

## Medication Management in Primary and Secondary Schools: Assessing the Practices and Opinions of Pediatricians

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**OBJECTIVES** 1)To assess the awareness of pediatricians regarding the potential problems caused by children taking their medications before or during school hours 2) To identify the types of interventions pediatricians use to manage these issues 3)To assess the views of pediatricians regarding how well the process of medication management is handled by the schools that their patients attend.

**METHODS** Thirty-five pediatricians completed a questionnaire inquiring about their prescribing habits for children under the age of 18, their views on the possible effects medications may have on children while at school, and what they do to minimize problems that may be associated with taking or being under the influence of medications while at school.

**RESULTS** The largest group of responding physicians (42.9%; n = 15) selected "Somewhat Common" when asked how common it is that they prescribe medications that must be used before or during school hours. The majority of responding pediatricians surveyed (62%; n = 21) believe that taking medications at school can create special problems. The majority of respondents (59.4%; n = 19) disagree with the statement that "Medications in Illinois schools are well managed by a trained agent. These pediatricians utilize a variety of strategies to minimize problems caused by medication use during or before school, and the most common of these is the prescribing of sustained release products.

**CONCLUSIONS** Pediatricians who responded to a survey are aware of potential problems associated with children being under the influence of, or taking medications during school hours. As a result, many have devised ways to ameliorate and/or prevent potential problems.

**KEYWORDS** pediatrician, school medications, survey

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### INTRODUCTION

Children suffering from serious diseases are often mainstreamed into schools, leaving parents to rely on schools to play an increasing role in the management of their medications. Nearly 9 million children in the United States have asthma, 900,000 have epilepsy, 176,000 have diabetes, and approximately 2 million have attention deficit hyperactive disorder.<sup>1-4</sup> The result of these realities is that many children are taking medications to treat their disorders while they are in school and

are under the effects of medication during school, even if the dose was taken at home before school. Not all schools utilize nurses to dispense medica-

**ABBREVIATIONS** ICAAP, Illinois Chapter of the American Academy of Pediatrics

tions to students. Often, secretaries, health aides, teachers, parents, and others assist with medication management of the school-aged child. There is concern that lack of licensed personnel, drug information resources, and medication management knowledge, mean that school children may not be receiving optimum drug therapy.

In previous studies, school nurses, teachers, unlicensed assistive personnel, pharmacists, college of pharmacy faculty members, and parents have been surveyed regarding their knowledge

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of and attitudes toward medication management in schools.<sup>5-9</sup> However, little is known about the views and prescribing habits of pediatricians as they relate to medication use in school. One way to make a contribution to this knowledge base, therefore, is to assess the views of pediatricians as they relate to the prescribing and use of medications taken before or during school hours. Indeed, office-based physicians, working in conjunction with community pharmacists, have an opportunity to reduce the risks associated with the use of medications in schools.

Pediatricians have a vested interest in the success of the therapies that they prescribe for their patients. Assessing the attitudes and knowledge of pediatricians regarding medications in schools allows for policy recommendations to improve the effectiveness of school health services, specifically medication management services. This paper assesses the prescribing habits and views of pediatricians in order to address this important drug therapy problem.

## METHODS

A questionnaire was developed for pediatricians attending the annual meeting of the Illinois Chapter of the American Academy of Pediatrics (ICAAP). The questionnaire was a modified version of one used earlier to survey pharmacists and parents.<sup>7,9</sup> All attendees of the ICAAP meeting were given the questionnaire with a cover letter explaining the importance of their input on issues related to medication management in schools. Of the approximately 100 attendees, only 29 pediatricians and 1 advanced practice nurse specializing in pediatrics responded to the 15 question survey estimated to take only 10 minutes to complete.

Given the low response rate, an attempt to increase sample size was made by attaching the survey to an electronic, monthly newsletter received by approximately 1,700 members of the ICAAP. In this newsletter, it was requested that any member that had not previously completed the questionnaire please do so. Again, information about the short survey emphasized the value of the pediatricians' input. In addition to the 30 original surveys, five more were submitted online (all from pediatricians), resulting in a total sample size of 35. Background information on these individuals is presented in Tables 1 and 2.

**Table 1.** Physician Demographics

Age	46.29 years (29-63)
Sex	
Male (n = 12)	34.3%
Female (n = 23)	65.7%
Race	
White, not Hispanic (n = 25)	75.8%
Black, not Hispanic (n = 2)	6.1%
Hispanic (n = 1)	2.9%
Asian (n = 4)	12.1
Other (n = 1)	2.9%

## RESULTS

All of the respondents reported that they have prescribed medications to children under the age of 18 that may affect the child while at school. When asked how common this was, 42.9% (n = 15) selected "Somewhat Common", followed by "Quite Common" (34.3%; n = 12), "Occasional" (17.1%; n = 6), and "Rare" (2.9%, n = 1). Rescue inhalers were identified as medication most commonly prescribed for use in schools (79.4%, n = 27), followed by medications used to treat attention deficit hyperactivity disorder (8.8%, n = 3), over-the-counter medications (5.9%; n = 2), and antibiotics (2.9%, n = 1).

The majority (60%) of pediatricians responding to the survey believe that taking medications at school can create special problems with drug therapy. Twenty-one pediatricians gave examples of problems with drug therapy that can occur while a child is under the influence of a medication during school hours. These results are shown in Figure 1. (The total in Figure 1 is greater than 21, because some subjects identified multiple problems.)

Table 3 presents actions that these physicians have taken in order to minimize problems with medications being taken before or during school. Other actions taken by pediatricians to avoid potential problems are included in Table 4 and are shown verbatim.

The majority of pediatricians surveyed, (59.4%; n = 19) disagreed with the statement that "Medications in Illinois schools are well managed by a trained agent (nurse or health care aide)". Physicians who disagreed with the above statement were not more likely to use additional actions

**Table 2.** Practice Characteristics

Degree	
M.D. (n = 29)	82.9%
D.O. (n = 5)	14.3%
Advanced Practice Nurse (n = 1)	2.9%
Practice Type	
Office or clinic-based, general pediatrics/primary care (n = 26)	74.3%
Office or clinic-based, pediatrics with sub-specialization* (n = 4)	11.4%
In-patient care only (n = 3)	8.6%
Other** (n = 2)	5.7%
Practice Location	
Urban (n = 16)	45.7%
Suburban (n = 18)	51.4%
Rural (n = 1)	2.9%
Experience	15.67 years (1-40)

\*adolescent, diabetes, internal medicine, neuro-development pediatrics

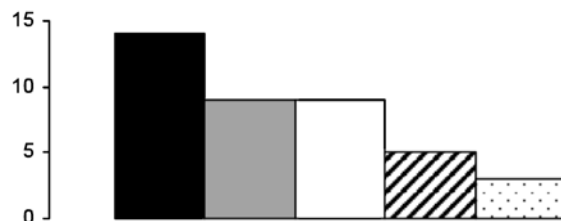
\*\*hospital based-primary care, pediatric child psychology

taken to prevent possible problems with taking medications at school than those who agreed with the statement. In contrast, those physicians who thought that there can be special problems associated with taking medications at or before school used more actions, on average, than those who did not. The difference, however, was not statistically significant.

## DISCUSSION

Research indicates a particular difficulty in collecting data from physicians, mainly because they are too busy to complete surveys, regardless of topic. Often, receptionists are asked to discard mail containing surveys.<sup>10</sup> In one study, only 66 physicians out of 189 (34.9%) responded to a survey on ambulatory-care sensitive admissions.<sup>10</sup> Another study conducted to further improve response rates by physicians found that only 19.6% of physicians responded to a pilot survey, but after a monetary incentive and several reminders to complete the survey were issued, the response rate jumped to 64.8%.<sup>11</sup>

The sample size for this study was small due to a low response rate from pediatricians who are members of the ICAAP. Possible reasons for this low response rate include the workload of the physician, no incentives or reminders to complete the survey, and the fact that members of ICAAP include not only physicians, but also



**Figure.** Problems with the Use of Medications in School. (■) School-related shortcomings; (■) non-compliance and/or misuse; (□) side effects; (▨) inhibition of learning; (▩) stigma

pediatric dentists, students, retired pediatricians, and any healthcare professional with a specific interest in pediatrics (including those who cannot prescribe—pharmacists, physical therapists, occupational therapists, etc.).<sup>12</sup> Our results might be biased, too, because practitioners who choose to belong to professional societies might be more involved in a broader range of patient care issues than those who do not. Also, five of our 35 surveys were submitted online (versus being completed at the conference), and this could have conceivably affected the results. In any case, the literature shows that physicians are generally unlikely to complete and return questionnaires; therefore our results, if only suggestive, add a degree of knowledge relating to our understanding of this important area of drug therapy.

Given these limitations, some conclusions and recommendations can be made. First, the

**Table 3.** Actions to Minimize Potential Problems

Actions Pediatricians Have Taken To Minimize Potential Problems	Frequency (%)
Write prescriptions for sustained release products, so doses at school are avoided	33 (94.3%)
Provide counseling to parents/children about takings medications at school	25 (71.4%)
Stay aware of medications that might be taken at school	23 (65.7%)
Write standing orders for over-the-counter or other medications at schools	22 (62.9%)
Suggest parents get separate bottle for school meds from pharmacy	18 (51.4%)
Interact with school personnel directly	13 (37.1%)
Provide educational programs to school personnel, boards, PTAs	4 (11.4%)
Provide pamphlets or other drug information to school staff	2 (5.7%)

majority of these respondents think that taking medications at school creates problems with drug therapy and about the same number do not think medications are well managed in Illinois schools. These pediatricians are aware of specific problems associated with children being under the influence of, or taking medications during, school hours. Their views along these lines are consistent with the literature.<sup>9,13</sup> Perhaps most striking along these lines is that the problems identified most often by respondents have to do with the way the schools handle medications. Some of these concerns were general while others specifically mentioned school nurses. Clearly, school nurses would disagree, especially when they are so often required to delegate their duties to unlicensed personnel.<sup>14-16</sup> There is an obvious need for better communication between these nurses and the physicians who treat their students.

Many of these prescribers have devised ways to reduce or prevent potential problems. This was generally true regardless of years of experience, practice setting, types and frequency of medication prescribed, the belief that medications are well managed in schools, and the belief that medications can potentially cause problems for children during school hours. Though results were not statistically significant, most responses followed predictable patterns. The most common intervention was writing prescriptions for sustained release products so that taking doses at school is not necessary.

A 2003 survey of 569 licensed pharmacists with community pharmacy experience presented the same list of interventions (using pharmacist terms) as presented to respondents in the present study.<sup>7</sup> The pharmacists provided an average of 3.34 interventions, the most common of which was providing additional labeled containers

(over 90%). In the present survey, over half of the pediatricians indicated that they suggest parents ask for additional labeled containers. Therefore, this is one area in which prescribers and pharmacists can work together to reduce the risks associated with students needing to take medications at school. The most commonly reported intervention by far (94.3%) from respondents in the present study was writing prescriptions for sustained release products. (This was also the third most common intervention reported by pharmacists in the 2003 study, with 50% of subjects reporting that they recommended sustained release products. Again, this is an area where prescribers and pharmacists can stay up-to-date and try to identify safe and effective sustained release products, which can help reduce the number of doses taken at school.)

Finally, it is worth noting a substantial proportion of both groups (46.3% of pharmacists and 65.7% of pediatricians) report that they make an effort to stay current regarding medications that are most likely to be used at school. In general, larger proportions of pediatricians than pharmacists report making helpful interventions. Pharmacists need to increase efforts by lending their expertise to decrease risks associated with this important area of drug therapy.

In summary, responding pediatricians seem well-aware of the problems associated with students using medication before or during school hours. These doctors tend to not be satisfied with the way that schools handle this issue, and they employ a variety of strategies to help ameliorate the associated risks. Because these physicians might be more engaged in their work than the average pediatrician, it is not wise to extrapolate these conclusions. The ICAAP does have a School Health sub-section, and it would

**Table 4.** Verbatim Comments Regarding Actions Taken by Pediatricians to Avoid Potential Problems

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Fill out forms requested by schools re: meds. Give extra Rx for inhalers so 1 can be at school
Fill out school medication information form – diagnosis, name of drug, dose and frequency, benefit, side-effects, allergies, other meds, and permission to give medication
Get the schools out from between the patient and doctor
I only write standing orders for Tylenol® or ibuprofen not for cold meds, etc
List side-effects in "School Med Form". For ADHD – ask teachers to complete Conner's periodically; ask parents to talk to teachers
Many of above are mandated by school and state
Notify school that child is on medication
Sending letter with patient explaining need for med
Some parents have wanted to bring medications to schools
Use as directed. Educate patients and school personnel
Using long-term medication as much as possible; having mother take the medication to school

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be worthwhile to consider incorporating some education regarding these concerns into regular meetings and newsletters. (Of course, such actions would probably be a helpful practice in other states and professional organizations, too.) Another implication of this research is that there is a real opportunity (and need) for pediatricians, community pharmacists, and school nurses to work together to improve drug therapy in the schools. An intervention as simple as suggesting to the patients or their parents that they ask the pharmacist for a separate labeled container for school use could pay dividends in terms of safer and more effective therapy in the schools.

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