



The Center for  
Health and Health Care in Schools

## Medication Management in Schools

*A Systems Approach to  
Reducing Risk and  
Strengthening Quality in  
School Medication  
Management*

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## Issue Brief

### *A Systems Approach to Reducing Risk and Strengthening Quality in School Medication Management*

#### **Introduction**

This paper and the invitational meeting for which it has been prepared make certain assumptions about the challenge of strengthening the quality of medication management in school.

- ♦ We believe that recent research on improving the safety and quality of patient care has relevance for health services in school, particularly the safety of medication management practices.
- ♦ We propose to focus on the systems that make it least likely that errors will occur in the management of medications and most likely that the needs of students will be met.
- ♦ We acknowledge that medications may be administered in schools in conditions not anticipated in nurse practice acts or other professional guidance.
- ♦ Our objective is to identify how risk can be minimized and quality of care assured in the administration of medications or provision of therapeutic interventions in a setting that may not be a health care facility

In the past 30 years there have been major changes in health care, including an increased reliance on prescription drugs. There have also been changes in school systems, with a federal mandate created in the 1970s obligating schools to provide certain children with medical services, including medication. Medications that schools are asked to manage may include controlled substances, psychotropic medications, and a range of therapeutic interventions for chronic illnesses such as diabetes and asthma. Over-the-counter medications, homeopathic medications, and dietary supplements have their own challenges. With more children receiving increasingly powerful drugs during the school day, the school system's liability for safe management of medication has increased. This is a whole new situation. No one planned it and no one planned **for** it. But now is the time to look at the issue and see what changes need to be made.

#### **The Context**

Some fortunate schools in the United States have a health care professional, usually a nurse, on site at all times. But for many elementary and secondary schools, this is not the case; schools may share an itinerant nurse who is present only one or two days a week in any one school, or districts or individual schools may employ no nurses at all. In the absence of a licensed medical professional, the responsibility for supervising or dispensing medication is in most cases assigned to a non-medical person on the school staff, sometimes a teacher but more often the school secretary or other administrative aide. The school district or the state nursing policy board may require that non-medical person handling these responsibilities receive some training, and nurse practice regulations may require "supervision" by medical professionals. The nature and extent of the supervision is frequently undefined.

But whether medication is managed by a delegated non-medical person or by a registered nurse, the school is at risk of failing to follow proper procedures in handling potentially dangerous medications unless systems are in place that will make errors less likely. And to make a difficult situation more so, the school nurse required to supervise the non-medical personnel may be told to delegate to unlicensed staff under conditions that she/he views as contrary to the delegation regulations mandated by the state board of nursing.

### **Systems to Reduce Risk**

That human beings are fallible and prone to error is recognized in industries such as the airlines in which error can result in disaster. In many such industries, and more recently in health care, an emphasis is placed on designing and implementing systems, or ways of performing routine tasks, that minimize the opportunities for mistakes and strengthen the ability of workers to make good judgments and carry out appropriate procedures.

Applying such preventive thinking to schools and the medication of students might involve addressing a number of factors. These might include, for example:

- **Policy.** Policy guidance might include the following: The school or school district would have a clear, written policy on medication that is transmitted to all school personnel, parents, and students. The policy might specify what responsibility for medication the school or district is willing to assume and which school personnel will provide medications. The policy might also specify the responsibilities of parents, such as providing medication in original containers with the name of the prescribing doctor, a written order for the medication, and the patient for whom the drug is prescribed. The school or district could also specify its policies with regard to over-the-counter medications, whether kept at school or carried by students. The policy statement might also state the school or district's rules on self-medication by students and whether students are allowed to carry such equipment as asthma inhalers or insulin injectors. A reciprocal authorization for release of information between the prescribing health care provider and school health professional might facilitate a school-community clinical partnership. A feedback mechanism that enables parents and the primary care provider to learn what the nurse has observed in terms of the medication's effect should be established.
- **Delegation.** If state law or nurse practice regulations allow medication administration to be delegated by licensed medical personnel to non-medical personnel in a school, it is reasonable to assume that the persons to whom the medical tasks are assigned would be recognized, trained, supervised, and protected from liability. One approach that recognizes the importance of delegation would be to require that the names and responsibilities of all personnel who are authorized to provide medications be registered and their duties specified by the agency responsible for school health.

Delegation involves more than a "hand-off" in responsibility. While the degree of "supervision" required by delegation may be debated, a licensed professional might be expected to review medication orders, set up the medication administration plan and documentation arrangements, review medications and their potential side effects with those administering the medications, and provide on-going supervision.

- **Documentation.** “If it isn’t documented, it didn’t happen.” To protect themselves from liability and to provide a record for parents, schools would want to have in place a method of recording each administration of medication to a child. This might be a written log, or a computer entry. It should specify the name of the child, the medication that was provided, and the date and time of the medication, who administered the medication, plus any other information the school believes relevant. In the event that a dosage is missed, information on the missing dosage and why it was missed should also be included.
- **Process.** A core principle of systems to minimize risk is that the tasks people are asked to perform are analyzed to determine if the environment in which they work is conducive to error. For school medication, whether by a licensed health professional or a non-medical person who has been delegated the function, such analysis might include asking the following questions: Are there safeguards to prevent dosage errors, such as asking each student his or her name and comparing it with the label on a prescription package or attaching the student’s photo to the medication package and comparing the photo to the presenting student? Is a written or computer log kept of each dose administered, to whom, and at what time of the day? Is the physical environment conducive to error—for example, do groups of students tend to appear for their medications at the same time, as when they are out of class for lunch, and if so, does that create noise, confusion, and jostling in the office or nurse station? If medications are administered by a school secretary, does he or she also have to answer telephones, hand out student materials, or field questions while dispensing medication?
- **Security.** Schools wanting to shield themselves from liability for misuse of prescription or other medications should take steps to assure that drugs provided by parents are stored in secure locations to prevent theft. The keys to locked cabinets must be secure, but it should be known who has access to them. There may be exceptions: For example, Epi-Pens® should be accessible and kept in unlocked storage so that students and staff may obtain them in the event of a life-threatening allergic reaction. Schools might develop protocols for who will treat a student who requires medication while on a field trip or athletic event, and how that individual will access the necessary drugs or devices.
- **Quality.** Some drugs have special storage or handling requirements. Some may need to be refrigerated; others have a limited shelf life. Does the school have procedures for verifying refrigerator temperatures, or for assuring that a medication is still within its “use by” date?
- **Self-Medication.** A school or school district might determine if state law or nurse practice regulations permit self-medication by students, and if so, whether self-administered medications should be monitored by a member of the school staff. The school or district may also want to make clear to parents who request self-medication that the school assumes no responsibility for the student’s use of or failure to use the pharmaceuticals. Self-medication often involves a decision by the school or district that students may or may not carry on their persons inhalers or other asthma devices, or kits for measuring blood sugar in diabetes.
- **Privacy.** The major federal legislation to protect the privacy of student records, including health information, is the Family Educational Rights and Privacy Act (FERPA). This law allows release of student health information to those who have been determined by the school

or district to need that information in order to provide a student with educational services. FERPA places no restrictions on how those who receive the information may use it, but a school or district may impose its own requirements for teachers and others to keep health records confidential. Release of health information “to the school community” without authorization by a student’s guardians has been challenged as a denial of student rights under other federal laws in recent court cases.

- **Prescribing.** The pediatrician or primary care provider who writes a prescription for a child requiring medication during school hours should know who will be administering it, in order to assess whether a licensed medical professional will be available to evaluate a potential adverse reaction or to administer a drug on an “as needed” basis. Schools or school districts generally require that student medications be brought to school by parents or guardians, in original containers. In order to provide the school with an original container, a pharmacist may need to fill a prescription in two containers, one for home and one for school, both with package inserts. All drugs should be administered at home or in a clinical setting before being provided to a school, to guard against unexpected reactions. A strategy that might prevent errors would be the use of unit dose packaging.
- **Standards.** When widely accepted professional standards exist for the management of a medical condition—such as the national standards for asthma management, for example—a school is at risk of liability if it cannot document that such standards were followed in its medication management program.
- **Communication with Medical Professionals.** The issues outlined above are difficult for schools to deal with, since the primary mission of a school is education, not medical care. This makes it important that schools reach out to medical professionals in their communities for advice and assistance, and it is imperative that the public and private health care systems regard the schools as partners in the management of medication and other health issues.

## **Key Questions**

The research literature devoted to patient safety, quality improvement, and error reduction has focused on inpatient and adult settings. Are these approaches to improving patient safety and the quality of care applicable to medication management in schools?

There are additional critical questions to be addressed. What research is needed to create a knowledge base sufficient to make recommendations for systems changes? Or, do we already have the research sufficient to make recommendations?

What are the downsides of assuming that a safer system can be created when unlicensed personnel perform medical functions?

What are the politics that will impact the capacity of community, state, and national institutions to implement any recommendations? Are there strategies that could be developed to build a foundation for quality improvement in medication management at school?

This paper aims to begin a dialogue that explores what we know, what we can learn from the risk-reduction literature, and how we might strengthen the capacity of providers, researchers, and institutional leaders to reduce risk and strengthen quality in medication management at school.

## Keynote

### *The New, New Morbidities: An Emerging Role for School Health, and Medication Management at School*

*Howard Bauchner, MD, Professor, Pediatrics and Public Health, Boston Medical Center*

Almost 25 years ago, Bob Haggerty, one of America's most distinguished pediatricians and a former president of the American Academy of Pediatrics, wrote an article called *The New Morbidities*. And the morbidities he talked about were the developmental and psycho-social issues that were facing adolescents growing up in the 70s, 80s, and 90s.

My perspective is that we are now coming full circle and that the *new* new morbidities are, in fact, very traditional and very medical. They reflect the increase in certain medical conditions: obstructive sleep apnea that now affects 3 – 5% of children, type II diabetes that is becoming an important child health concern, and asthma and other allergic diseases of many kinds. The opportunities to treat many diseases with an increased array of vaccines also make this an area appropriate for renewed attention.

**An emerging role for school health: managing chronic disease and supporting adherence to treatment regimens.** I would argue that in most of these emerging arenas, we will only be able to make the progress with respect to the health and well-being for children if schools play a more prominent role in the health care of children.

And why do I say that? Pediatricians see children when they are young. They unequivocally and absolutely do not see children routinely when they are older. Indeed, children are as likely to see a family practitioner as a pediatrician when they see a physician. Once enrolled in elementary school, some children (14.6%) will not visit a physician's office, an emergency room, or clinic at all on an annual basis and certain groups of children will forego doctor's visits at a much higher rate. For example, nearly half of uninsured poor children and a third of near-poor children will not make a single visit to a doctor's office or clinic during a year. And among all children, poor and non-poor, nearly 60% of all children and adolescents make between one and three visits annually.<sup>1</sup>

Potential School Health Role in Managing Important Child Health Problems

**Asthma** -- Monitor disease, educate or reinforce education in disease self-management, and assist in use of medications

**Type II Diabetes** -- Screen aggressively for BMI and refer obese children to their clinicians for screening for type II diabetes

**Type I Diabetes** -- Monitor disease, educate or reinforce education in disease self-management, and assist in use of medications

**Immunizations** -- Monitor compliance with recommended vaccines, provide missing immunizations, and re-vaccinate when required

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<sup>1</sup> National Center for Health Statistics, United States, 2003. Hyattsville, Maryland: 2003. Table 70: Health care visits to doctor's offices, emergency departments and home visits within the past 12 months, according to selected characteristics: United States, selected years 1997 - 2001. P.235.

These visit rates are inconsistent with the management of chronic disease. But, if a school nurse is present at school and available to all students for extended periods of time, then the gaps in disease management for children and continuing education for parents can be overcome.

With growing opportunities for school health to make a major difference for children's health in the future, how should the field evolve over the next decade and what might be the implications for our conference topic — improving the safety of medication management at school?

Without doubt, schools need to take a lead role in solving one of the major issues of chronic care management – the problem of adherence or compliance. My colleagues who take care of children with chronic disease – cystic fibrosis, type I diabetes, asthma – largely say they have the right drugs but they cannot get patients to adhere to treatment regimens. And why would we ever think that a physician sitting in his or her office seeing a child once or twice a year could help a family dealing with a child who needs to take medicine two or three times a day seven days a week? Why would that physician have an impact on adherence? So, if there is one area in which schools must be more aggressive, it is around marrying with the healthcare system on issues related to adherence. And with medication playing a key role in chronic disease management, the issue of medication management in school would seem to relate closely to this function I see as critical in the future.

**Managing medications at school.** Here are some things we know and don't know about medication management at school. We know, for example, that in the city of Boston, a couple hundred thousand doses of medications are given at school over the course of a 10-month period. We don't have the data about whether or not the doses given are correct, whether they are given at the right time, and whether the dose is resulting in an adverse event.

In patient safety issues, the emphasis has been on the inpatient side of things. Little is known about the ambulatory area. Investigators are just beginning to look at medication errors in ambulatory medicine. One can imagine that medication errors with serious consequences will be rare – and one would like to think that there would be an objective measure of a serious adverse event or potentially serious medication error – but I suspect there will not be a lot of agreement.

In addition to safety issues, another topic the Institute of Medicine has talked about are issues of effectiveness and efficiency. These matters connect with evidence-based medicine and the goal of using the best data available to make decisions. In internal medicine, the general view is that about 50 percent of decisions are not evidence-based. Because there is little evidence in pediatrics, decisions that are not evidence-based may be closer to 75 percent of the total. The only way we can do a better job with children is to do a better job of using information technology and I'll return to that with the possibilities of introducing electronic medical records in schools.

Equity is another big issue in medicine. And equity is a bigger issue than just disparities based on race and ethnicity. There are also the inequities based on social class and economic status. There was a stunning article in the e-pages of *Pediatrics*. That article pointed out that the mortality associated with cystic fibrosis worldwide had a gradient from the highest socio-economic status to the lowest social-economic status of about 20-fold.

While I can see potential roles for school health as they fit into the health care system, let me challenge you by saying that school health supporters have not made the compelling case. In my heart I think school health is a good thing. I would never vote against it. But I'm a data driven kind of guy.

And I only have a certain amount of money to spend. So I want the field to show me that school health really makes a difference in the health and well-being of children.

You can probably give me some data around processes of care – medications delivered, minor injuries cared for rather than sent to an emergency room – so you are saving me a lot of money. But are the health outcomes for children better? Now we don't know if seeing a pediatrician makes much of a difference in a child's life, so you're in good company. But the question remains, can you prove school health is a good thing?

**Building a politically effective constituency for school health.** One thing to keep in mind is that building a politically effective constituency for school health is a complex balance. One would think that insurers would want to know about the cost-savings provided by school health. Our Boston data suggest that a conservative estimate is that the school nurses save \$15 - \$20 million for the traditional health care system. But health insurers may get nervous that they may be asked to pick up part of the cost of the school health system that is saving them so much money. I believe the pediatricians and the family practitioners are your key professional allies. They do care about the kids and if you can help them achieve their goals, they will be in your corner. Parents are the underutilized stakeholders and we need to involve them in the game.

I believe medication errors with serious consequences are likely to be rare. So when you talk about quality in schools, I think you're going to want to focus more on the larger genre of quality and medical errors rather than specifically medication errors. And you may want to talk more about screening and case finding and detection rather than medication errors per se unless you broaden the discussion about medication errors — not limiting the focus to adverse events but concentrating on *adherence*. For some diseases we can be quite sure that if you don't adhere to the treatment or management regimen, it is not a good thing. Those are the diseases and the problems of adherence on which you should focus.

The great value resulting from making school health part of community health is that it opens school health to the same funding streams and resources available to other ambulatory services, and it makes school health a participant in providing services characterized by quality, efficiency, timeliness, equitability, safety and patient-centeredness. This is a win for children's health and a win for school health

I don't think that school health is going to go away soon, but for it to expand in the landscape of American medicine, the benefits must be palpable and transparent.

*Question:*

*Are you optimistic about the future of school health?*

*Answer:*

I would say I am neutral. I'm concerned that with exploding healthcare costs, it will be difficult to shift dollars from one health arena to another. The "silo effect" which is so powerful in the United States will be difficult to break down. A major shifting of dollars from traditional health care to school health is difficult to imagine. In the United Kingdom, they are shifting dollars out of community-based health care into school health because they have some good data suggesting that if they do certain things in schools early on, they prevent health care morbidity. But in the United Kingdom,

both sets of health services are paid by the same payer so the payer gains from that shifting. Shifting dollars among separately funded silos in the United States is much more problematic.

On the other hand, while I think the route for school health may be through participating in a traditional model of managing medical problems, I am impressed with the U.S. response to the epidemic of obesity. Obesity may be the perfect time for school health to tout what it can do in terms of at least problem identification if not diagnosis and disease management. I think the coming trend in immunizations may be another area in which school health may parlay technological advances to benefit the school health services.

*Question:*

*What are the implications for medication management at school of the rapidly increasing number of psychotropic medications being prescribed for children?*

*Answer:*

From my work with 12 medical groups that take care of children, I can tell you they are worried about two things. First, they have no idea of what to do about the obesity epidemic and they are frustrated by that. Second, they are asked to write medication prescriptions for adolescents with mental health problems about which they have no knowledge and they are petrified. In terms of the impact of psychotropic drug prescriptions on schools, I think it is an evolving science. Just as we have seen a totally unpredicted drop in medications due to the once-a-day ADHD drugs, I think we may see something similar with the psychotropic medications. This may not solve the problems associated with increasing numbers of adolescents on psychotropic medications but it will reduce the burden on school health.

## **Plenary Presentations**

### ***Opportunities to Strengthen Medication Management at School: Tales From Two Cities***

Judith Frederick, RN, Director, Student Health Services, Children's Hospital, Austin, Texas  
Elizabeth Schainker, MD, Fellow, Division of General Pediatrics, Boston Medical Center, Boston, Massachusetts

The Austin, Texas and Boston, Massachusetts school nursing programs, described by Judy Frederick and Elizabeth Schainker, provide a high-volume, diverse set of health services to their respective student bodies. Background information on the two school districts and their health programs appears in Table 1.

*Table 1. Snapshots of Two City School Districts and Their School Nursing Programs*

School Year 2001 - 2002

<b>City/school system background</b>	<b>Austin</b>	<b>Boston</b>
City Population	680,000	589,141
No. of schools	103	130
No. of students	78,000	63,024
Limited English Proficiency students	22.0%	16.0%
Special Education	12.3%	20.0%
Percent of uninsured children	Statewide, Texas children ages 6 - 12 have a 25% uninsured rate; teens ages 13 - 18 have an uninsured rate of 37%	6.3%*
Students eligible for free and reduce-price lunch	53%	71.0%
Students with Individualized Health Care Plans	2.3% (1,802**)	3.8% (2,400)
<b>School nursing program</b>		
Program sponsor	Seton Health System - Children's Hospital	Boston Public Schools
<b>School health staff</b>		
Number of school nurses	65***	93.5 FTE
Number of health aides	52	5.0 FTE****

\*Uninsured children 0 - 18. Massachusetts Survey of Health Insurance Status, 2002.

\*\*Asthma, Diabetes, Teenage Pregnancies

\*\*\*Degree to which individuals are full-time as defined by being present when children are present in the school buildings is not available.

\*\*\*\*These paraprofessionals provide care to special needs students and do not provide assistance to school nurses.

***Key Features of the Austin and Boston School Health Programs***

- Both programs provide a substantial number of services to students. As suggested by Table 2, Boston's school nurses handle, on average, about 40 visits a day. In Austin the combination of health aides and nurses together average 30 visits per day. As Dr. Schainker pointed out, because children with Individual Health Plans are more likely to be heavy users of health services, a significant number of visits are attributable to a small number of students — similar to the experience of doctors' offices and ambulatory clinics.

*Table 2. Student Health Service Volume*

School health services 2001 - 2002	Austin, TX	Boston, MA
Direct student contacts	543,259*	721,300
Medication assistance	188,519	227,114

\*Total direct contacts include immunizations, screenings, TB risk assessments, ill/injured contacts, medications, case management, and student health education contacts.

- While episodic care, which includes illness assessment, first aid, and health education, is the leading service category in the Austin and Boston programs, medication management is a major service for each.

*Table 3. Student School Health Encounters, 2001 - 2002*

	Austin, TX		Boston, MA	
	Number	Percent	Number	Percent
Episodic	338,489	57.5	416,650	57.8
Medication	187,897	31.9	227,114	31.4
Procedure	Included under Episodic & Medications	---	44,369	5.7
Screening	61,786	10.5	36,645	5.1
<b>Total</b>	588,172	99.9	721,300	100

- *Safety procedures for medication management.* With medication management constituting a significant component of school health encounters, both health services have established guidance to promote medication safety. Each state school health office provides exemplary guidelines and, in the case of Massachusetts, many of the guidelines are state government requirements. Many of the safety procedures, it was noted, add time and complexity to the medication management process. Judy Frederick commented that Austin nurses are expected to check the dosage calculations and make sure that acceptable abbreviations, acronyms and symbols are used on medication labels. The nurses are also responsible for reviewing the safety of medication equipment such as insulin pumps and nebulizers, keeping count of controlled substances, and documenting use of emergency medications, including Epi-pens and glucogen injections. Children’s Hospital in Austin provides mandatory training and competency testing to reinforce compliance with the procedures. Program management also keeps careful watch on each school’s medication error rate as a way to assess patient safety and quality in the medication management program.
- *Professional standards for school nurses.* In Austin, school nurses are baccalaureate-prepared nurses with at least two years professional experience. The school health assistants or health aides are high school graduates with a minimum of six months health-related employment in health. They receive additional training through Children’s Hospital. In Boston, the school nurses also must have a baccalaureate degree and have two years of pediatric or community health experience. They are also required to complete a literacy examination that is required of teachers, and complete a Massachusetts Department of Public Health orientation for school nurses. The school nurses are responsible for training unlicensed staff in medication management so that those staff can assume the medication responsibilities when the school nurse is out of the building. *Parent contact* is important to both programs although both have struggled to engage parents on an on-going basis. In Austin, direct parent contacts totaled 68,026 or 11.6% of student encounters in school year 2001-02. In Boston, direct parent contacts totaled 76,664 or 10.6% of student encounters.

The Boston program, which tracked direct contact with the students’ health care professionals, found that only one percent of encounters involved communications with that group. The potential for building more effective partnerships between school nurses and community providers may be considerably compromised if this low number reflects hesitation on either side’s part to initiate communication.

## Workshop Discussions

### **Challenges to Reducing Risk and Strengthening Quality in School Medication Management**

*The limited work undertaken in risk reduction and quality improvement in pediatric ambulatory care in general makes it difficult to jump start efforts in systems improvement for school-based medication management.* While patient safety and medical errors have become major concerns in the United States, these are matters that have mostly been examined in the context of adult care and inpatient care in particular. Only recently have the American Academy of Pediatrics and the Agency for Healthcare Research and Quality begun the work of looking at medical errors in ambulatory care for children. Thus, the task of improving medication management at school is more challenging because it must take place in a context in which pediatrics at large has not developed standards and quality measures that can be adapted and adopted into the school setting.

That said, a key problem area that **has** been identified in pediatric care is the “hand-off” between one medical setting to another. Children get care in many settings. Making sure that parents and providers communicate accurately and fully with school health staff about the medications that children are taking, as well as educating school staff about potential side effects is an important but difficult task. It would be helpful to know, for example, the gaps in communication between the physician who manages a child’s diabetes and the school staff who see that child five times a week. If one were to pursue Dr. Bauchner’s suggestion of integrating community and school-based management of children’s chronic diseases, then understanding and guiding the hand-offs from office practices to school and back again is a critical challenge and one requiring the development of systems for care.

*The on-going focus on staffing issues within school health makes difficult a focus on other system components that might be strengthened to improve medication management at school.* Discussions during the conference demonstrated the difficulty of moving beyond the importance of staffing levels in schools to consideration of *the systems required* for safe medication management. School health staffing questions — what credentials should be required and how many staffing hours are essential to provide adequate care for students — were the primary themes in workgroup discussions. The long history of understaffing in school-based health care makes sustained consideration of other systems issues difficult.

*There are additional issues, not included in the initial issue brief, that should be considered when addressing medication management at school.* The issue brief identified and described a number of critical issues: policy guidance, delegation, documentation, supervision and training of unlicensed personnel, processes used by care givers, security, quality control, self-management policies, privacy, prescribing, service delivery standards, and communications with health professionals. Workshop participants suggested additional topics: psychotropic drugs, data collection and analysis, accountability and liability, and parental involvement.

*Psychotropic Medication.* A major concern for school medication management is how to deal with psychotropic drugs prescribed for students with mental, emotional, or behavioral problems. Workshop participants heard that such medications are often prescribed by primary care physicians who may be uncomfortable with psychiatric problems but are aware that the medications are the only immediately available source of care for troubled young persons. Recent concerns expressed in medical

journals in the United States and England about suicidal tendencies in children given psychotropic drugs have heightened concern that children on such medications should be observed for adverse reactions, a service many schools are not equipped to provide. Psychotropic drugs also call for secure storage on the school premises to prevent theft and abuse. **[On October 15, 2004 the U.S. Food and Drug Administration announced that it is requiring the strongest possible warning on antidepressant medicines to the effect that these drugs may increase the risk of suicidal thinking in children.]**

*Data Collection and Use.* The conference heard repeatedly that a major shortcoming of current school medication practice is the failure to use electronic data systems to record and analyze data on individual encounters and the outcomes of the health services provided. Currently, many school health staff — even full-time nurses — lack computers and continue to record data by paper and pencil, a time-consuming process that makes it improbable the data will become widely available. For medication management, conferees agreed that minimal information to be logged, by hand or by computer, every time a medication is given, should include verification of the student’s identity, the date and time of administration, the exact name and indicated dosage of the medication, the parental or other authorization for the administration, and any missed or incorrect doses or adverse reactions.

*Accountability and Liability.* There has been little litigation to date on failures of schools to properly manage or administer medications, which may indicate that the effects of errors are minimal—a missed dose may not have serious results, for example—or that errors are uncommon, the conference was told. There have been some significant damage awards, however, and schools need to consider how best to protect themselves from liability in this area. It is generally agreed that a well-thought-out medication policy, written and disseminated to parents and staff, is protective, but many educators believe that committing policy to paper invites, not discourages, litigation.

*Parental Involvement.* Representatives of a state and a community that developed exemplary medication practices as part of their school health programs told the conference that parental influence was largely responsible for their progress and that medication issues were high on parental agendas. It was not always easy to resolve differences between parents and school and health professionals on medication issues, and in other school districts many problems remain. Parents do not always understand, for example, the importance of bringing medications to school themselves—not sending them in students’ backpacks—and of providing prescription medicines in the original pharmaceutical containers. They may not understand that parents cannot “order” administration of medication but must submit verification of prescriptions and dosages by medical professionals. Issues also arise as to whether students may carry medicines or medical devices on their persons, and whether the school bans or limits the presence on school property of over-the-counter medications or alternative medicines such as dietary supplements or folk remedies.

## **Next Steps: What Lies Ahead**

Planning for this conference on medication management at school focused on concerns about patient safety at school, an interest in reducing medication errors, and a desire to identify systems of care that, if adopted and adapted to the school environment, would strengthen patient safety and quality of care. What emerged from the workshop was a sense that improving medication management at school is important, but we need to broaden our understanding of its context as well as sharpen our understanding of related issues.

Howard Bauchner pointed out that child health, the context for school health, may be changing from a 30-year focus on the behavior-oriented new morbidities to the *new*, new morbidities of chronic diseases such as asthma and diabetes, and mental disorders. Increased attention to chronic diseases makes medication management at school even more consequential. Dr. Bauchner also noted that within pediatrics a patient's failure to adhere to treatment regimens is recognized as a major barrier to effective medical care. He strongly suggested that the potential contribution of schools to children's adherence to treatment, as for example in the regular administration of prescribed medication, can be a major public health benefit as well as a way to keep children healthy so they may benefit from school attendance. The challenge, as pointed out by Howard Taras, MD, former chair of the American Academy of Pediatrics School Health Committee, is that pediatricians, laboring under time constraints and reimbursement worries, historically have resisted pressures to build closer clinical ties with school nurses.

Limited research on patient safety and quality in ambulatory pediatric care leaves us poorly equipped to suggest standards and measures of quality in medication management at school. However, certain findings may point to areas where greater attention would yield safety and quality gains. Denise Dougherty pointed out that patient safety research has identified the "hand-off", when a patient moves from one care setting to another, as a key trigger for subsequent errors. This suggests that a recommendation might be that school nurses have more communication with prescribing physicians than a one-page written form provided to the school nurse. Data from Boston, reported by Elisabeth Schinker, however, indicate that direct oral school nurse-physician communication is rare.

Essentially, the conference confirmed the importance of our topic but identified the limited research available to inform a patient safety/quality improvement approach to medication management at school. While challenging, several participants suggested promising directions for continuing this work.

- If we don't have the research to begin discussions of standards or measures for patient safety and medication management at school, perhaps we could start by discussing *criteria* that could be used to identify measures or standards for evaluating the safety of medication management practices. Such a discussion might benefit from the inclusion of additional experts from the patient safety field.
- A promising area for patient safety improvement is greater engagement of community pharmacists in school-based medication management. Among the things pharmacists might do would be to routinely provide parents with two labeled containers of any medication that needs to be administered at school.<sup>1</sup> Pharmacists might also provide two copies of instructions for medication, including side effects and drug interactions, so that parents may send one copy to school. The evolving nature of medication ordering and distribution suggests that pharmaceutical benefit managers should also be brought into the conversation.
- Casting a broader net to identify multiple issues affecting patient safety at school might generate greater attention and more research on the topic. For example, while medical error, particularly medication errors, have been recognized as a potential threat to patient safety, other school-based services are beginning to receive attention, including pre-participation physical evaluations for high school athletes and access to immunizations for uninsured children.
- Within the domain of chronic disease management, specialists have established "gold standards" for treatment of conditions and diseases common among school-age children, including asthma and diabetes. These well-established standards or measures of care quality may apply or might be adapted to the school setting.

Although the health of children has been of concern to schools for more than a century, the conference indicated to all of us that the possibilities for improved effectiveness of school health programs are great and deserve both careful study and conscientious application.

## **State Medication Management Policies**

A state-by-state summary of legislation and regulations concerning medication management at school has been compiled from resources on the National Association of State Boards of Education Web site and is available on the Center for Health and Health Care in Schools Web site at <http://www.healthinschools.org/sh/mgmtpolicies.asp>.

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<sup>2</sup> Note that regulations concerning the storage of medications at school may vary among school districts and states.

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