be less ambiguous and to provide an option of no information or no communication. The question asking physicians to rank order their preference on "What information from school personnel do you find most useful in making medication decisions..." was eliminated from the revised form because it was frequently skipped or answered incorrectly on the preliminary survey. In addition, it was eliminated due to the fact that it did not document current information exchange practices, but rather asked what was preferred. This question did not provide significantly more information than already gathered through the question "About which student characteristic(s), do you desire more information from school personnel..." It is likely that physicians would mark the same information for both questions, since the information they find most useful in making medication decisions is probably the information they desire.

Revised school psychologist survey. This modified survey is very similar to the preliminary school survey (see Appendix E). In general, the same changes in format, wording, and content made to the physician survey were incorporated into the revised school survey form. The only additional change made to the school survey was in the revision of the demographic question addressing caseload size. This question was reworded to be more specific by using the same measurement scale used to determine caseload by NASP (i.e., school psychologist to student ratio).

Inter-coder Agreement. For both phases of the study, data were coded and entered into a database and analyzed through the use of a computerized statistical software package (i.e., SPSS). Prior to data entry, three graduate students were

trained to 90% agreement on the data entry procedures to ensure the reliability of the data entered. For at least 30% of the returned surveys, trained graduate students entered the data independently. Inter-coder agreement was calculated by comparing the entered responses from each coder. Percent agreement was calculated by taking the total number of agreements divided by the total number of agreements plus disagreements and multiplying by 100. For Phase 1, inter-coder agreement was calculated for 33% of the entries for the physician survey and for 32% of the entries for the school survey. For the physician and school surveys, the average agreement was 99.6% and 99.6%, respectively. For Phase 2, inter-coder agreement was calculated for 30% of the entries for the physician survey and for 30% of the entries for the school survey. The average agreement was 98.2% for the physician surveys and 99.6% for the school surveys.

General Procedures

In this section, general procedures for each phase of the study are described. For Phase 1, procedures for the development and field-testing of preliminary surveys are described. Procedures described for Phase 2 include mailing of surveys and incentives for response rate. Data analysis procedures were the same for both Phases and are described below.

Phase 1. Preliminary survey questions were developed from a comprehensive review of the literature and through consultation with a behavioral pharmacologist, pediatrician, school psychologist, and school administrator. Surveys were reviewed by groups of local primary care physicians and school psychologists to ensure that questions were relevant, presented in a manner that was clear, and easy to complete.

The preliminary physician survey was piloted to a forum of local physicians. Physicians were asked to complete the survey and provide feedback via a semi-structured feedback form. Additionally, a group of local school psychologists were asked to complete the preliminary school psychologist survey and provide feedback through the use of the feedback form. Based on feedback information, surveys were modified for mailing to a random national sample of potential participants (i.e., primary care physicians and school psychologists). Responses to preliminary surveys were summarized and are presented in the results section.

Phase 2. A total of 1000 primary care physicians and 500 school psychologists were asked to participate in this study. To increase the response rate for completed surveys, each potential participant received three mailings (i.e., initial survey packet, postcard reminder, another survey packet). Potential participants received an initial mailing packet that included a cover letter describing the purpose of the survey, a copy of the survey, a return pre-paid addressed envelope, and a small incentive for completing the survey (i.e., bookmark). Two-weeks after the initial survey mailing, a post-card reminder was sent to all potential participants. This reminder was designed to prompt participants to complete and return the survey. A second mailing of the survey (i.e., cover letter, survey, and pre-paid address envelope) was sent to all potential participants four weeks from the initial mailing with a request to complete and return the survey if they had not yet done so.

Based on survey research, the return of completed surveys tends to be greater when incentives are included with the mailings (Rea & Parker, 1997). Thus, included in the initial survey mailing only were incentives for all potential participants (i.e., bookmark). In addition, one larger incentive was available for each participant group (i.e., physicians and school psychologists). For one of the 1000 physicians and one of

the 500 school psychologists, a one-year subscription to the journal *Proven Practice:*
Prevention and Remediation of School Problems was available. The winners of the
journal subscriptions were notified by a postcard included in the initial mailing
package. Potential participants were prompted to examine the package materials for
the postcard indicating that they won. Winners were not required to complete and
return the survey to claim their free journal subscription. The incentives were
selected for practical and economic reasons.

Data analysis. For both Phases of the study, responses to the surveys were
entered into a computerized statistical software package (i.e., SPSS) using a coding
sheet. Descriptive statistics (e.g., mean, mode, median) were used to describe the
information gathered from the surveys. The average number of choice options that
were marked for each question was analyzed to assess the top rated responses to each
question. The top rated responses to each question varied from one to seven
responses. Top rated responses provides a general description of the current and
desired communication practices between schools and physicians, as reported by the
respondents. Any additional written comments provided by respondents were
summarized qualitatively.

CHAPTER III

RESULTS

Results for Phase 2 of the study are described in this section. See Appendix F for data summaries for Phase 1. Responses to the national survey were summarized using the data analysis procedures previously described.

In Phase 2 of the study, surveys were sent out to a national random sample of primary care physicians and school psychologists to document current and preferred information exchange practices. Data summaries for both the physician and school surveys are described under the following categories: (1) current information exchange practices, (2) satisfaction with current information exchange practices, (3) desired information exchange practices, and (4) barriers to and suggestions for communication.

What are the typical current information exchange practices? Current information exchange practices are reported for three different time periods: (1) before medication is prescribed, (2) when medication is being evaluated, and (3) when medication is being monitored. Table 3 illustrates current information exchanges practices reported by both physicians and school psychologists.

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Table 3

Typical Current Information Exchange Practices Reported by
Physicians and School Psychologists

Typical Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
Student Characteristics Information Collected On	(n=174)	(n=173)	(n=172)	(n=195)	(n=192)	(n=192)
Classroom Behavior	94.3% (166)	82.4% (145)	79.0% (139)	92.3% (181)	78.1% (153)	73.5% (144)
Social Interactions -	71.0% (125)	48.3% (85)	50.6% (89)	64.8% (127)	45.4% (89)	39.8% (78)
Cognitive Ability	59.7% (105)	26.1% (46)	25.0% (44)	45.4% (89)	8.2% (16)	6.1% (12)
Academic Perf.	83.0 % (146)	68.8% (121)	74.4% (131)	76.5% (150)	40.3% (79)	34.7% (68)
Adverse Reactions		42.0% (74)	36.9% (65)		42.3% (83)	33.2% (65)
No Information	5.1% (9)	11.4% (20)	14.8% (26)	7.1% (14)	19.9% (39)	23.0% (45)
Other (e.g., school history, attendance, processing skills, behavior at home)	1.1% (2)	1.7% (3)	0.0% (0)	8.2% (16)	3.6% (7)	4.6% (9)

Table 3—Continued

Typical Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
How Information is Collected	(n=175)	(n=174)	(n=173)	(n=195)	(n=190)	(n=192)
Direct Observation	47.2% (83)	43.8% (77)	47.7% (84)	77.6% (152)	57.7% (113)	54.1% (106)
Rating Scale	76.1% (134)	41.5% (73)	38.6% (68)	91.3% (179)	58.7% (115)	45.9% (90)
Standardized Test	36.4% (64)	7.4% (13)	8.0% (14)	45.9% (90)	7.7% (15)	4.1% (8)
Self-Report	37.5% (66)	36.9% (65)	36.9 % (65)	53.6% (105)	40.3% (79)	37.8% (74)
Incident Report	39.2% (69)	30.7% (54)	34.1% (60)	38.8% (76)	27.0% (53)	23.5% (46)
Report Card	59.7% (105)	44.9% (79)	52.3% (92)	48.0% (94)	27.6% (54)	29.1% (57)
No Information	2.8% (5)	11.4% (20)	10.8% (19)	5.6% (11)	16.3% (32)	19.9% (39)
Unclear	0.6% (1)	1.7% (3)	1.1% (2)			
Other (e.g., record review, specific forms,intervention)	8.0% (14)	8.0% (14)	9.1% (16)	16.3% (32)	10.2% (20)	8.2% (16)

Table 3—Continued

Typical Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
What Format Information is Summarized and Presented	(n=173)	(n=171)	(n=171)	(n=193)	(n=189)	(n=190)
Written Report	81.8% (144)	46.6% (82)	49.4% (87)	80.1% (157)	51.5% (101)	43.9% (86)
Verbal Description	36.4% (64)	47.2% (83)	43.8% (77)	36.7% (72)	46.4% (91)	46.9% (92)
Numerical Summaries	26.1% (46)	13.1% (23)	11.9% (21)	16.3% (32)	11.7% (23)	10.2% (20)
Graphic Representations	18.2% (32)	5.1% (9)	5.1% (9)	19.4% (38)	14.8% (29)	11.2% (22)
No Information	4.5% (8)	18.2% (32)	22.7% (40)	9.7% (19)	18.9% (37)	24.0% (47)
Other (e.g., team or parent meeting)	6.3% (11)	5.1% (9)	6.3% (11)	4.6% (9)	5.1% (10)	5.6% (11)
Mode of Communication Information is Sent/ Received	(n=174)	(n=171)	(n=170)	(n=194)	(n=190)	(n=192)
Phone Call	25.6% (45)	25.6% (45)	23.9% (42)	44.4% (87)	46.4% (91)	41.3% (81)
Postal Mail	37.5% (66)	19.9% (35)	21.6% (38)	56.1% (110)	35.7% (70)	31.6% (62)
Fax	15.9% (28)	12.5% (22)	11.9% (21)	32.1% (63)	23.0% (45)	18.9% (37)

Table 3—Continued

Typical Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
Mode of Communication Information is Sent/ Received	(n=174)	(n=171)	(n=170)	(n=194)	(n=190)	(n=192)
E-mail	1.7% (3)	2.8% (5)	3.4% (6)	2.6% (5)	2.0% (4)	2.6% (5)
Intermediary	81.8% (144)	76.1% (134)	76.7% (135)	63.8% (125)	52.6% (103)	51.5% (101)
No Information -	5.7% (10)	11.9% (21)	13.1% (23)	6.1% (12)	14.8% (29)	19.4% (38)
Other (e.g., team meeting, in person, www.portmd.com)	4.0% (7)	2.3% (4)	2.8% (5)	5.1% (10)	6.1% (12)	4.6% (9)
Who Communicates School- Based Information	(n=174)	(n=172)	(n=172)	(n=195)	(n=193)	(n=192)
Parent/Guardian	92.0% (162)	88.1% (155)	88.1% (155)	66.8% (131)	63.3% (124)	61.7% (121)
School Psych.	46.0% (81)	11.9% (21)	11.9% (21)	71.4% (140)	44.9% (88)	33.2% (65)
Teacher	63.1% (111)	45.5% (80)	40.3% (71)	33.2% (65)	42.9% (84)	40.8% (80)
Principal	5.7% (10)	0.6% (1)	1.1% (2)	5.6% (11)	2.6% (5)	3.1% (6)
School Nurse	11.4% (20)	10.2% (18)	8.5% (15)	18.4% (36)	24.5% (48)	22.4% (44)

Table 3—Continued

Typical Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
Who Communicates School- Based Information	(n=174)	(n=172)	(n=172)	(n=195)	(n=193)	(n=192)
No Information	1.7% (3)	3.4% (6)	4.5% (8)	3.1% (6)	8.7% (17)	11.7% (23)
Other (e.g., school social worker or counselor, outside diagnostician)	2.8% (5)	2.8% (5)	1.7% (3)	12.8% (25)	10.2% (20)	8.7% (17)
Frequency of Communication	(n=162)	(n=167)	(n=166)	(n=183)	(n=180)	(n=178)
1 or more times per week	2.8% (5)	6.8% (12)	1.1% (2)	6.6% (13)	5.1% (10)	3.1% (6)
2-3 times per month	10.8% (19)	27.8% (49)	4.0% (7)	8.2% (16)	16.8% (33)	5.1% (10)
1 time per month	15.3% (27)	20.5% (36)	7.4% (13)	17.9% (35)	19.9% (39)	14.3% (28)
Once every 2 months	1.7% (3)	5.1% (9)	10.2% (18)	5.1% (10)	5.6% (11)	5.1% (10)
2-3 times per year	19.3% (34)	13.6% (24)	45.5% (80)	10.7% (21)	15.8% (31)	23.0% (45)
Once per year	37.5% (66)	9.7% (17)	13.1% (23)	40.3% (79)	17.3% (34)	24.5% (48)
Never	4.5% (8)	11.4% (20)	13.1% (23)	4.6% (9)	11.2% (22)	15.8% (31)

Note: All data indicate the percentage (and number) of participants.

The top rated responses provides an overview of the current information exchange practices that typically occur between schools and physicians across all decision-making periods. Overall, physician respondents indicated that, currently, they typically receive information from school personnel on the classroom behavior, academic performance, and social interactions of the patient identified with ADHD. Information is usually collected through report cards, direct observations, and rating scales. School-based information is frequently summarized and presented through written reports and verbal descriptions sent to physicians via an intermediary (e.g., parent) and postal mail. Usually, the parent/guardian or classroom teacher communicates the school-based information to the physicians. The frequency of communication is usually once per year before medication is prescribed, 2-3 per month when medication is evaluated, and 2-3 times per year when medication is monitored.

As a whole, school psychologist respondents indicated that, currently, they typically send information to the prescribing physician on classroom behavior, social interactions, and academic performance of the student identified with ADHD. Information is generally collected through rating scales, direct observations, anecdotal/self-reports, and report cards that is summarized and presented in a written report format or verbal description to the physicians. School-based information is usually communicated to the physicians through postal mail, phone call or intermediary (i.e., parent). The person to communicate information to the physician is often the parent/guardian, school psychologist, or teacher. The frequency of communication typically occurs once per school year before medication is prescribed, once per month when medication is evaluated, and once per year when medication is monitored.

How satisfied are physicians and school psychologists with the current

information exchange practices? On a 5-point Likert scale (1=not satisfied,

3=somewhat satisfied, 5=totally satisfied), respondents were asked to rate how

satisfied they are with current information exchange practices. Overall, physician and

school psychologist respondents indicated that, generally, they are somewhat satisfied

with current information exchange practices. Both respondent groups rated the

frequency of communication to be the area they were the least satisfied. Satisfaction

ratings for both respondent groups are depicted in Table 4.

Overall, 96% (n = 169) of physician respondents indicated that, generally,

they are somewhat satisfied with current information exchange practices.

Specifically, physician respondents were somewhat satisfied with the content of

information (mean 3.0, range 1-5, SD 1.0), method of data collection (mean = 3.0,

range 1-5, SD = 1.0), format in which information is presented (mean = 3.0, range 1-

5, SD = 1.0), the mode of communication (mean = 3.0, range 1-5, SD = 1.0) and who

communicates information (mean = 3.2, range 1-5, SD = 1.0). Respondents were

slightly less than somewhat satisfied with the frequency of communication (mean =

2.8, range 1-5, SD = 1.1).

The 98% (n = 192) of school psychologist respondents indicated that,

generally, they were somewhat satisfied with current information exchange practices.

Specifically, respondents were somewhat satisfied with the content of information

(mean = 3.2, range 1-5, SD = 1.2), method of data collection (mean = 3.4, range 1-5,

SD = 1.1), format that it is presented to the prescribing physician (mean = 3.3, range

1-5, SD = 1.2), mode of communication (mean = 3.1, range 1-5, SD = 1.2), and who

communicates information (mean = 3.2, range 1-5, SD = 1.2). Respondents were less

than somewhat satisfied with the frequency of communication (mean = 2.3, range 1-5,

SD = 1.2).

Table 4

Satisfaction Ratings for Current Information Exchange Practices

Satisfaction Area	Physicians		School Psychologists	
	Mean (Range) Mode	Standard Deviation	Mean (Range) Mode	Standard Deviation
	(n=169)		(n=192)	
Content of Information	3.0 (1-5) 3.0	1.0	3.2 (1-5) 4.0	1.2
Method of Data Collection	3.0 (1-5) 3.0	1.0	3.4 (1-5) 4.0	1.1
Format in which Information is Summarized	3.0 (1-5) 3.0	1.0	3.3 (1-5) 4.0	1.2
Mode of Communication	3.0 (1-5) 3.0	1.0	3.1 (1-5) 4.0	1.2
Who Communicates Information	3.2 (1-5) 4.0	1.0	3.2 (1-5) 4.0	1.2
Frequency of Communication	2.8 (1-5) 3.0	1.1	2.3 (1-5) 1.0	1.2

Note: All data indicate the mean rating, (range), **mode**, and standard deviation. Ratings are based on a 5-point Likert scale (i.e., 1=not satisfied, 3=somewhat satisfied, 5=totally satisfied).

What are the desired information exchange practices for school-physician communication? Desired information exchange practices are reported in Tables 5a and 5b. The desired frequency of communication is reported for three decision-making periods: (1) before medication is prescribed, (2) when medication is being evaluated, and (3) when medication is being monitored. Desired information

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exchange practices reported by both respondent groups vary from reported current information exchange practices. For example, respondents indicated that frequency of communication needed to occur more often, especially during the evaluation of medication effects.

Table 5a

Desired Information Exchange Practices Reported by
Physicians and School Psychologists

	Physician		School Psychologist	
Desired Reported Practice				
Student Characteristics Information Collected On	(n=168)		(n=192)	
Classroom Behavior	77.8%	(137)	98.0%	(192)
Social Interactions	63.6%	(112)	79.1%	(155)
Cognitive Ability	61.9%	(109)	35.2%	(69)
Academic Performance	69.9%	(123)	76.5%	(150)
Adverse Reactions	43.8%	(77)	62.8%	(123)
Other (e.g., special ed. evaluations, learning style, home behavior)	4.5%	(8)	6.6%	(13)
How Information is Collected	(n=173)		(n=191)	
Direct Observations	74.4%	(131)	88.8%	(174)
Rating Scales	71.6%	(126)	93.9%	(184)
Standardized Tests	39.8%	(70)	33.2%	(65)
Anecdotal/Self-Reports	31.3%	(55)	54.1%	(106)

Table 5a—Continued

Desired Reported Practice	Physician		School Psychologist	
How Information is Collected		(n=173)		(n=191)
Incident Reports	30.7%	(54)	38.3%	(75)
Report Card/Grades	52.8%	(93)	43.4%	(85)
Other (e.g., interviews, direct conference, response to past interventions)	6.3%	(11)	7.7%	(15)
What Format Information is Summarized and Presented		(n=173)		(n=191)
Written Reports	89.8%	(158)	84.2%	(165)
Verbal Descriptions	39.2%	(69)	44.4%	(87)
Numerical Summaries	14.2%	(25)	19.9%	(39)
Graphic Representations	16.5%	(29)	21.9%	(43)
Other (e.g., specialized or IEP forms, consultation with physician)	3.4%	(6)	2.6%	(5)

Table 5a—Continued

	Physician		School Psychologist	
Desired Reported Practice				
<u>Mode of Communication Information is Sent/ Received</u>		(n=173)		(n=193)
Phone Call	55.7%	(98)	59.7%	(117)
Postal Mail	44.3%	(78)	52.0%	(102)
Fax	30.1%	(53)	31.6%	(62)
E-mail	6.8%	(12)	9.7%	(19)
Intermediary	54.5%	(96)	25.0%	(49)
Other (e.g., web, face to face)	4.0%	(7)	6.6%	(13)
<u>Who Communicates School- Based Information</u>		(n=174)		(n=193)
Parent/Guardian	54.0%	(95)	24.0%	(47)
School Psychologist	47.2%	(83)	78.1%	(153)
Teacher	74.4%	(131)	27.6%	(54)
Principal	2.3%	(4)	2.0%	(4)
School Nurse	8.5%	(15)	20.9%	(41)
Other (e.g., school social worker, school counselor)	2.8%	(5)	12.2%	(24)

<u>Note</u>: All data indicate the percentage (and number) of participants.

Table 5b

Desired Frequency of Communication Practices Reported by
Physicians and School Psychologists

Desired Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
Frequency of Communication	(n=164)	(n=165)	(n=163)	(n=184)	(n=183)	(n=178)
1 or more times per week	6.8% (12)	17.6% (31)	2.3% (4)	9.7% (19)	19.4% (38)	2.6% (5)
2-3 times per month	23.9% (42)	43.2% (76)	6.8% (12)	29.6% (58)	31.1% (61)	12.2% (24)
1 time per month	17.0% (30)	17.6% (31)	13.1% (23)	25.5% (50)	25.0% (49)	27.0% (53)
Once every 2 months	8.5% (15)	7.4% (13)	19.3% (34)	3.1% (6)	3.6% (7)	20.4% (40)
2-3 times per year	17.6% (31)	6.3% (11)	47.7% (84)	13.8% (27)	11.7% (23)	28.6% (56)
Once per year	19.3% (34)	1.7% (3)	3.4% (6)	12.2% (24)	2.6% (5)	3.6% (7)

Note: All data indicate the percentage (and number) of participants.

In general, school psychologist respondents indicated that they desire to send
information to prescribing physicians on the classroom behavior, academic
performance, and social interactions of the student identified with ADHD and adverse
reactions to medication. Rating scales, direct observations, anecdotal/self-reports,
and report cards/grades were reported to be the desired method to collect school-
based information. School psychologists desire to summarize and present

information to physicians in a written report and verbal descriptions format. The classroom teacher and school psychologist were reported to be the desired person to communicate school-based information to the physician. The desired method to communicate information was through the mail and phone call. Desired frequency of contact was 2-3 times per month before medication is prescribed, 2-3 times per month when medication is evaluated, and 2-3 times per year when medication is monitored.

What are perceived barriers to and potential ways to facilitate school-physician communication? Reported barriers to and suggestions for school-physician communication are illustrated in Table 6. Both the physicians and school psychologists reported that the most significant barrier to communication is the availability of time. More specifically, physician respondents reported that time constraints (81.3%, n = 143), mode of communication (47.2%, n = 83), and limited resources (30.7%, n = 54) were the top rated barriers to communication. Other suggested barriers included the degree to which teachers have the time to collect information; some teachers refuse to collect information; better double-blind placebo trial needed; parental inconsistency; and difficulty in building a working relationship. Top rated methods to facilitate communication identified by physicians were to allocate more time and resources (52.3%, n = 92) and establish timelines to communicate (42.6%, n = 75). Additional methods to foster school-physician communication included: (a) standardize a mode of communication, (b) have school psychologists do more testing to evaluate learning disabilities, (c) provide resources to address co-morbidities, (d) educate teachers about ADHD and treatments (i.e., medication and behavioral interventions), and (e) utilize a web based model (www.portmed.com).

Table 6

Barriers to and Suggestions for School-Physician Communication as Reported by
Physicians and School Psychologists

	Physicians		School Psychologists	
Barriers to Communication	(n=173)		(n=192)	
Time Constraints	81.3%	(143)	66.3%	(130)
Mode of Communication	47.2%	(83)	30.6%	(60)
Beliefs Surrounding Medication	27.8%	(49)	12.8%	(25)
Confidentiality Issues	23.3%	(41)	19.4%	(38)
Validity of School-Based Information	13.1%	(23)	0.0%	(0)
Unclear on What Information to Collect	0.0%	(0)	12.2%	(24)
Lack of Appropriate Training	23.9%	(42)	15.3%	(30)
Limited Resources	30.7%	(54)	13.8%	(27)
Other	5.1%	(9)	29.1%	(57)
Suggestion to Facilitate Communication	(n=169)		(n=187)	
Allocate more Time and Resources	52.3%	(92)	56.6%	(111)
Utilize Technology	29.5%	(52)	33.7%	(66)
Simplify Release of Confidential Information	25.6%	(45)	21.4%	(42)

Table 6—Continued

	Physicians		School Psychologists	
Suggestion to Facilitate Communication	(n=169)		(n=187)	
Establish Timelines to Communicate	42.6%	(75)	41.3%	(81)
Provide Appropriate Training	38.1%	(67)	28.6%	(56)
Foster Legal Mandates	1.1%	(2)	5.6%	(11)
Other	6.8%	(12)	13.8%	(27)

Note: All data indicate the percentage (and number) of participants.

School psychologist respondents reported time constraints (66.3%, n = 130) and mode of communication (30.6%, n = 60) to be the top barriers to school-physician communication. Other suggested barriers included the trouble contacting physicians directly and consistently; physicians don't request information; physicians request IQ testing and nothing more (e.g., functional behavioral assessment); failure to deliver advance notice to collect data; reliance on parental reports; and schools fear of having to pay for medical evaluations. Top rated methods to facilitate communication identified by school psychologists were to allocate more time and resources (56.6%, n = 111) and to establish timelines to communicate (41.3%, n = 81). Other methods to foster school-physician communication included: (a) build better relationships between schools and doctors (e.g., open house forum), (b) physicians to request information from schools directly, (c) alter physician expectations of what information schools can provide (other than a checklist), (d) identify a school contact person, (e) trains teachers on how to collect data and what information to collect, (f) educate parents, and (g) consistent follow-up procedures.

Physician and school psychologist responses to the question "who should be responsible for obtaining a release of information to allow school personnel and physicians to communicate directly?" are depicted in Table 7. Physician respondents rated parent/guardian (85.2%, n = 150) and the prescribing physician (21.0%, n = 37) to be the top person to be responsible for obtaining a release of information. School psychologist respondents rated parent/guardian (54.1%, n = 106) and the school psychologist (46.9%, n = 92) as the top person responsible.

Table 7

Person Responsible for Obtaining a Release of Information as Reported by
Physicians and School Psychologists

	Physicians Psychologists		School	
Person Responsible	(n=173)		(n=195)	
Parent/Guardian	85.2%	(150)	54.1%	(106)
School Nurse	6.8%	(12)	25.5%	(50)
School Psychologist	17.0%	(30)	46.9%	(92)
Prescribing Physician	21.0%	(37)	42.3%	(83)
Classroom Teacher	14.8%	(26)	12.2%	(24)
Principal	4.5%	(8)	13.3%	(26)
Other (e.g., person responsible for school enrollment or for evaluation or monitoring)	1.7%	(3)	17.3%	(34)

Note: All data indicate percentage and (number) of participants.

In addition, on a 5-point Likert scale (i.e., 1=never, 3=occasionally, 5=always), respondents rated how often physicians request information from schools

and how often do school personnel send the information to prescribing physicians. A summary of the ratings is depicted in Table 8. Physician respondents reported that they typically request information from schools (mean = 3.7, range 1-5, SD = 1.31) and that school personnel typically send information (mean = 3.7, range 1-5, SD = 0.93). School psychologists, on the other hand, reported that physicians only occasionally request information from schools (mean = 2.6, range 1-5, SD = 0.96) and that almost always school personnel send information (mean = 4.6, range 1-5, SD = 0.67).

Table 8

.Frequency in Which School-Based Information is Requested by
Physicians and Sent by School Personnel

	Physicians		School Psychologists	
	Mean (Range) **Mode**	Standard Deviation	Mean (Range) **Mode**	Standard Deviation
Do prescribing physicians request information from schools?	3.7 (1-5) **5.0**	1.31 (n=174)	2.6 (1-5) **2.0**	0.96 (n=193)
Do school personnel send information to prescribing physicians?	3.7 (1-5) **4.0**	0.93 (n=169)	4.6 (1-5) **4.0**	0.67 (n=192)

Note: All data indicate the mean rating, (range), **mode**, and standard deviation.
Ratings are based on a 5-point Likert scale (i.e., 1=never, 3=occasionally, 5=always).

CHAPTER IV

DISCUSSION

This study documented school-physician communication practices for medication evaluation purposes for students with ADHD utilizing a national survey of primary care physicians and school psychologists. Specific information exchange practices that were documented included: (a) the student characteristics about which information is collected (e.g., academic performance, disruptive behavior, social interactions), (b) how school-based information is collected (e.g., direct observations, rating scales), (c) the format in which information is summarized and presented (e.g., graphs, numerical summaries), (d) the mode of communication (e.g., phone call, email, fax), (e) the person who communicates information (e.g., school psychologist, teacher), and (f) the frequency of communication (e.g., 2-3 times per month). Discussion of results are presented for current information exchange practices, satisfaction with current information exchange practices, desired information exchange practices, and barriers to and suggestions for school-physician communication.

What are the typical current information exchange practices? Current information exchange practices were assessed for three-decision making periods: (1) before medication is prescribed, (2) when medication is being evaluated, and (3) when medication is being monitored. Results indicated that the variability across decision-making periods was generally minimal. Responses tended to be more similar across medication evaluation and monitoring periods and less similar before

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medication is prescribed.

Physicians and school psychologists generally agreed that school-based information is typically collected on classroom behavior, social interactions, and academic performance during the three decision-making periods. In addition, both groups agreed that cognitive ability information was typically communicated more frequently before medication is prescribed. This corresponds to previous research, in that, school psychologists are likely to collect and provide information (e.g., cognitive ability information) to prescribing physicians before the initiation of medication therapy (Miles, 2000). However, when medication is being evaluated and when medication is being monitored, respondents differed in their ratings on the degree to which cognitive ability information is communicated. More specifically, a higher percentage of physicians than school psychologists reported that cognitive ability information is communicated. Differences might be attributed to training backgrounds and experiences. For example, schools may view cognitive ability measures to be a time-intensive and less sensitive tool to monitor student performance when compared to other available measures (e.g., CBM, direct observations). Also, information on cognitive ability may be requested by physicians during these periods (thus the higher percentage compared to school psychologists), however, schools may not always send that particular information, or send it in a format that physicians may not categorize as cognitive ability information. This may explain why a higher percentage of school psychologists, compared to physicians, reported no information is sent during these periods. A discussion between professionals on the utility of this measure may be useful in addressing this issue.

Physicians reported direct observations, rating scales, and report cards are respectively the three primary methods in which school-based information is

collected. School psychologists also reported these methods were most common, but rated the use of self-reports more frequently than the use of report cards. Physician and school psychologist respondents indicated that standardized testing was a method used to collect school-based information more frequently before medication is prescribed and less often when medication is being evaluated and monitored. Differences in reported use of report cards and self-reports may be a result of physicians reporting on practices that occur in the school setting and not what they directly observe. Physicians may have responded to this question based on how school-based information is summarized and presented (e.g., percentage of time on-task may lead to direct observations as a method to collect such information), however, very few physician respondents indicated that it was unclear on how school-based information is collected. Because an intermediary (i.e., parent) is more likely to communicate information (e.g., Copeland et al., 1987), this may also contribute to reported differences. That is, parents may be communicating school-based information to physicians using their child's report card.

Both respondent groups reported that the format in which school-based information is summarized and presented is typically through written reports and/or verbal descriptions. The reported use of verbal descriptions increased across the decision-making periods (i.e., more frequent during medication evaluation and monitoring than before medication is prescribed). Both respondent groups indicated that school-based information is less likely to be summarized and presented using graphic representations and/or numerical summaries. The use of written reports and verbal descriptions may be less time-consuming to summarize school-based information. As a result, school psychologists may use it more frequently and consistently across decision-making periods.

According to physicians and school psychologist respondents, an intermediary (e.g., parent) was the most common reported mode of communication in which school-based information is delivered. The next most frequent mode of communication was postal mail before prescribing medication and phone call when evaluating and monitoring medications effects. Both respondent groups indicated e-mail to be the most infrequent mode of communication.

Parent/guardian was reported by both respondent groups to be the person who typically communicates school-based information across all decision-making periods. Physicians and school psychologists indicated that the classroom teacher and school psychologist are other primary persons who communicate school-based information. However, school psychologist respondents indicated they are more likely to communicate information to physicians than the classroom teacher before medication is prescribed (and to a small degree more when medication is being monitored). Both respondent groups indicated school psychologists communicate school-based information to physicians more often before medication is prescribed as compared to other decision-making periods. This is congruent with previous research that indicates school psychologists to be the school person who is most likely to collect, summarize and communicate school-based information in the assessment of ADHD (Miles, 2000). Both respondent groups indicated that the school nurse occasionally communicates school-based information. Compared to physicians, a higher percentage of school psychologists reported the school nurse and others, such as the school social worker or school counselor communicate information. In addition, school psychologists were more likely to report that no information is communicated.

Physicians and school psychologists agreed that the frequency of communication usually occurs once per school year before medication is prescribed.

Physicians reported the frequency of contact is typically 2-3 times per month when medication is evaluated and 2-3 times per year when medication is monitored. School psychologists indicated communication typically occurs once per month when medication is evaluated and once per school year when medication is being monitored. Although differences existed between the number of contacts when medication is evaluated and monitored, school psychologists and physicians agreed that the frequency of communication increases during the evaluation period and decreases during monitoring. We would hope that schools and physicians would communicate more frequently when medication is being evaluated to determine an appropriate medication type and dosage for the identified student with ADHD (Osman, 2000). Differences in frequency between school psychologists and physicians may be that physicians directly communicate with parents regarding school-based information (e.g., Copeland et al., 1987; Weithorn & Ross, 1975; Wolraich et al., 1990; Wright, 1997), thus school psychologists report more infrequent communication when evaluating and monitoring medication effects.

How satisfied are physicians and school personnel with the current information exchange practices? Generally, physicians and school psychologists reported that they are somewhat satisfied (i.e., mean ratings ranged from 3.0 to 3.4) with what student characteristics information is collected on, the method in which information is collected, the format in which information is summarized and presented, the mode of communication in which information is communicated, and who communicates information. Although this information does not suggest dissatisfaction with specific current information exchange practices, the rating does indicate a need for improved practices. Both respondent groups indicated they are less satisfied with the frequency of communication (i.e., mean rating of 2.3 and 2.8).

These satisfaction ratings document the need to improve school-physician information exchange practices, particularly with regard to the frequency of communication. Because frequency of contact was reported to be the area of least satisfaction, it may be a place to address first to enhance communication practices. By fostering more frequent communication across decision-making periods, both physicians and school psychologists may be able to modify other specific information exchange practices (e.g., type of information sent, how information is collected, mode of communication).

What are the desired information exchange practices for school-physician communication? Both respondent groups indicated classroom behavior, academic performance, and social interactions to be the desired student characteristics to assess. This coincides with reported current information exchange practices. Differences between groups occurred with the degree to which cognitive ability and adverse reaction information is desired. Physicians desire more cognitive ability information and school psychologists want to collect and send more adverse reaction information. Physicians may receive adverse reaction information from the parent/guardian, student and/or from directly observing the student in the physician's office (e.g., physical exams), thus, more information regarding medication side-effects may not be perceived by physicians as necessary to evaluate medication effectiveness. This difference between cognitive ability information was also noted in current information exchange practices for two of the three decision-making periods (i.e., when medication is evaluated and when medication is monitored).

Physicians and school psychologists identified direct observations, rating scales, and report cards/grades as the desired format to collect school-based information. School psychologists, however, reported that they desire the use of

anecdotal/self-reports more than the use of report cards/grades. Group differences are consistent with current information exchange practices. School psychologists might desire the use of self-reports because they are accustomed to this current practice.

Desired formats to summarize and present school-based information were written reports and verbal descriptions. Both respondent groups agreed graphic representations and numerical summaries were the least desired formats to present information. Reported desired practices are consistent with current information exchange practices. Other desired formats included using specially designed forms and direct consultation.

Both respondent groups reported that a phone call was the desired mode of communication for medication evaluation purposes. Physicians indicated that use of an intermediary (e.g., parent) to be the next most desirable mode of communication. School psychologists, in contrast, indicated postal mail. Desired information exchange practices differed from current practices. Specifically, both respondent groups indicated that, initially, an intermediary is the most frequently used mode of communication, then, the use of postal mail (before prescribing medication) and phone call (when evaluating and monitoring medications effects). When using an intermediary to communicate information, the accuracy of communication may be compromised (Copeland et a., 1987; Wolraich et al., 1990). Physicians and school psychologists report that they desire more direct contact through the use of a phone call. A potential reason why this may not be occurring may be because of the differences in scheduling between school personnel and physicians. In addition, if parents do not sign a release of information to directly communicate, then physicians or school psychologists cannot attempt direct contact with one another.

Physicians and school psychologists identified a school person (i.e., classroom

teacher, school psychologist) to be the most desirable person to communicate school-based information. Both want to have more direct school-physician contact when compared to current practices (i.e., indirect school-physician contact). In addition to the classroom teacher, physicians reported the parent/guardian as an additional person to communicate school-based information. School psychologists, on the other hand, indicated themselves as the most desirable person to communicate information and the classroom teacher as the next desired person. Differences in desired practice might be attributed to the fact the school psychologists may be the person more likely to collect school-based information (e.g., conduct systematic classroom observations, administer and score rating scales) that is provided to the teacher who communicates the information to the parent or physician. The classroom teacher and school psychologist may be seen to work as a "team" that communicates information to physicians.

Physician and school psychologist respondents agreed on the desired frequency of communication across all decision-making periods. In particular, desired frequency of contact was 2-3 times per month before medication is prescribed, 2-3 times per month when medication is evaluated, and 2-3 times per year when medication is monitored. Thus, in comparison to reported current practices, respondents desire more frequent contact across all decision-making periods.

What are perceived barriers and potential ways to facilitate school-physician communication? Physician and school psychologist respondents identified the most frequent barriers to communication to be time constraints and mode of communication. In addition, physician respondents indicated limited resources as another barrier to direct school-physician contact. School psychologists identified "other" as an additional communication barrier. A review of other comments

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indicated responses fell into the following categories: difficulty in contacting physicians directly and consistently; physicians don't request information; type of information physicians request (e.g., IQ testing); and reliance on parental reports. Identifying the mode of communication as a barrier to school-physician communication is congruent with findings from other aspects of this study (i.e., current vs. desired practices). The reported current mode of communication (i.e., intermediary) does not lend itself to foster more frequent and open lines of communication between schools and physicians. Desired information exchange practice supports the need for a more direct mode of communication to facilitate school-physician communication.

To address barriers to communication, physicians and school psychologists suggested allocating more time and resources in addition to establishing timelines to communicate. Providing appropriate training and utilizing technology (e.g., web based model) were other suggested ways to facilitate communication. Both groups of respondents identified specific areas for training issues under comments noted in "other". For example, physicians desire to educate teachers about ADHD and treatments (i.e., medication and behavioral interventions). School psychologists want to alter physician expectations of what information schools can provide and to train teachers on how to collect data and what information to collect. Additional ways to foster school-physician communication, as indicated by school psychologists, included: physicians to request information from schools directly and to identify a school contact person.

In order for physicians and school personnel to communicate directly, a release of information document must be signed by the parent/guardian. The top person identified by physicians and school psychologists to obtain a release of

information was the parent/guardian. In addition, respondents indicated themselves (i.e., prescribing physicians and school psychologists) to take responsibility in obtaining a release of information to facilitate more direct communication. To foster more direct lines of communication, prescribing physicians and school psychologists need to be more insistent in obtaining a release of information.

Physicians report they almost always request information from schools (mean rating of 3.7) and they almost always receive it (mean rating of 3.7). In contrast, school psychologists reported physicians only occasionally ask for school-based information (mean rating of 2.6) and when physicians do, they almost always send it (mean rating of 4.6). This discrepancy is consistent with findings from previous research (Copeland et al., 1987; Gadow, 1983). The differences in these ratings may be a result of the current mode of communication (intermediary) and who communicates information (parent/guardian). When physicians primarily communicate to the school via the parent, break down in communication is probable. For example, parents/guardians may not always ask school personnel to gather information to send to the prescribing physician, despite that fact that the physician requested the parent to do so.

Implications of Findings

This study extended the research by documenting specific information exchange practices in more detail (e.g., on what student characteristic(s) is information collected, how information is collected, format information is presented and summarized) than previous research findings have addressed (e.g., Brulle et al., 1983; Copeland et al., 1987; Solomons, 1973; Wolraich et al., 1990; Wright, 1997). In addition, earlier research has looked at physician perceptions and teacher

perceptions (e.g., Brulle et al., 1983; Weithorn & Ross, 1975), but has not systematically compared reported practices between the two groups. Summaries of specific information exchange practices detail what currently is being communicated with regards to specific practices, how satisfied they are with each practice, and what are desired practices. Comparing detailed communication practices between physicians and school psychologists identified discrepancies within and between current and desired practices. Differences in current and desired information exchange practices support the need for the development of models to facilitate communication. This research specifically identified communication practices (i.e., mode of communication, who communicates school-based information, and the frequency of communication) that may be impeding direct school-physician contact. Such information is needed if we hope to bridge the gap between research and school-based practices in medication assessment.

According to this study, physicians want more cognitive ability information from schools to make medication decisions, which is consistent with previous research (e.g., Copeland et al., 1987). In addition, physicians reported a barrier to communication to be the degree to which schools are open to providing testing results (e.g., results that may be a part of a special education evaluation). School psychologists can administer other measures that are more cost-effective than typical standardized tests. Yet school psychologists note that physicians do not always ask for other information that may be more feasible to collect (e.g., CBM, systematic behavioral observations). For example, reading and math CBM and on-task behavior collected through systematic direct observations have been found to be sensitive to medication responsiveness and may be more feasible for school practitioners to administer (Roberts et al., 1999). The use of more vigilant measures can provide

more valuable information with regards to responsiveness to stimulant medication (e.g., Northup et al. 1999; Roberts et al., 1999). Schools need to understand that it may be difficult for physicians to access more vigilant measures with the lack of direct school-physician contact, thus they rely on what is readily available. Findings from this study further support the need to identify and define more vigilant measures to collect student characteristic information.

Additionally, the findings of this study suggest that physicians and school psychologists may not have a clear understanding of each other's professional training, experiences, and daily practices. For example, physicians desire to have more cognitive ability information and school psychologists report that physicians rarely ask for school-based information. This lack of understanding becomes a concern as the numbers of students taking stimulant medication for ADHD increases (Rappley, et al., 1995; Safer et al., 1996; Safer & Krager, 1988). Establishing a forum of educators and physicians may address some barriers to direct school-physician communication. By having physicians and educators meet in an open forum, a clearer understanding of other's professional training background and job roles and responsibilities may arise. This can be valuable, in that, both physicians and educators can get to know each other on a more personal and professional level. In addition, physicians and educators can directly communicate regarding information exchange practices. For example, if educators are going to collect information on classroom behavior (e.g., on-task behavior, disruptive behavior) then physicians can recommend a method to collect the information (e.g., systematic direct observation) that will provide them with more meaningful information than current practice (e.g., behavior rating scales, anecdotal/self-reports) to make medication decisions. Finally, physicians and educators can establish timelines and modes of communication that

are feasible and will likely impact more direct and frequent contact.

Findings of this study further document that school-physician communication lacks direct contact. Because previous research documenting and noting poor communication across home, school, and physician has occurred over a 30-year span there was a need to assess to what degree preliminary findings generalized to current practices (e.g., Brulle et al., 1983; Gadow, 1983; Solomons, 1973; Weithorn & Ross, 1975; Wright, 1997). Results of this study helped to clarify how information exchange practices compare to findings from earlier research. For example, several research studies noted that physicians primarily rely on school-based information reported to them by parents to make medication decisions (e.g., Copeland et al., 1987; Weithorn & Ross, 1975; Wolraich et al., 1990). Specifically, Weithorn and Ross (1975) indicated that direct contact between teachers and physicians occurred infrequently, and that, more information was provided through an intermediary source (e.g., parent). In some instances, no communication occurred. This is consistent with current information exchange practices documented in this study. That is, contact between schools and physicians typically occur through parents/guardians, when direct contact does occur, it happens infrequently. As a result, direct contact between schools and physicians continues to be less than desirable. Moreover, findings of this study support the desire for a change in current practice to include more direct contact (e.g., phone call) between schools and physicians. The lack of effective communication across parents, educators, and physicians is problematic and one might argue that poor monitoring of medication effects may be attributed to this lack of direct communication (Gadow, 1983; Weithorn & Ross, 1975; Wright, 1997).

<u>Limitations</u>

The sample of returned surveys may not be representative of the total population; therefore, the generality of the results may be limited. More specifically, because response to the survey was voluntary, the returned surveys may represent a biased sample, in that, participants who respond to the survey may be different than those who did not. In addition, the random sample was selected based on membership to professional national organizations (i.e., AMA and NASP). Thus, the responses may have differed from those who were not members of national organizations (e.g., members of national organizations may be more likely to engage in best practices). Furthermore, considering information assessment devices relied on self-report, the data gathered from both surveys may not be representative of what actually occurs in practice. More specifically, practices reported by physicians and school psychologists may not coincide with actual clinical or school practice.

The use of a mail-out survey may have resulted in a lower response rate than other survey methods (e.g., telephone interviews, in-person interviews). In an attempt to address this potential limitation, proper methods for increasing response rates for mail-based surveys (e.g., Ary, Jacobs & Razavieh, 1996; Rea & Parker, 1997) were incorporated in the procedures (i.e., frequent survey mailings, post-card reminder, and incentives). Although the sample size selected from each membership database from AMA and NASP was approximately 2.5% for both the physician and school psychologist groups, the response rate for physicians (17.6%) was much lower than the response rate for the school psychologists (39.2%). Through the use of a mail out survey we can expect a response rate between 40-60% to be satisfactory for purposes of analysis of findings (e.g., Ary, Jacobs & Razavieh, 1996; Rea & Parker, 1997). However, other studies that have assessed information exchange practices have

collected information from a small number of participants through the use of a telephone interview or by hand delivering surveys to participants (e.g., Brulle et al., 1983; Solomons, 1973; Weithorn & Ross, 1975; Wright 1997). These findings are limited to the degree in which they generalize. Some studies that have assessed physician responses through mail-out surveys have resulted in 40%-50% response rate (Copeland et al. 1987; Wolraich et al., 1990). These preliminary studies that have assessed physician practices regarding medication management have been conducted by medical affiliates. Potentially, the lower physician response rate that was obtained through this study could be a result of who conducted the survey research.

Future Directions for Research and Practice

To bridge the gap between research and school-based practices in medication assessment, we need to identify ways to facilitate more frequent and direct lines of communication between school and physicians. Three specific information exchange practices (i.e., mode of communication, who communicates information and frequency of communication) were identified in this study as plausible next steps to foster communication practices. This information can impact more frequent and direct communication practices that, in turn, may lead to improved monitoring of medication effects for students with ADHD. For example, by increasing communication frequency, medication may be altered more efficiently (i.e., quickly and appropriately) and, thus, impact the educational growth and performance of students with ADHD. According to current information exchange practices, if monitoring medication effects only occurs approximately (1-3 times per year) then changes in medication that may be necessary might not occur until a later date. If

medication is not at an optimal level for a student with ADHD, this can impact various educational components (e.g., classroom behavior, social interactions with peers or adults, time-on task, homework completion). If we want to change current practices, then we need to provide school personnel and physicians with opportunities to directly communicate with one another (e.g., in an open forum session). As a result, by improving specific lines of communication in practice, medication decisions for students with ADHD may be more efficient and effective.

Based on survey results, respondents indicated that time constraints impedes communication on a consistent basis. Future directions for practice might focus on establishing timelines and guidelines for communication once medication is prescribed. For example, when a student is diagnosed with ADHD and stimulant medication (e.g., Ritalin) is initiated as a part of treatment, physicians can outline timelines for communication with schools (e.g., every Friday when evaluating medication effects, every first week of the month when monitoring medication effects) and guidelines on what student characteristics to collect school-based information, how to collect it, how to summarize and present it, etc. Additionally, we need to consider how managed care may impact direct and frequent contact between physicians and schools. If primary care physicians are limited to a certain number of phone calls for reimbursement, this can affect the degree to which direct contact occurs.

The findings of this study documented current and desired information exchange practices between physicians and school psychologists. The existing data may be further examined to evaluate within group differences. For example, do specific information exchange practices differ for school psychologists with a higher versus a smaller caseload? Copeland et al. (1987) findings suggested physicians that

were more recently trained to be more in line with best practices in the assessment of ADHD and titration of medication. Another within group comparison may be to assess if differences exist between recently trained professionals and those who were trained at an earlier date.

In addition to this study, methods used in previous studies have included interviews (face to face or phone) or surveys. It would be important for next steps for research to attempt to directly observe to assess if reported practices are actually occurring in daily practice. This is more difficult to carry out, but an area for future research to address. Also, more research is needed in evaluating the utility of more vigilant measures in determining responsiveness to stimulant medication. Direct observation was reported to be one of the current and desired practice to collect school-based information. However, the reported format in which school-based information is typically summarized and presented is through written reports and/or verbal descriptions. Based on this information, one would wonder on the type of direct observation (i.e., systematic or informal) typically being utilized. If systematic, we might expect that the information would be summarized using graphic representation and/or numerical summaries. If informal, then through written reports or verbal descriptions. If direct observational data is collected in an informal manner, then we might be cautious in interpreting the findings, especially when evaluating medication effects. More specifically, informal observations tend to be more subjective in nature and the use of that information alone is a concern (Gulley & Northup, 1997; Stoner et al., 1994). Although preliminary studies (e.g., Northup et al., 1999; Roberts et al., 1999) have supported the use of objective measures (e.g., systematic direct observations) that may be more time-efficient for school practitioners to incorporate into practice when collecting school-based information,

additional research is needed.

In addition to validating the findings of this study, future research might focus on testing hypothesized methods (e.g., establishing timelines, standardize a mode of communication) to facilitate communication and to determine their impact on determining effective medication types and dosages. For example, given a sample form that details what and how to collect information (e.g., Brulle et al., 1983; DuPaul & Stoner, 1994; Weithorn & Ross, 1975) and given pre-established timelines to communication (i.e., every Friday through email), to what degree does that impact evaluating medication effects? Specifically, will clearly defined communication expectations impact effective medication dosage and types as opposed to current information exchange practices wherein, frequency is low and type of information sent is not always desired? In addition, future research may focus on identifying how poor communication methods impact medication treatment for students with ADHD. For example, given case vignettes, to what degree does certain information (e.g., classroom behavior vs. academic performances) impact medication decisions (e.g. increase or decrease dosage). If we provide the same information to physicians, but alter the format in which it is presented, how might that impact medication decisions?

In essence, we want to facilitate lines of communication across all systems when monitoring interventions for students with ADHD. This is particularly important when stimulant medication is a part of their intervention. This study documented information exchange practices betweens school and physicians that lead to the identification of barriers and breakdowns in lines of communication, as well as methods to improve communication practices. This study provides an initial research base of information that is needed to further impact medication evaluation practices for students with ADHD. We must move forward from here to improve more direct

and frequent communication by addressing future research questions to impact

practice.

Appendix A

Preliminary Physician Survey

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PHYSICIAN SURVEY

What is your specialty?

___ Pediatrician   ___ General/Family Practitioner   ___ Psychiatrist   ___ Other (specify) _____

How many *years* have you been practicing? _____

What *year* did you complete your residency training? _____

Average number of <u>patients</u> seen *per day*? _____

Of the children and adolescents you see, approximately what percentage are <u>diagnosed with Attention Deficit Hyperactivity Disorder (ADHD)</u>?

__ 0-5%	__ 6-10%	__ 11-15%	__ 16-20%	__ 21-25%	__ 26-30%	__ 31-35%
__ 36-40%	__ 41-45%	__ 46-50%	__ 51-55%	__ 56-60%	__ 61-65%	__ 66-70%
__ 71-75%	__ 76-80%	__ 81-85%	__ 86-90%	__ 91-95%	__ 96-100%	

Of the children and adolescents with ADHD, how many have <u>stimulant medication</u> as a part of their treatment?

__ 0-5%	__ 6-10%	__ 11-15%	__ 16-20%	__ 21-25%	__ 26-30%	__ 31-35%
__ 36-40%	__ 41-45%	__ 46-50%	__ 51-55%	__ 56-60%	__ 61-65%	__ 66-70%
__ 71-75%	__ 76-80%	__ 81-85%	__ 86-90%	__ 91-95%	__ 96-100%	

Please answer the following questions based on your experience with children and adolescents you treat who are diagnosed with ADHD.

<u>DIRECTIONS</u>: *For each of the questions, check <u>all</u> that apply.*

About which <u>student characteristic(s)</u> do you typically receive information *from school personnel...*

before **INITIATION** of medication?	*during* **TITRATION** of medication?	*during* **MONITORING** of effective dosage?
☐ Classroom Deportment	☐ Classroom Deportment	☐ Classroom Deportment
☐ Social Interactions	☐ Social Interactions	☐ Social Interactions
☐ Cognitive Ability	☐ Cognitive Ability	☐ Cognitive Ability
☐ Academic Performance	☐ Academic Performance	☐ Academic Performance
☐ No Information	☐ Adverse Reactions	☐ Adverse Reactions
☐ Other (specify) _____	☐ No Information	☐ No Information
	☐ Other (specify) _____	☐ Other (specify) _____

Typically, <u>how</u> is *school-based* information that you receive <u>collected</u>?

before **INITIATION** of medication?	*during* **TITRATION** of medication?	*during* **MONITORING** of effective dosage?
☐ Direct Observations	☐ Direct Observations	☐ Direct Observations
☐ Rating Scales	☐ Rating Scales	☐ Rating Scales
☐ Standardized Tests	☐ Standardized Tests	☐ Standardized Tests
☐ Global Impressions	☐ Global Impressions	☐ Global Impressions
☐ Incident Reports	☐ Incident Reports	☐ Incident Reports
☐ Report Cards/Grades	☐ Report Cards/Grades	☐ Report Cards/Grades
☐ Unclear	☐ Unclear	☐ Unclear
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

PLEASE GO TO NEXT PAGE ⊃

What information from *school personnel* do you find most useful in making medication decisions... Please rank the top five in order of most to least important (i.e., "1" most important to "5" least important).

before INITIATION of medication?	*during* TITRATION of medication?	*during* MONITORING of effective dosage?
___ Classroom Deportment	___ Classroom Deportment	___ Classroom Deportment
___ Social Interactions	___ Social Interactions	___ Social Interactions
___ Cognitive Ability	___ Cognitive Ability	___ Cognitive Ability
___ Academic Performance	___ Academic Performance	___ Academic Performance
___ Other (specify) _____	___ Adverse Reactions	___ Adverse Reactions
_____	___ Other (specify) _____	___ Other (specify) _____

In what manner is information from *school personnel* typically presented to you...

before INITIATION of medication?	*during* TITRATION of medication?	*during* MONITORING of effective dosage?
❑ Written Reports	❑ Written Reports	❑ Written Reports
❑ Verbal Descriptions	❑ Verbal Descriptions	❑ Verbal Descriptions
❑ Numerical Summaries	❑ Numerical Summaries	❑ Numerical Summaries
❑ Graphic Representations	❑ Graphic Representations	❑ Graphic Representations
❑ Other (specify) _____	❑ Other (specify) _____	❑ Other (specify) _____

Typically, how is information *from school personnel* communicated to you...

before INITIATION of medication?	*during* TITRATION of medication?	*during* MONITORING of effective dosage?
❑ Phone Call	❑ Phone Call	❑ Phone Call
❑ Letter	❑ Letter	❑ Letter
❑ Fax	❑ Fax	❑ Fax
❑ E-mail	❑ E-mail	❑ E-mail
❑ Intermediary (e.g., Parent)	❑ Intermediary (e.g., Parent)	❑ Intermediary (e.g., Parent)
❑ Don't Communicate	❑ Don't Communicate	❑ Don't Communicate
❑ Other (specify) _____	❑ Other (specify) _____	❑ Other (specify) _____

Who typically communicates *school-based* information to you...

before INITIATION of medication?	*during* TITRATION of medication?	*during* MONITORING of effective dosage?
❑ Parent/Guardian	❑ Parent/Guardian	❑ Parent/Guardian
❑ School Psychologist	❑ School Psychologist	❑ School Psychologist
❑ Teacher	❑ Teacher	❑ Teacher
❑ Principal	❑ Principal	❑ Principal
❑ School Nurse	❑ School Nurse	❑ School Nurse
❑ Other (specify) _____	❑ Other (specify) _____	❑ Other (specify) _____

PLEASE GO TO NEXT PAGE ⊃

On average and per case, how <u>frequently</u> is information *from schools* communicated to you...
Check ☒ one and fill in the appropriate number.

before INITIATION of medication?

☐ _____ times per week
☐ _____ times per month
☐ _____ times per year

during TITRATION of medication?

☐ _____ times per week
☐ _____ times per month
☐ _____ times per year

during MONITORING of effective dosage?

☐ _____ times per week
☐ _____ times per month
☐ _____ times per year

DIRECTIONS: *Please circle the appropriate number.*

With respect to making judgments about appropriate use of medication...

How satisfied are you with the <u>content</u> of the information provided by *school personnel*?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the <u>method(s)</u> by which *school-based* information is <u>collected</u>?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the current <u>format</u> in which *school-based* information is presented to you?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with <u>who</u> typically communicates *school-based* information to you?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the current <u>method</u> by which *school-based* information is typically communicated to you?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the current <u>frequency</u> in which *school-based* information is typically communicated to you?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

DIRECTIONS: *Check <u>all</u> that apply.*
About which <u>student characteristic(s)</u> do you desire more information *from school personnel*...

before INITIATION of medication?

☐ Classroom Deportment
☐ Social Interactions
☐ Cognitive Ability
☐ Academic Performance
☐ Other (specify) _____
_____

during TITRATION of medication?

☐ Classroom Deportment
☐ Social Interactions
☐ Cognitive Ability
☐ Academic Performance
☐ Adverse Reactions
☐ Other (specify) _____

during MONITORING of effective dosage?

☐ Classroom Deportment
☐ Social Interactions
☐ Cognitive Ability
☐ Academic Performance
☐ Adverse Reactions
☐ Other (specify) _____

PLEASE GO TO NEXT PAGE ⊃

Through which **method(s)** do you desire *school-based* information be collected...

before **INITIATION** of medication?	*during* **TITRATION** of medication?	*during* **MONITORING** of effective dosage?
❏ Direct Observations	❏ Direct Observations	❏ Direct Observations
❏ Rating Scales	❏ Rating Scales	❏ Rating Scales
❏ Standardized Tests	❏ Standardized Tests	❏ Standardized Tests
❏ Global Impressions	❏ Global Impressions	❏ Global Impressions
❏ Incident Reports	❏ Incident Reports	❏ Incident Reports
❏ Report Cards/Grades	❏ Report Cards/Grades	❏ Report Cards/Grades
❏ Other (specify) _____	❏ Other (specify) _____	❏ Other (specify) _____

In what **format** do you desire *school-based* information be presented to you?

before **INITIATION** of medication?	*during* **TITRATION** of medication?	*during* **MONITORING** of effective dosage?
❏ Written Reports	❏ Written Reports	❏ Written Reports
❏ Verbal Descriptions	❏ Verbal Descriptions	❏ Verbal Descriptions
❏ Numerical Summaries	❏ Numerical Summaries	❏ Numerical Summaries
❏ Graphic Representations	❏ Graphic Representations	❏ Graphic Representations
❏ Other (specify) _____	❏ Other (specify) _____	❏ Other (specify) _____

Through what **method(s)** do you desire to communicate *with school personnel*...

before **INITIATION** of medication?	*during* **TITRATION** of medication?	*during* **MONITORING** of effective dosage?
❏ Phone Call	❏ Phone Call	❏ Phone Call
❏ Letter	❏ Letter	❏ Letter
❏ Fax	❏ Fax	❏ Fax
❏ E-mail	❏ E-mail	❏ E-mail
❏ Intermediary (e.g., Parent)	❏ Intermediary (e.g., Parent)	❏ Intermediary (e.g., Parent)
❏ Other (specify) _____	❏ Other (specify) _____	❏ Other (specify) _____

Who do you desire to communicate *school-based* information to you...

before **INITIATION** of medication?	*during* **TITRATION** of medication?	*during* **MONITORING** of effective dosage?
❏ Parent/Guardian	❏ Parent/Guardian	❏ Parent/Guardian
❏ School Psychologist	❏ School Psychologist	❏ School Psychologist
❏ Teacher	❏ Teacher	❏ Teacher
❏ Principal	❏ Principal	❏ Principal
❏ School Nurse	❏ School Nurse	❏ School Nurse
❏ Other (specify) _____	❏ Other (specify) _____	❏ Other (specify) _____

Ideally, for each case, how **frequently** would you like to have contact *with school personnel*...
Check ☒ one and fill in the appropriate number.

before **INITIATION** of medication?	*during* **TITRATION** of medication?	*during* **MONITORING** of effective dosage?
❏ _____ times per week	❏ _____ times per week	❏ _____ times per week
❏ _____ times per month	❏ _____ times per month	❏ _____ times per month
❏ _____ times per year	❏ _____ times per year	❏ _____ times per year

PLEASE GO TO NEXT PAGE ⊃

DIRECTIONS: *Circle the appropriate number or check all that apply.*

Do you systematically request information from *schools* for the purposes of initiating, titrating and monitoring medication treatment?

1	2	3	4	5
Never		Occasionally		Always

When you ask for information from *schools*, do you typically receive it?

1	2	3	4	5
Never		Occasionally		Always

For medication evaluation purposes, what significant barrier(s) exist that impede upon school-physician communication?

- ❑ Time Constraints
- ❑ Confidentiality Issues
- ❑ Lack of Appropriate Training
- ❑ Modes of Communication
- ❑ Validity of School-Based Information
- ❑ Limited Resources Available
- ❑ Beliefs Regarding Medication
- ❑ Other (specify) _____

What may help to facilitate lines of communication between physicians and schools with respects to medication issues?

- ❑ Allocate More Time/Resources
- ❑ Simplify Release of Confidential Information
- ❑ Provide Appropriate Training
- ❑ Utilize Technology (e.g., e-mail)
- ❑ Establish Timelines to Communicate
- ❑ Foster Legal Mandates
- ❑ Other (specify) _____

Who do you believe should be responsible for obtaining a release of information for school personnel and physicians to have direct contact?

- ❑ Parent/Guardian
- ❑ School Psychologist
- ❑ Classroom Teacher
- ❑ Building Principal
- ❑ School Nurse
- ❑ Physician
- ❑ Other (specify) _____

ADDITIONAL COMMENTS:

_____
_____
_____
_____
_____
_____
_____

☺ Thank you for your time and effort to complete this survey! ☺

Appendix B

Preliminary School Psychologist Survey

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SCHOOL PSYCHOLOGIST SURVEY

In what type of setting do you primarily work?

____ Public School   ____ Private School   ____ Charter School   ____ Private Practice   ____ Other (specify) _____

If you work in schools, *how many* students are enrolled in the school(s) that you serve? _____

How *many years* have you been practicing as a school psychologist? _____

What *year* did you complete your graduate training? _____

What is your average caseload size *per school year*? _____

Of the students you serve, what percentage are diagnosed with Attention Deficit Hyperactivity Disorder (ADHD)?

___ 0-5%   ___ 6-10%   ___ 11-15%   ___ 16-20%   ___ 21-25%   ___ 26-30%   ___ 31-35%

___ 36-40%   ___ 41-45%   ___ 46-50%   ___ 51-55%   ___ 56-60%   ___ 61-65%   ___ 66-70%

___ 71-75%   ___ 76-80%   ___ 81-85%   ___ 86-90%   ___ 91-95%   ___ 96-100%

Of the students with ADHD, what percentage take medication (e.g., Ritalin, Cylert, Dexedrine) as a part of their treatment?

___ 0-5%   ___ 6-10%   ___ 11-15%   ___ 16-20%   ___ 21-25%   ___ 26-30%   ___ 31-35%

___ 36-40%   ___ 41-45%   ___ 46-50%   ___ 51-55%   ___ 56-60%   ___ 61-65%   ___ 66-70%

___ 71-75%   ___ 76-80%   ___ 81-85%   ___ 86-90%   ___ 91-95%   ___ 96-100%

Please answer the following questions based on your experience in working with students diagnosed with ADHD. **DIRECTIONS:** For each of the questions, check *all* that apply.

Typically, which **student characteristic(s)** is *school-based* information collected on and sent to *prescribing physicians*...

before medication is **PRESCRIBED?**	*when* medication is **EVALUATED?**	*when* on-going treatment is **MONITORED?**
❏ Classroom Behavior	❏ Classroom Behavior	❏ Classroom Behavior
❏ Social Interactions	❏ Social Interactions	❏ Social Interactions
❏ Cognitive Ability	❏ Cognitive Ability	❏ Cognitive Ability
❏ Academic Performance	❏ Academic Performance	❏ Academic Performance
❏ No Information	❏ Adverse Reactions	❏ Adverse Reactions
❏ Other (specify) _____	❏ No Information	❏ No Information
	❏ Other (specify) _____	❏ Other (specify) _____

Typically, how is *school-based* information that is sent to *prescribing physicians* collected...

before medication is **PRESCRIBED?**	*when* medication is **EVALUATED?**	*when* on-going treatment is **MONITORED?**
❏ Direct Observations	❏ Direct Observations	❏ Direct Observations
❏ Rating Scales	❏ Rating Scales	❏ Rating Scales
❏ Standardized Tests	❏ Standardized Tests	❏ Standardized Tests
❏ Self-Reports (e.g., teacher, student, etc.)	❏ Self-Reports (e.g., teacher, student, etc.)	❏ Self-Reports (e.g., teacher, student, etc.)
❏ Disciplinary Actions	❏ Disciplinary Actions	❏ Disciplinary Actions
❏ Report Cards/Grades	❏ Report Cards/Grades	❏ Report Cards/Grades
❏ Other (specify) _____	❏ Other (specify) _____	❏ Other (specify) _____

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Typically, how is *school-based* information <u>presented</u> to *prescribing physicians*...

before medication is <u>PRESCRIBED</u>?	*when* medication is <u>EVALUATED</u>?	*when* on-going treatment is <u>MONITORED</u>?
☐ Written Reports	☐ Written Reports	☐ Written Reports
☐ Verbal Descriptions	☐ Verbal Descriptions	☐ Verbal Descriptions
☐ Numerical Summaries	☐ Numerical Summaries	☐ Numerical Summaries
☐ Graphic Representations	☐ Graphic Representations	☐ Graphic Representations
☐ No Information Presented	☐ No Information Presented	☐ No Information Presented
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

Typically, <u>how</u> is school-based information <u>communicated</u> to *prescribing physicians*...

before medication is <u>PRESCRIBED</u>?	*when* medication is <u>EVALUATED</u>?	*when* on-going treatment is <u>MONITORED</u>?
☐ Phone Call	☐ Phone Call	☐ Phone Call
☐ Letter	☐ Letter	☐ Letter
☐ Fax	☐ Fax	☐ Fax
☐ E-mail	☐ E-mail	☐ E-mail
☐ Intermediary (e.g., Parent)	☐ Intermediary (e.g., Parent)	☐ Intermediary (e.g., Parent)
☐ Don't Communicate	☐ Don't Communicate	☐ Don't Communicate
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

<u>Who</u> typically communicates *school-based* information to *prescribing physicians*...

before medication is <u>PRESCRIBED</u>?	*when* medication is <u>EVALUATED</u>?	*when* on-going treatment is <u>MONITORED</u>?
☐ Parent/Guardian	☐ Parent/Guardian	☐ Parent/Guardian
☐ School Psychologist	☐ School Psychologist	☐ School Psychologist
☐ Teacher	☐ Teacher	☐ Teacher
☐ Principal	☐ Principal	☐ Principal
☐ School Nurse	☐ School Nurse	☐ School Nurse
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

On average and per case, how <u>frequently</u> is *school-based* information communicated to *prescribing physicians*... Check ☒ one and fill in the appropriate number.

before medication is <u>PRESCRIBED</u>?	*when* medication is <u>EVALUATED</u>?	*when* on-going treatment is <u>MONITORED</u>?
☐ _____ times per week	☐ _____ times per week	☐ _____ times per week
☐ _____ times per month	☐ _____ times per month	☐ _____ times per month
☐ _____ times per year	☐ _____ times per year	☐ _____ times per year

<u>DIRECTIONS</u>: *Circle the appropriate number.*

With respect to school-physician communication for purposes of evaluating medication effects...

How satisfied are you with the <u>content</u> of the information that is provided to *prescribing physicians*?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

PLEASE GO TO NEXT PAGE ➲

How satisfied are you with the <u>methods</u> by which *school-based* information is <u>collected</u>?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the current <u>format</u> in which *school-based* information is presented to *prescribing physicians*?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the current <u>method</u> by which *school-based* information is typically <u>communicated</u> to *prescribing physicians*?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with <u>who</u> typically communicates *school-based* information to *prescribing physicians*?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the current <u>frequency</u> with which *school-based* information is typically communicated to *prescribing physicians*?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

DIRECTIONS: *Check all that apply.*

Which <u>student characteristic(s)</u> is desired to collect information on and send to *prescribing physicians*...

before medication is **PRESCRIBED**?	*when* medication is **EVALUATED**?	*when* on-going treatment is **MONITORED**?
☐ Classroom Behavior	☐ Classroom Behavior	☐ Classroom Behavior
☐ Social Interactions	☐ Social Interactions	☐ Social Interactions
☐ Cognitive Ability	☐ Cognitive Ability	☐ Cognitive Ability
☐ Academic Performance	☐ Academic Performance	☐ Academic Performance
☐ No Information	☐ Adverse Reactions	☐ Adverse Reactions
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

What is the desired <u>method(s)</u> to collect *school-based* information...

before medication is **PRESCRIBED**?	*when* medication is **EVALUATED**?	*when* on-going treatment is **MONITORED**?
☐ Direct Observations	☐ Direct Observations	☐ Direct Observations
☐ Rating Scales	☐ Rating Scales	☐ Rating Scales
☐ Standardized Tests	☐ Standardized Tests	☐ Standardized Tests
☐ Self-Reports (e.g., teacher, student, etc.)	☐ Self-Reports (e.g., teacher, student, etc.)	☐ Self-Reports (e.g., teacher, student, etc.)
☐ Disciplinary Actions	☐ Disciplinary Actions	☐ Disciplinary Actions
☐ Report Cards/Grades	☐ Report Cards/Grades	☐ Report Cards/Grades
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

PLEASE GO TO NEXT PAGE ⊃

What is the desired <u>format</u> to present *school-based* information to *prescribing physicians* ...

before medication is <u>PRESCRIBED</u>?	*when* medication is <u>EVALUATED</u>?	*when* on-going treatment is <u>MONITORED</u>?
❑ Written Reports	❑ Written Reports	❑ Written Reports
❑ Verbal Descriptions	❑ Verbal Descriptions	❑ Verbal Descriptions
❑ Numerical Summaries	❑ Numerical Summaries	❑ Numerical Summaries
❑ Graphic Representations	❑ Graphic Representations	❑ Graphic Representations
❑ Other (specify) _____	❑ Other (specify) _____	❑ Other (specify) _____

What is the desired <u>method(s)</u> to communicate with *prescribing physicians* ...

before medication is <u>PRESCRIBED</u>?	*when* medication is <u>EVALUATED</u>?	*when* on-going treatment is <u>MONITORED</u>?
❑ Phone Call	❑ Phone Call	❑ Phone Call
❑ Letter	❑ Letter	❑ Letter
❑ Fax	❑ Fax	❑ Fax
❑ E-mail	❑ E-mail	❑ E-mail
❑ Intermediary (e.g., Parent)	❑ Intermediary (e.g., Parent)	❑ Intermediary (e.g., Parent)
❑ Other (specify) _____	❑ Other (specify) _____	❑ Other (specify) _____

<u>Who</u> is the desired person to communicate *school-based* information to *prescribing physicians*...

before medication is <u>PRESCRIBED</u>?	*when* medication is <u>EVALUATED</u>?	*when* on-going treatment is <u>MONITORED</u>?
❑ Parent/Guardian	❑ Parent/Guardian	❑ Parent/Guardian
❑ School Psychologist	❑ School Psychologist	❑ School Psychologist
❑ Teacher	❑ Teacher	❑ Teacher
❑ Principal	❑ Principal	❑ Principal
❑ School Nurse	❑ School Nurse	❑ School Nurse
❑ Other (specify) _____	❑ Other (specify) _____	❑ Other (specify) _____

Ideally, for each case, what is the desired <u>frequency</u> of contact with *prescribing physicians* ...
Check ☒ one and fill in the appropriate number.

before medication is <u>PRESCRIBED</u>?	*when* medication is <u>EVALUATED</u>?	*when* on-going treatment is <u>MONITORED</u>?
❑ _____ times per week	❑ _____ times per week	❑ _____ times per week
❑ _____ times per month	❑ _____ times per month	❑ _____ times per month
❑ _____ times per year	❑ _____ times per year	❑ _____ times per year

<u>DIRECTIONS</u>: *Circle the appropriate number or check all that apply.*

Do *prescribing physicians* systematically request information from schools for purposes of initiating, evaluating and monitoring medication treatment?

1	2	3	4	5
Never		Occasionally		Always

When *prescribing physicians* ask for information from schools, is it typically sent?

1	2	3	4	5
Never		Occasionally		Always

98

For medication ~~v~~ ~~luati~~
communicatic
☐ Time Constr~~u~~
☐ Modes of Co~~...~~ ~~~atic~~
☐ Beliefs Surr~~~~ ~~g Me~~

What may he ~~facili~~
medication iss ~~~~
☐ Allocate Mor ~~e; F.~~
☐ Utilize Tech~~u~~ ~~/ (e.g.,~~
☐ Other (speci ~~~~ _____

Who should t ~~r~~ns
have direct co: ~~~~ ?
☐ Parent/Guar~~~~
☐ School Nurs~~e~~

_____
_____
_____
_____
_____
_____
_____

on school-physician

Appropriate Training
~~1~~ Resources Available
_____

with respects to

Appropriate Training
Legal Mandates
_____

school personnel to

Building Principal
_____

_____
_____
_____
_____
_____
_____

☺ Than~~k~~ ~~you f~~ ~~th~~is survey! ☺

For medication evaluation purposes, what significant barrier(s) exist that impede upon school-physician communication?

- ☐ Time Constraints
- ☐ Modes of Communication
- ☐ Beliefs Surrounding Medication

- ☐ Confidentiality Issues
- ☐ Unclear on What Information To Collect
- ☐ Other (specify) _____

- ☐ Lack of Appropriate Training
- ☐ Limited Resources Available

What may help to facilitate lines of communication between physicians and schools with respects to medication issues?

- ☐ Allocate More Time/Resources
- ☐ Utilize Technology (e.g., e-mail)
- ☐ Other (specify) _____

- ☐ Simplify Release of Confidential Information
- ☐ Establish Timelines to Communicate

- ☐ Provide Appropriate Training
- ☐ Foster Legal Mandates

Who should be responsible for obtaining a release of information for physicians and school personnel to have direct contact?

- ☐ Parent/Guardian
- ☐ School Nurse

- ☐ School Psychologist
- ☐ Prescribing Physician

- ☐ Classroom Teacher
- ☐ Other (specify) _____

- ☐ Building Principal

ADDITIONAL COMMENTS:

_____

_____

_____

_____

_____

_____

_____

☺ Thank you for your time and effort to complete this survey! ☺

Appendix C

Feedback Form

99

Thank you for your willingness to test out our survey and to supply us with feedback. Please feel free to write comments on the actual survey.

1. How long did it take you to read and complete the survey?   _____ minutes

2. Are the questions asked in a manner that is easily understood?   YES   NO
   If **NO**, please indicate the specific question(s) and why it is troublesome.

   _____

   _____

3. Is the format of the survey easy to read and interpret?   YES   NO
   If **NO**, please identify what was problematic and why.

   _____

   _____

4. Do the answer choices correspond to the questions being asked?   YES   NO
   If **NO**, please identify what was problematic and why.

   _____

   _____

5. Are the answer choices flexible enough to reflect your opinion(s)?   YES   NO
   If **NO**, please identify what was problematic and why.

   _____

   _____

6. Are the directions to complete the survey easy to follow?   YES   NO

7. Do you see the utility of the survey to help determine lines of communication between educators and physicians for the purpose of managing and monitoring medication treatment for children and adolescents with ADHD?   YES   NO

8. What would motivate you to complete and return this survey?

   _____

   _____

Please provide any additional comments on the back of this form.

Appendix D

Revised Physician Survey

101

PHYSICIAN SURVEY

What is your specialty?

☐ Pediatrician ☐ General/Family Practitioner ☐ Psychiatrist ☐ Other (specify) _____

How many *years* have you been practicing? _____

What *year* did you complete your residency training? _____

Typically, what is the average number of <u>patients</u> you see *per day*? _____

Of the children and adolescents you see, *approximately* what percentage are <u>diagnosed with Attention Deficit Hyperactivity Disorder (ADHD)</u>?

☐ 0-10% ☐ 11-20% ☐ 21-30% ☐ 31-40% ☐ 41-50%
☐ 51-60% ☐ 61-70% ☐ 71-80% ☐ 81-90% ☐ 91-100%

Of the children and adolescents with ADHD, *approximately* how many have <u>stimulant medication</u> as a part of their treatment?

☐ 0-10% ☐ 11-20% ☐ 21-30% ☐ 31-40% ☐ 41-50%
☐ 51-60% ☐ 61-70% ☐ 71-80% ☐ 81-90% ☐ 91-100%

DIRECTIONS: PLEASE ANSWER THE FOLLOWING QUESTIONS BASED ON YOUR EXPERIENCE WITH CHILDREN AND ADOLESCENTS YOU TREAT WHO ARE DIAGNOSED WITH ADHD. BECAUSE INFORMATION MAY VARY DURING DIFFERENT TIMES OF TREATMENT (I.E., INITIATION, EVALUATION AND MONITORING OF TREATMENT), PLEASE ANSWER THE QUESTIONS FOR EACH IDENTIFIED TIME PERIOD. CHECK **ALL** THAT APPLY.

About which <u>student characteristic(s)</u> do you typically receive information *from school personnel*...

before **INITIATION** of medication?	*during* **TITRATION** of medication?	*during* **MONITORING** of effective dosage?
☐ Classroom Behavior	☐ Classroom Behavior	☐ Classroom Behavior
☐ Social Interactions	☐ Social Interactions	☐ Social Interactions
☐ Cognitive Ability	☐ Cognitive Ability	☐ Cognitive Ability
☐ Academic Performance	☐ Academic Performance	☐ Academic Performance
☐ No Information	☐ Adverse Reactions	☐ Adverse Reactions
☐ Other (specify) _____	☐ No Information	☐ No Information
	☐ Other (specify) _____	☐ Other (specify) _____

Typically, <u>how</u> is *school-based* information that you receive <u>collected</u>?

before **INITIATION** of medication?	*during* **TITRATION** of medication?	*during* **MONITORING** of effective dosage?
☐ Direct Observations	☐ Direct Observations	☐ Direct Observations
☐ Rating Scales (e.g., ADDES,CBCL)	☐ Rating Scales	☐ Rating Scales
☐ Standardized Tests	☐ Standardized Tests	☐ Standardized Tests
☐ Global Impressions (self-reports)	☐ Global Impressions	☐ Global Impressions
☐ Discipline/Incident Reports	☐ Discipline/Incident Reports	☐ Discipline/Incident Reports
☐ Report Cards/Grades	☐ Report Cards/Grades	☐ Report Cards/Grades
☐ Unclear/Don't Know	☐ Unclear/Don't Know	☐ Unclear/Don't Know
☐ No Information Collected	☐ No Information Collected	☐ No Information Collected
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

PLEASE GO TO NEXT PAGE ➲

What method(s) is information *from school personnel* typically summarized and presented to you...

before INITIATION of medication?	*during* TITRATION of medication?	*during* MONITORING of effective dosage?
☐ Written Reports/Letters	☐ Written Reports/Letters	☐ Written Reports/Letters
☐ Verbal Descriptions	☐ Verbal Descriptions	☐ Verbal Descriptions
☐ Numerical Summaries	☐ Numerical Summaries	☐ Numerical Summaries
☐ Graphic Representations	☐ Graphic Representations	☐ Graphic Representations
☐ No Information Sent	☐ No Information Sent	☐ No Information Sent
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

Typically, what method(s) is information *from school personnel* communicated to you...

before INITIATION of medication?	*during* TITRATION of medication?	*during* MONITORING of effective dosage?
☐ Phone Call	☐ Phone Call	☐ Phone Call
☐ Postal Mail	☐ Postal Mail	☐ Postal Mail
☐ Fax	☐ Fax	☐ Fax
☐ E-mail –	☐ E-mail	☐ E-mail
☐ Intermediary (e.g., Parent)	☐ Intermediary (e.g., Parent)	☐ Intermediary (e.g., Parent)
☐ Don't Communicate	☐ Don't Communicate	☐ Don't Communicate
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

Who typically communicates *school-based* information to you...

before INITIATION of medication?	*during* TITRATION of medication?	*during* MONITORING of effective dosage?
☐ Parent/Guardian	☐ Parent/Guardian	☐ Parent/Guardian
☐ School Psychologist	☐ School Psychologist	☐ School Psychologist
☐ Teacher	☐ Teacher	☐ Teacher
☐ Principal	☐ Principal	☐ Principal
☐ School Nurse	☐ School Nurse	☐ School Nurse
☐ Don't Communicate	☐ Don't Communicate	☐ Don't Communicate
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

On average and per case, how frequently is information *from schools* communicated to you...
[CHECK ONE BOX FOR EACH TIME PERIOD]

before INITIATION of medication?	*during* TITRATION of medication?	*during* MONITORING of effective dosage?
☐ 1 or more times per week	☐ 1 or more times per week	☐ 1 or more times per week
☐ 2-3 times per month	☐ 2-3 times per month	☐ 2-3 times per month
☐ 1 time per month	☐ 1 time per month	☐ 1 time per month
☐ Once every 2 months	☐ Once every 2 months	☐ Once every 2 months
☐ 2-3 times per year	☐ 2-3 times per year	☐ 2-3 times per year
☐ Once per year	☐ Once per year	☐ Once per year
☐ Never	☐ Never	☐ Never

PLEASE GO TO NEXT PAGE ⊃

DIRECTIONS: CIRCLE THE NUMBER THAT BEST REPRESENTS YOUR LEVEL OF SATISFACTION WITH SCHOOL-PHYSICIAN COMMUNICATION FOR THE PURPOSE OF EVALUATING MEDICATION EFFECTS.

How satisfied are you with the content of information provided by *school personnel*?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the method(s) by which *school-based* information is collected?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the format in which *school-based* information is summarized and presented to you?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with who typically communicates *school-based* information to you?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the method by which *school-based* information is typically communicated by to you?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the frequency in which *school-based* information is typically communicated to you?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

DIRECTIONS: PLEASE ANSWER THE FOLLOWING QUESTIONS BASED ON WHAT ARE THE PREFERRED LINES OF SCHOOL-PHYSICIAN COMMUNICATION. CHECK **ALL** THAT APPLY.

About which student characteristic(s) do you prefer more information *from school personnel*...

☐ Classroom Behavior   ☐ Social Interactions   ☐ Cognitive Ability

☐ Academic Performance   ☐ Adverse Reactions   ☐ Other (specify) _____

Through which method(s) do you prefer *school-based* information be collected...

☐ Direct Observations   ☐ Rating Scales   ☐ Standardized Tests

☐ Global Impressions/Self-Reports   ☐ Discipline/Incident Reports   ☐ Report Cards/Grades

☐ Other (specify) _____

In what method(s) do you prefer *school-based* information be summarized and presented to you?

☐ Written Reports/Letters   ☐ Oral/Verbal Descriptions   ☐ Numerical Summaries

☐ Graphic Representations   ☐ Other (specify) _____

Through what method(s) do you prefer to communicate *with school personnel*...

☐ Phone Call   ☐ Postal Mail   ☐ Fax

☐ E-mail   ☐ Intermediary (e.g., Parent)   ☐ Other (specify) _____

PLEASE GO TO NEXT PAGE ⊃

Who do you prefer to communicate *school-based* information to you...

☐ Parent/Guardian ☐ School Psychologist ☐ Teacher

☐ Principal ☐ School Nurse ☐ Other (specify) _____

Ideally, for each case, how **frequently** do you prefer to have contact *with school personnel*...

[CHECK **ONE** BOX FOR EACH TIME PERIOD]

before INITIATION of medication?	*during* TITRATION of medication?	*during* MONITORING of effective dosage?
☐ 1 or more times per week	☐ 1 or more times per week	☐ 1 or more times per week
☐ 2-3 times per month	☐ 2-3 times per month	☐ 2-3 times per month
☐ 1 time per month	☐ 1 time per month	☐ 1 time per month
☐ Once every 2 months	☐ Once every 2 months	☐ Once every 2 months
☐ 2-3 times per year	☐ 2-3 times per year	☐ 2-3 times per year
☐ Once per year	☐ Once per year	☐ Once per year

DIRECTIONS: CIRCLE THE APPROPRIATE NUMBER **OR** CHECK **ALL** THAT APPLY.

Do you systematically request information from *schools* for the purpose of evaluating medication effects?

1	2	3	4	5
Never		Occasionally		Always

When you ask for information from *schools*, do you typically receive it?

1	2	3	4	5
Never		Occasionally		Always

For medication evaluation purposes, what significant barrier(s) exist that impede upon school-physician communication?

☐ Time Constraints ☐ Confidentiality Issues ☐ Lack of Appropriate Training

☐ Modes of Communication ☐ Validity of School-Based Information ☐ Limited Resources Available

☐ Beliefs Regarding Medication ☐ Other (specify) _____

What may help to facilitate lines of communication between schools and physicians with respects to medication issues?

☐ Allocate More Time/Resources ☐ Simplify Release of Confidential Information ☐ Provide Appropriate Training

☐ Utilize Technology (e.g., e-mail) ☐ Establish Timelines to Communicate ☐ Foster Legal Mandates

☐ Other (specify) _____

Who do you believe should be responsible for obtaining a release of information for school personnel and physicians to have direct contact?

☐ Parent/Guardian ☐ School Psychologist ☐ Classroom Teacher ☐ Building Principal

☐ School Nurse ☐ Physician ☐ Other (specify) _____

☺ THANK YOU FOR COMPLETING THIS SURVEY! ☺

—

Appendix E

Revised School Psychologist Survey

106

SCHOOL SURVEY

In what type of setting do you primarily work?

❏ Public School ❏ Private School ❏ Private Practice ❏ Other (specify) _____

If you work in schools, what is the school psychologist to student ratio (e.g., 1:1,500)? _____

How *many years* have you been practicing as a school psychologist? _____

What *year* did you complete your graduate training (e.g., 1973)? _____

Of the students you serve, *approximately* what percentage are <u>diagnosed with Attention Deficit Hyperactivity Disorder (ADHD)</u>?

❏ 0-10%   ❏ 11-20%   ❏ 21-30%   ❏ 31-40%   ❏ 41-50%
❏ 51-60%   ❏ 61-70%   ❏ 71-80%   ❏ 81-90%   ❏ 91-100%

Of the students with ADHD, *approximately* what percentage take <u>medication</u> (e.g., Ritalin, Dexedrine) as a part of their treatment?

❏ 0-10%   ❏ 11-20%   ❏ 21-30%   ❏ 31-40%   ❏ 41-50%
❏ 51-60%   ❏ 61-70%   ❏ 71-80%   ❏ 81-90%   ❏ 91-100%

DIRECTIONS: PLEASE ANSWER THE FOLLOWING QUESTIONS BASED ON YOUR EXPERIENCE IN WORKING WITH STUDENTS DIAGNOSED WITH ADHD. BECAUSE INFORMATION SENT TO PHYSICIANS MAY VARY DURING DIFFERENT TIMES OF TREATMENT (I.E., INITIATION, EVALUATION AND MONITORING OF TREATMENT), PLEASE ANSWER THE QUESTIONS FOR EACH IDENTIFIED TIME PERIOD. CHECK **ALL** THAT APPLY.

Typically, which <u>student characteristic(s)</u> is *school-based* information collected on and sent to *prescribing physicians...*

before medication is **PRESCRIBED**?	*when* medication is **EVALUATED**?	*when* on-going treatment is **MONITORED**?
❏ Classroom Behavior	❏ Classroom Behavior	❏ Classroom Behavior
❏ Social Interactions	❏ Social Interactions	❏ Social Interactions
❏ Cognitive Ability	❏ Cognitive Ability	❏ Cognitive Ability
❏ Academic Performance	❏ Academic Performance	❏ Academic Performance
❏ No Information Collected	❏ Adverse Reactions	❏ Adverse Reactions
❏ Other (specify) _____	❏ No Information Collected	❏ No Information Collected
	❏ Other (specify) _____	❏ Other (specify) _____

Typically, what <u>method(s)</u> is used to <u>collect</u> *school-based* information that is sent to *prescribing physicians...*

before medication is **PRESCRIBED**?	*when* medication is **EVALUATED**?	*when* on-going treatment is **MONITORED**?
❏ Direct Observations	❏ Direct Observations	❏ Direct Observations
❏ Rating Scales (e.g., CBCL, ADDES)	❏ Rating Scales (e.g., CBCL, ADDES)	❏ Rating Scales (e.g., CBCL, ADDES)
❏ Standardized Tests	❏ Standardized Tests	❏ Standardized Tests
❏ Anecdotal or Self-Reports	❏ Anecdotal or Self-Reports	❏ Anecdotal or Self-Reports
❏ Disciplinary/Incident Reports	❏ Disciplinary/Incident Reports	❏ Disciplinary/Incident Reports
❏ Report Cards/Grades	❏ Report Cards/Grades	❏ Report Cards/Grades
❏ No Information Sent	❏ No Information Sent	❏ No Information Sent
❏ Other (specify) _____	❏ Other (specify) _____	❏ Other (specify) _____

Typically, in what __format__ is *school-based* information __summarized__ and presented to *prescribing physicians*...

before medication is **PRESCRIBED**?	*when* medication is **EVALUATED**?	*when* on-going treatment is **MONITORED**?
☐ Written Reports/Letters	☐ Written Reports/Letters	☐ Written Reports/Letters
☐ Oral/Verbal Descriptions	☐ Oral/Verbal Descriptions	☐ Oral/Verbal Descriptions
☐ Numerical Summaries	☐ Numerical Summaries	☐ Numerical Summaries
☐ Graphic Representations	☐ Graphic Representations	☐ Graphic Representations
☐ No Information Summarized	☐ No Information Summarized	☐ No Information Summarized
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

Typically, what __method(s)__ is used to __communicate__ *school-based* information to *prescribing physicians*...

before medication is **PRESCRIBED**?	*when* medication is **EVALUATED**?	*when* on-going treatment is **MONITORED**?
☐ Phone Call	☐ Phone Call	☐ Phone Call
☐ Postal Mail	☐ Postal Mail	☐ Postal Mail
☐ Fax	☐ Fax	☐ Fax
☐ E-mail	☐ E-mail	☐ E-mail
☐ Intermediary (e.g., Parent)	☐ Intermediary (e.g., Parent)	☐ Intermediary (e.g., Parent)
☐ Don't Communicate	☐ Don't Communicate	☐ Don't Communicate
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

__Who__ typically communicates *school-based* information to *prescribing physicians*...

before medication is **PRESCRIBED**?	*when* medication is **EVALUATED**?	*when* on-going treatment is **MONITORED**?
☐ Parent/Guardian	☐ Parent/Guardian	☐ Parent/Guardian
☐ School Psychologist	☐ School Psychologist	☐ School Psychologist
☐ Teacher	☐ Teacher	☐ Teacher
☐ Principal	☐ Principal	☐ Principal
☐ School Nurse	☐ School Nurse	☐ School Nurse
☐ Don't Communicate	☐ Don't Communicate	☐ Don't Communicate
☐ Other (specify) _____	☐ Other (specify) _____	☐ Other (specify) _____

On average and per case, how __frequently__ is *school-based* information communicated to *prescribing physicians*...   [CHECK __ONE__ BOX FOR EACH TIME PERIOD]

before medication is **PRESCRIBED**?	*when* medication is **EVALUATED**?	*when* on-going treatment is **MONITORED**?
☐ 1 or more times per __week__	☐ 1 or more times per __week__	☐ 1 or more times per __week__
☐ 2-3 times per __month__	☐ 2-3 times per __month__	☐ 2-3 times per __month__
☐ 1 time per __month__	☐ 1 time per __month__	☐ 1 time per __month__
☐ Once every 2 __months__	☐ Once every 2 __months__	☐ Once every 2 __months__
☐ 2-3 times per __year__	☐ 2-3 times per __year__	☐ 2-3 times per __year__
☐ Once per __year__	☐ Once per __year__	☐ Once per __year__
☐ Never	☐ Never	☐ Never

PLEASE GO TO NEXT PAGE ⊃

DIRECTIONS: CIRCLE THE NUMBER THAT BEST REPRESENTS YOUR LEVEL OF SATISFACTION WITH SCHOOL-PHYSICIAN COMMUNICATION FOR THE PURPOSE OF EVALUATING MEDICATION EFFECTS.

How satisfied are you with the <u>content</u> of information that is provided to *prescribing physicians*?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the <u>method(s)</u> by which *school-based* information is <u>collected</u>?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the <u>format</u> in which *school-based* information is <u>summarized</u> and presented to *prescribing physicians*?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the <u>method(s)</u> by which *school-based* information is <u>communicated</u> to *prescribing physicians*?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with <u>who</u> communicates *school-based* information to *prescribing physicians*?

1	2	3	4	5
Not Satisfied		Somewhat Satisfied		Totally Satisfied

How satisfied are you with the <u>frequency</u> with which *school-based* information is communicated to *prescribing physicians*?

1	2	3	4	5 -
Not Satisfied		Somewhat Satisfied		Totally Satisfied

DIRECTIONS: PLEASE ANSWER THE FOLLOWING QUESTIONS BASED ON WHAT ARE THE PREFERRED LINES OF SCHOOL-PHYSICIAN COMMUNICATION. CHECK ALL THAT APPLY.

Which <u>student characteristic(s)</u> is preferred to collect information on and send to *prescribing physicians?*

☐ Classroom Behavior   ☐ Social Interactions   ☐ Cognitive Ability

☐ Academic Performance   ☐ Adverse Reactions   ☐ Other (specify) _____

What is the preferred <u>method(s)</u> to <u>collect</u> school-based information?

☐ Direct Observations   ☐ Rating Scales (e.g., CBCL, ADDES)   ☐ Standardized Tests

☐ Anecdotal or Self-Reports   ☐ Disciplinary/Incident Reports   ☐ Report Cards/Grades

☐ Other (specify) _____

What is the preferred <u>format</u> to <u>summarize</u> and present school-based information to *prescribing physicians?*

☐ Written Reports/Letters   ☐ Oral/Verbal Descriptions   ☐ Numerical Summaries

☐ Graphic Representations   ☐ Other (specify) _____

What is the preferred <u>method(s)</u> to <u>communicate</u> school-based information to *prescribing physicians*?

☐ Phone Call   ☐ Postal Mail   ☐ Fax

☐ E-mail   ☐ Intermediary (e.g., Parent)   ☐ Other (specify) _____

<u>Who</u> is the preferred person to communicate school-based information to *prescribing physicians*?

☐ Parent/Guardian   ☐ School Psychologist   ☐ Teacher

☐ Principal   ☐ School Nurse   ☐ Other (specify) _____

Ideally, for each case, what is the preferred <u>frequency</u> of contact with *prescribing physicians*...
[CHECK <u>ONE</u> BOX FOR EACH TIME PERIOD]

before medication is <u>PRESCRIBED</u>?	*when* medication is <u>EVALUATED</u>?	*when* on-going treatment is <u>MONITORED</u>?
☐ 1 or more times per <u>week</u>	☐ 1 or more times per <u>week</u>	☐ 1 or more times per <u>week</u>
☐ 2-3 times per <u>month</u>	☐ 2-3 times per <u>month</u>	☐ 2-3 times per <u>month</u>
☐ 1 time per <u>month</u>	☐ 1 time per <u>month</u>	☐ 1 time per <u>month</u>
☐ Once every 2 <u>months</u>	☐ Once every 2 <u>months</u>	☐ Once every 2 <u>months</u>
☐ 2-3 times-per <u>year</u>	☐ 2-3 times per <u>year</u>	☐ 2-3 times per <u>year</u>
☐ Once per <u>year</u>	☐ Once per <u>year</u>	☐ Once per <u>year</u>

DIRECTIONS: CIRCLE THE APPROPRIATE NUMBER <u>OR</u> CHECK <u>ALL</u> THAT APPLY.

Do *prescribing physicians* systematically request information from schools for the purpose of evaluating medication effects?

1	2	3	4	5
Never		Occasionally		Always

When *prescribing physicians* ask for information from schools, is it typically sent?

1	2	3	4	5
Never		Occasionally		Always

For medication evaluation purposes, what significant barrier(s) exist that impede upon school-physician communication?

☐ Time Constraints   ☐ Confidentiality Issues   ☐ Lack of Appropriate Training

☐ Modes of Communication   ☐ Unclear on What Information To Collect   ☐ Limited Resources Available

☐ Beliefs Surrounding Medication   ☐ Other (specify) _____

What may help to facilitate lines of communication between physicians and schools with respects to medication issues?

☐ Allocate More Time/Resources   ☐ Simplify Release of Confidential Information ☐ Provide Appropriate Training

☐ Utilize Technology (e.g., e-mail)   ☐ Establish Timelines to Communicate   ☐ Foster Legal Mandates

☐ Other (specify) _____

Who should be responsible for obtaining a release of information for physicians and school personnel to have direct contact?

☐ Parent/Guardian   ☐ School Psychologist   ☐ Classroom Teacher   ☐ Building Principal

☐ School Nurse   ☐ Prescribing Physician   ☐ Other (specify) _____

☺ THANK YOU FOR COMPLETING THIS SURVEY! ☺

Appendix F

Phase 1 Data Summaries

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Phase 1

The purpose of this portion of the study was to field-test preliminary surveys for wording, format, and length. Data summaries for both the physician and school surveys are described under the following categories: (1) current information exchange practices, (2) satisfaction with current information exchange practices, (3) desired information exchange practices, and (4) barriers to and suggestions for communication.

Current information exchange practices. Current information exchange practices are reported for three different time periods: (1) before medication is prescribed, (2) when medication is being evaluated, and (3) when medication is being monitored. Table A illustrates current information exchanges practices reported by both physicians and school psychologists.

The top rated responses provides an overview of the current information exchange practices that typically occur between schools and physicians across all decision-making periods. Overall, physician respondents indicated that, currently, they typically receive information from school personnel on the classroom behavior and academic performance of the patient identified with ADHD. Information is usually collected through report cards and direct observations. School-based information is frequently summarized and presented through written reports sent to physicians via an intermediary (e.g., parent). Usually, the parent/guardian communicates the school-based information to the physicians. The frequency of communication is usually once per year before medication is evaluated, once per month when medication is evaluated, and 2-3 times per year when medication is monitored.

Table A

Typical Current Information Exchange Practices Reported by
Physicians and School Psychologists

	Physician			School Psychologist		
Typical Reported Practice	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
Student Characteristics **Information Collected On**						
	(n=24)	(n=22)	(n=23)	(n=22)	(n=22)	(n=22)
Classroom Behavior	70.8% (17)	58.3% (14)	66.7% (16)	86.4% (19)	68.2% (15)	63.6% (14)
Social Interactions	54.2% (13)	37.5% (9)	45.8% (11)	50.0% (11)	31.8% (7)	27.3% (6)
Cognitive Ability	29.2% (7)	20.8% (5)	20.8% (5)	18.2% (4)	9.1% (2)	4.5% (1)
Academic Perf.	75.0 % (18)	50.0% (12)	58.3% (4)	59.1% (13)	40.9% (9)	27.3% (6)
Adverse Reactions	29.2% (7)	29.2% (7)	29.2% (7)	13.6% (3)	22.7% (5)	18.2% (4)
No Information	8.3% (2)	37.5% (9)	37.5% (9)	9.1% (2)	18.2% (4)	22.7% (5)
Other (e.g., school or developmental history)		0.0% (0)	0.0% (0)		4.5% (1)	0.0% (0)

Table A—Continued

Typical Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
How Information is Collected	(n=24)	(n=23)	(n=23)	(n=22)	(n=22)	(n=22)
Direct Observation	50.0% (12)	45.8% (11)	50.0% (12)	63.6% (14)	45.5% (10)	18.2% (4)
Rating Scale	45.8% (11)	33.3% (8)	25.0% (6)	81.8% (18)	27.3 (6)	18.2% (4)
Standardized Test	16.7% (4)	0.0% (0)	0.0% (0)	31.8% (7)	4.5% (1)	4.5% (1)
Self-Report –	45.8% (11)	41.7% (10)	37.5 % (9)	54.5% (12)	63.6% (14)	63.6% (14)
Incident Report	20.8% (5)	25.0% (6)	30.8 % (5)	18.2% (4)	4.5% (1)	4.5% (1)
Report Card	54.2% (13)	37.5% (9)	58.3% (14)	31.7% (7)	13.6% (3)	22.7% (5)
Unclear	20.8% (5)	16.7% (4)	16.7% (4)			
Other (e.g., informal obs., interviews)	8.3% (2)	0.0% (0)	0.0% (0)	0.0 (0)	4.5% (1)	0.0% (0)
What Format Information is Summarized	(n=19)	(n=18)	(n=18)	(n=22)	(n=22)	(n=22)
Written Reports	62.5% (15)	41.7% (10)	41.7% (10)	68.2% (15)	36.4% (8)	27.3% (6)
Verbal Descriptions	29.2% (7)	33.3% (8)	33.3% (8)	22.7% (5)	40.9% (9)	31.8% (7)
Numerical Summaries	4.2% (1)	0.0% (0)	0.0% (0)	18.2% (4)	4.5% (1)	4.5% (1)

Table A—Continued

Typical Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
What Format Information is Summarized	(n=19)	(n=18)	(n=18)	(n=22)	(n=22)	(n=22)
Graphic Representations	0.0% (0)	0.0% (0)	0.0% (0)	9.1% (2)	4.5% (1)	4.5% (1)
No Information				9.1% (2)	18.2% (4)	31.8% (7)
Other (e.g., report card)	0.0% (0)	0.0% (0)	0.0% (0)	4.5% (1)	4.5% (1)	9.1% (2)
Mode of Communication Information is Sent/ Received	(n=21)	(n=21)	(n=21)	(n=22)	(n=22)	(n=22)
Phone Call	12.5% (3)	8.3% (2)	12.5% (3)	13.6% (3)	22.7% (5)	18.2% (4)
Letter	37.5% (9)	25.0% (6)	29.2% (7)	54.5% (12)	31.8% (7)	18.2% (4)
Fax	4.2% (1)	4.2% (1)	4.2% (1)	27.3% (6)	22.7% (5)	13.6% (3)
E-mail	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Intermediary	70.8% (17)	75.0% (18)	75.0% (18)	50.0% (11)	45.5% (10)	45.5% (10)
Don't Communicate	20.8% (5)	29.2 % (7)	29.2% (7)	13.6% (3)	22.7% (5)	31.8% (7)
Other	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)

Table A—Continued

Typical Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
Who Communicates School- Based Information	(n=21)	(n=21)	(n=21)	(n=22)	(n=22)	(n=22)
Parent/Guardian	83.3% (20)	83.3% (20)	83.3% (20)	72.7% (16)	68.2% (15)	54.5% (12)
School Psychologist	12.5% (3)	0.0% (0)	4.2% (1)	63.6% (14)	18.2% (4)	9.1% (2)
Teacher	33.3% (8)	20.8% (5)	20.8% (5)	45.5% (10)	40.9% (9)	40.9% (9)
Principal	0.0% (0)	0.0% (0)	0.0% (0)	9.1% (2)	4.5% (1)	4.5% (1)
School Nurse	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Other (e.g., social worker, counselor,	0.0% (0)	0.0% (0)	0.0% (0)	22.7% (5)	22.7% (5)	22.7% (5)
Frequency of Communication	(n=21)	(n=19)	(n=21)	(n=22)	(n=22)	(n=22)
1 or more times per week	12.5% (3)	4.2% (1)	4.2% (1)	4.5% (1)	0.0% (0)	0.0% (0)
2-3 times per month	0.0% (0)	0.0% (0)	0.0% (0)	4.5% (1)	9.1% (2)	4.5% (1)
1 time per month	4.2% (1)	33.3% (8)	0.0% (0)	9.1% (2)	9.1% (2)	0.0% (0)
Once every 2 months	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	4.5% (1)
2-3 times per year	12.5% (3)	20.8% (5)	45.8% (11)	9.1% (2)	4.5% (1)	18.2% (4)

Table A—Continued

	Physician			School Psychologist		
Typical Reported Practice	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
Frequency of Communication	(n=21)	(n=19)	(n=21)	(n=22)	(n=22)	(n=22)
Once per year	50.0% (12)	0.0% (0)	16.7% (4)	50.0% (11)	31.8% (7)	31.8% (7)
Never	8.3% (2)	20.8% (5)	20.8% (5)	4.5% (1)	27.3% (6)	22.7% (5)

Note: All data indicate the percentage (and number) of participants.

As-a whole, school psychologist respondents indicated that, currently, they typically send information to the prescribing physician on classroom behavior and academic performance of the student identified with ADHD. Information is generally collected through rating scales, direct observations, and anecdotal/self-reports that is summarized and presented in a written report format or verbal description to the physicians. School-based information is usually communicated to the physicians through the mail or intermediary (i.e., parent). The person to communicate the information to the physician is often the parent/guardian, school psychologist, or teacher. The frequency of communication typically occurs once per school year.

Satisfaction with current information exchange practices. On a 5-point Likert scale (1=not satisfied, 3=somewhat satisfied, 5=totally satisfied), respondents were asked to rate how satisfied they are with current information exchange practices. Overall, physician and school psychologist respondents indicated that, generally, they are somewhat satisfied with current information exchange practices. Both respondent

groups rated the frequency of communication to be the area they were the least

satisfied. Satisfaction ratings for both respondent groups are depicted in Table B.

Table B

Satisfaction Ratings for Current Information Exchange Practices

Satisfaction Area	Physicians		School Psychologists	
	Mean (Range) **Mode**	Standard Deviation	Mean (Range) **Mode**	Standard Deviation
	(n=23)		(n=22)	
Content of Information	2.4 (1-5) **3.0**	1.1	2.5 (1-4) **3.0**	1.1
Method of Data Collection	2.4 (1-4) **3.0**	1.1	2.6 (1-4) **1.0, 4.0**	1.3
Format in which Information is Presented and Summarized	2.2 (1-4) **1.0**	1.2	2.5 (1-4) **1.0, 3.0**	1.2
Method of Communication	2.3 (1-5) **1.0, 3.0**	1.2	2.1 (1-5) **1.0**	1.2
Who Communicates Information	2.1 (1-4) **1.0, 3.0**	0.94	2.4 (1-5) **3.0**	1.2
Frequency of Communication	1.7 (1-4) **1.0**	0.97	1.7 (1-3) **1.0**	0.84

Note: All data indicate the mean rating, (range), **mode**, and standard deviation. Ratings are based on a 5-point Likert scale (i.e., 1=not satisfied, 3=somewhat satisfied, 5=totally satisfied).

Overall, 23 physician respondents indicated that, generally, they are somewhat

satisfied with current information exchange practices. Specifically, physician

respondents were less than somewhat satisfied with the content of information (mean

2.4, range 1-4, SD 1.1), method of data collection (mean 2.4, range 1-4, SD 1.1), format in which information is presented (mean 2.2 range 1-4, SD 1.2), the method of communication (mean 2.3, range 1-5, SD 1.2) and who communicates information (mean 2.1, range 1-4, SD .94). Respondents were the least satisfied with the frequency of communication (mean 1.7, range 1-4, SD .97).

The 22 school psychologist respondents indicated that, generally, they were somewhat satisfied with current information exchange practices. Specifically, respondents were somewhat satisfied with the content of information (mean 2.5, range 1-4, SD 1.1), method of data collection (mean 2.6, range 1-4, SD 1.3), and format that it is presented to the prescribing physician (mean 2.5 range 1-4, SD 1.2). The method of communication (mean 2.1, range 1-5, SD 1.2) and who communicates information (mean 2.4, range 1-5, SD 1.2) were rated as less than somewhat satisfied. Respondents were the least satisfied with the frequency of communication (mean 1.7, range 1-3, SD .84).

Desired information exchange practices. Desired information exchange practices are reported for three decision-making periods: (1) before medication is prescribed, (2) when medication is being evaluated, and (3) when medication is being monitored, and are illustrated in Table C. Desired information exchange practices reported by both respondent groups were different from current information exchange practices. For example, respondents indicated that frequency of communication needed to occur more often, especially during the evaluation of medication effects.

Table C

Desired Information Exchange Practices Reported by
Physicians and School Psychologists

Desired Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
Student Characteristics Information Collected On	(n=24)	(n=24)	(n=24)	(n=22)	(n=22)	(n=22)
Classroom Behavior	58.3% (14)	62.5% (15)	62.5% (15)	100% (22)	100% (22)	100% (22)
Social Interactions	75.0% (18)	83.3% (20)	83.3% (20)	86.4% (19)	86.4% (19)	86.4% (19)
Cognitive Ability	95.8% (23)	58.3% (14)	58.3% (14)	27.6% (6)	9.1% (2)	9.1% (2)
Academic Perf.	75.0 % (18)	95.8% (23)	95.8% (23)	90.9% (20)	86.4% (19)	90.9% (20)
Adverse Reactions		58.3% (14)	62.5% (15)		59.1% (13)	54.5% (12)
Other (e.g., response to behavior interventions, special ed. evals.)	4.2% (1)	4.2% (1)	0.0% (0)	9.1% (2)	4.5% (1)	4.5% (1)

Table C—Continued

Desired Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
How Information is Collected	(n=24)	(n=24)	(n=24)	(n=21)	(n=21)	(n=21)
Direct Observation	83.3% (20)	83.3% (20)	87.5% (21)	95.2% (20)	90.5% (19)	80.9% (17)
Rating Scale	83.3% (20)	62.5% (15)	62.5% (15)	100% (21)	80.9% (17)	76.2% (16)
Standardized Test	70.8% (17)	29.2% (7)	41.7% (10)	23.8% (5)	14.3% (3)	19.0% (4)
Self-Report	58.3% (14)	54.2% (13)	58.3 % (14)	80.9% (17)	85.7% (18)	71.4% (15)
Incident Report	50.0% (12)	45.8% (11)	45.8 % (11)	61.9% (13)	57.1% (12)	52.4% (11)
Report Card	70.8% (17)	75.0% (18)	75.0% (18)	61.9% (13)	42.9% (9)	42.9% (9)
Other (e.g., CBM)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	4.8% (1)	4.8% (1)
Format Information is Summarized	(n=24)	(n=24)	(n=24)	(n=21)	(n=21)	(n=21)
Written Report	95.8% (23)	95.8% (23)	95.8% (23)	90.5% (19)	80.9% (17)	66.7% (14)
Verbal Description	37.5% (9)	29.2% (7)	29.2% (7)	23.8% (5)	33.3% (7)	33.3% (7)
Numerical Summaries	33.3% (8)	25.0% (6)	25.0% (6)	33.3% (7)	23.8% (5)	23.8% (5)
Graphic Representations	20.8% (5)	12.5% (3)	16.7% (4)	33.3% (7)	33.3% (7)	33.3% (7)

Table C—Continued

Desired Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
Format Information is Summarized	(n=24)	(n=24)	(n=24)	(n=21)	(n=21)	(n=21)
Other (e.g., checklist)	0.0% (0)	0.0% (0)	0.0% (0)	4.8% (1)	4.8% (1)	4.8% (1)
Mode of Communication Information is Sent/ Received	(n=24)	(n=24)	(n=24)	(n=21)	(n=21)	(n=21)
Phone Call	33.3% (8)	54.2% (13)	50.0% (12)	61.9% (13)	71.4% (15)	66.7% (14)
Letter	83.3% (20)	70.8% (17)	70.8% (17)	66.7% (14)	71.4% (15)	52.4% (11)
Fax	29.2% (7)	29.2% (7)	29.2% (7)	57.1% (12)	57.1% (12)	42.9% (9)
E-mail	29.2% (7)	33.3% (8)	33.3% (8)	23.8% (5)	33.3% (7)	33.3% (7)
Intermediary	37.5% (9)	45.8% (11)	50.0% (12)	9.5% (2)	9.5% (2)	14.3% (3)
Other (e.g., meeting)	0.0% (0)	0.0% (0)	0.0% (0)	4.8% (1)	4.8% (1)	0.0% (0)
Who Communicates School- Based Information	(n=24)	(n=24)	(n=24)	(n=21)	(n=21)	(n=21)
Parent/Guardian	66.7% (16)	62.5% (15)	62.5% (15)	28.6% (6)	38.1% (8)	38.1% (8)
School Psychologist	75.0% (18)	54.2% (13)	58.3% (14)	71.4% (15)	52.4% (11)	52.4% (11)

Table C—Continued

Desired Reported Practice	Physician			School Psychologist		
	Prescribe	Evaluate	Monitor	Prescribe	Evaluate	Monitor
Who Communicates School- Based Information	(n=24)	(n=24)	(n=24)	(n=21)	(n=21)	(n=21)
Teacher	91.7% (22)	91.7% (22)	91.7% (22)	61.9% (13)	66.7% (14)	66.7% (14)
Principal	8.3% (2)	8.3% (2)	0.0% (0)	4.8% (1)	9.5% (2)	4.8% (1)
School Nurse	8.3% (2)	0.0% (0)	4.2% (1)	14.3% (3)	14.3% (3)	14.3% (3)
Other (e.g., social worker, counselor)	4.2% (1)	0.0% (0)	4.2% (1)	23.8% (5)	23.8% (5)	23.8% (5)
Frequency of Communication	(n=22)	(n=23)	(n=23)	(n=18)	(n=18)	(n=18)
1 or more times per week	13.6% (3)	26.1% (6)	4.3% (1)	23.8% (5)	19.0% (4)	4.8% (1)
2-3 times per month	18.2% (4)	17.4% (4)	0.0% (0)	4.8% (1)	14.3% (3)	14.3% (3)
1 time per month	13.6% (3)	34.8% (8)	30.4% (7)	14.3% (3)	19.0% (4)	42.9% (9)
Once every 2 months	18.2% (4)	13.0% (3)	34.8% (8)	9.5% (2)	9.5% (2)	14.3% (3)
2-3 times per year	13.6% (3)	8.7% (2)	30.4% (7)	9.5% (2)	14.3% (3)	4.8% (1)
Once per year	22.7% (5)	0.0% (0)	0.0% (0)	23.8% (5)	9.5% (2)	4.8% (1)

Note: All data indicate the percentage (and number) of participants.

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The top rated responses for desired information exchange practices are described for all decision-making periods. Overall, physician respondents indicated that they desire to receive information from school personnel on the classroom behavior, academic performance, social interactions, cognitive ability, and adverse reactions of the patient identified with ADHD. Physicians desire school-based information to be collected through direct observations, rating scales, standardized tests, report cards, and anecdotal/self-reports and to be summarized and presented through written and verbal reports sent to physicians via postal mail, phone call, or an intermediary (e.g., parent). The classroom teacher, school psychologist, and parent/guardian were rated to be the desired person to communicate school-based information to the prescribing physicians. Desired frequency of contact was one time per school year before medication is evaluated, once per month when medication is evaluated, and once every two months when medication is monitored.

In general, school psychologist respondents indicated that they desire to send information to prescribing physicians on the classroom behavior, academic performance, and social interactions of the student identified with ADHD. Rating scales, direct observations, anecdotal/self-reports, and disciplinary actions was reported to be the desired method to collect school-based information. School psychologists desire to summarize and present information to physicians in a written report, numerical summaries, and graphic representations format. The parent/guardian and school psychologist were reported to be the desired person to communicate school-based information to the physician. The desired method to communicate information was through the mail and phone call. Desired frequency of contact was one time per school year before medication is evaluated, once per month when medication is evaluated, and once per month when medication is monitored.

Barriers to and suggestions for communication. Reported barriers to and

suggestions for school-physician communication are illustrated in Table D.

Table D

Barriers to and Suggestions for School-Physician Communication as Reported by
Physicians and School Psychologists

	Physicians		School Psychologists	
	(n=24)			(n=22)
Barriers to Communication				
Time Constraints	95.8%	(23)	72.7%	(16)
Mode of Communication	83.3%	(20)	40.9%	(9)
Beliefs Surrounding Medication	37.5%	(9)	13.6%	(3)
Confidentiality Issues	33.3%	(8)	31.8%	(7)
Validity of School-Based Information	16.7%	(4)	0.0%	(0)
Unclear on What Information to Collect	0.0%	(0)	27.3%	(6)
Lack of Appropriate Training	25.0%	(6)	36.4%	(8)
Limited Resources	37.5%	(9)	4.5%	(1)
Other	0.0%	(0)	27.3%	(6)

Table D—Continued

	Physicians		School Psychologists	
	(n=24)		(n=22)	
<u>Suggestion to Facilitate Communication</u>				
Allocate more Time and Resources	66.7%	(16)	54.5%	(12)
Utilize Technology	66.7%	(16)	59.1%	(13)
Simplify Release of Confidential Information	33.3%	(8)	45.5%	(10)
Establish Timelines to Communicate	62.5%	(15)	59.1%	(13)
Provide Appropriate Training	37.5%	(9)	50.0%	(11)
Foster Legal Mandates	4.2%	(1)	4.5%	(1)
Other	8.3%	(2)	18.2%	(4)

Note: All data indicate the percentage (and number) of participants.

Both the physicians and school psychologists reported that the most significant barrier to communication is the availability of time and resources. More specifically, physician respondents reported that time constraints (95.8%, n=23), mode of communication (83.3%, n=20), beliefs/attitudes (37.5%, n=9), and limited resources (37.5%, n=9) were the top rated barriers to communication. Top rated methods to facilitate communication identified by physicians were to utilize technology (66.7%, n=16), allocate more time and resources (66.7%, n=16), and to establish timelines to communicate (62.5%, n=15). Additional methods to foster school-physician communication included: (a) identify a school contact person, and (b) standardize a mode of communication.

School psychologist respondents reported time constraints (72.7%, n=16),

mode of communication (40.9%, n=9), and lack of training (36.4%, n=8) to be the top

barriers to school-physician communication. Other suggested barriers included the

quality of interventions conducted; trouble contacting physicians directly; physicians

don't request information; physicians request IQ testing and nothing more. Top rated

methods to facilitate communication identified by school psychologists were to utilize

technology (59.1%, n=13), establish timelines to communicate (59.1%, n=13), and to

allocate more time and resources (54.5%, n=12). Other methods to foster school-

physician communication included: (a) build better relationships between schools and

doctors, (b) for physicians to request information from schools directly, (c) alter

physician expectations of what information schools can provide (other than a

checklist), and (d) develop criteria on what information to collect, when to collect it

and who is responsible to do so.

Physician and school psychologist responses to the question "who should be

responsible for obtaining a release of information to allow school personnel and

physicians to communicate directly?" are depicted in Table E. Physician respondents

rated parent/guardian (75.0%, n=18) and the school psychologist (33.3%, n=8) to be

the top person to be responsible for obtaining a release of information. School

psychologist respondents rated parent/guardian (45.5%, n=10) and the prescribing

physician (36.4%, n=8) as the top person responsible.

Table E

Person Responsible for Obtaining a Release of Information as Reported by
Physicians and School Psychologists

Person Responsible	Physicians (n=24)		School Psychologists (n=22)	
Parent/Guardian	75.0%	(18)	45.5%	(10)
School Nurse	0.0%	(0)	13.6%	(3)
School Psychologist	33.3%	(8)	22.7%	(5)
Prescribing Physician	25.0%	(6)	36.4%	(8)
Classroom Teacher	25.0%	(6)	0.0%	(0)
Principal _	8.3%	(2)	18.2%	(4)
Other (e.g., person responsible for school enrollment or for evaluation or monitoring)	0.0%	(0)	9.1%	(2)

Note: All data indicate percentage and (number) of participants.

In addition, on a 5-point Likert scale (i.e., 1=never, 3=occasionally, 5=always), respondents rated how often physicians request information from schools and how often do school personnel send the information to prescribing physicians. A summary of the ratings is depicted in Table F. Physician respondents reported that they typically request information from schools (mean 4.0, range 3-5, SD 0.81) and that school personnel typically send information (mean 3.0, range 1-5, SD 1.14). School psychologists, on the other hand, reported that physicians only occasionally request information from schools (mean 2.1, range 1-4, SD 0.92) and that almost always school personnel send information (mean 4.1, range 1-5, SD 1.04).

Table F

Frequency in Which School-Based Information is Requested by
Physicians and Sent by School Personnel

	Physicians		School Psychologists	
	Mean (Range) **Mode**	Standard Deviation	Mean (Range) **Mode**	Standard Deviation
	(n=24)		(n=22)	
Do prescribing physicians request information from schools?	4.0 (3-5) **4.0**	0.81	2.1 (1-4) **1.0**	0.92
Do school personnel send information to prescribing physicians?	3.0 (1-5) **3.0**	1.14	4.1 (1-5) **4.0**	1.04

Note: All data indicate the mean rating, (range), **mode**, and standard deviation.
Ratings are based on a 5-point Likert scale (i.e., 1=never, 3=occasionally, 5=always).

Appendix G

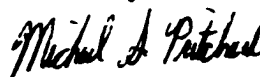Human Subjects Institutional Review Board Approval Letter

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WESTERN MICHIGAN UNIVERSITY

Date: January 31, 2001

To: Ruth Ervin, Principal Investigator
       Pamela Radford, Student Investigator for dissertation
       Jenny Aldrich, Student Investigator as faculty assistant
       Patrick Sorrelle, Student Investigator as faculty assistant
       Christina Terenzi, Student Investigator as faculty assistant

From: Michael S. Pritchard, Interim Chair   *Michael S. Pritchard*

Re: **Changes to HSIRB Project Number: 00-12-01**

This letter will serve as confirmation that the changes to your research project "Documenting Lines of Communication Between School Personnel and Physicians: Medication Evaluation Practices for Students with ADHA" requested in your memo dated January 31, 2001 have been approved by the Human Subjects Institutional Review Board.

The conditions and the duration of this approval are specified in the Policies of Western Michigan University.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: 20 December 2001

WESTERN MICHIGAN UNIVERSITY

Date: 8 May 2000

To: Ruth Ervin, Principal Investigator
Pamela Radford, Student Investigator for dissertation

Cc: Wil Emmert, Research and Sponsored Programs
Melissa Hess, Grants & Contracts
Proposal # 9810101

From: Sylvia Culp, Chair   *Sylvia Culp*

Re: HSIRB Project Number 00-05-01

This letter will serve as confirmation that your research project entitled
"Documenting the Lines of Communication Between Personnel and Physicians:
Medication Evaluation Practices for Students with ADHD" has been approved
under the exempt category of review by the Human Subjects Institutional Review
Board. The conditions and duration of this approval are specified in the Policies
of Western Michigan University. You may now begin to implement the research
as described in the application.

Please note that you may only conduct this research exactly in the form it was
approved. You must seek specific board approval for any changes in this project.
You must also seek reapproval if the project extends beyond the termination date
noted below. In addition if there are any unanticipated adverse reactions or
unanticipated events associated with the conduct of this research, you should
immediately suspend the project and contact the Chair of the HSIRB for
consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: 8 May 2001

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