AMERICAN ACADEMY OF PEDIATRICS

POLICY STATEMENT

Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of All Children

Committee on Injury, Violence, and Poison Prevention

Poison Treatment in the Home

ABSTRACT. The ingestion of a potentially poisonous substance by a young child is a common event, with the American Association of Poison Control Centers reporting approximately 1.2 million such events in the United States in 2001. The American Academy of Pediatrics (AAP) has long concerned itself with this issue and has made poison prevention an integral component of its injury prevention initiatives. A key AAP recommendation has been to keep a 1-oz bottle of syrup of ipecac in the home to be used only on the advice of a physician or poison control center. Recently, there has been interest regarding activated charcoal in the home as a poison treatment strategy. After reviewing the evidence, the AAP believes that ipecac should no longer be used routinely as a home treatment strategy, that existing ipecac in the home should be disposed of safely, and that it is premature to recommend the administration of activated charcoal in the home. The first action for a caregiver of a child who may have ingested a toxic substance is to consult with the local poison control center.

ABBREVIATIONS. AAPCC, American Association of Poison Control Centers; AAP, American Academy of Pediatrics.

INTRODUCTION

The ingestion of a potentially poisonous substance by a young child is a common event. The American Association of Poison Control Centers (AAPCC) reported 1.2 million such events in children younger than 6 years in 2001.[1] However, death attributable to unintentional poisoning is uncommon in children of this age, and the rate of such deaths has decreased dramatically over the past 50 years, from 500 per year in the 1940s to 25 in 1997.[2] There are many reasons for this decrease. These include the advent of child-resistant closures for hazardous pharmaceuticals and consumer products, constituent reformulations that make consumer products safer, anticipatory guidance, public education, legislation, the establishment of poison control centers, the development of product formulation and poison treatment databases, the development of sophisticated medical care resources, availability of new antidotes, and the replacement of more toxic pharmaceuticals with less hazardous drugs (eg, acetaminophen for aspirin and benzodiazepines for a host of sedative hypnotic agents). The 2 most important factors have been child-resistant closures and safer medications. These are examples of passive primary prevention, a strategy that is recognized as the most effective preventive intervention.

A significant amount of the credit for this success story is due to the American Academy of Pediatrics (AAP), its Committee on Injury and Poison Prevention, and many AAP fellows who advocated for and implemented many of the aforementioned interventions. A conspicuous aspect of the initiatives of the AAP has been the recommendation to keep a 1-oz bottle of syrup of ipecac in the home[3] to be used to induce emesis only on the advice of a physician or a poison control center. The controversy within the AAP regarding this recommendation is of historical interest. The recommendation was made by the Committee on Injury and Poison Prevention in 1983 but was not published until 1989. The concern was that "it was recognized that the efficacy of ipecac had never been proven."[4] Although widely accepted and also supported by other organizations, such as the AAPCC, there has always been concern regarding the effectiveness of this recommendation as expressed by this 1981 comment: "The ipecac story is but another example of a seemingly sensible preventive health strategy being universally recommended and widely accepted before its efficacy and validity has been established."[5]

The American Academy of Clinical Toxicology and the European Association of Poisons Centres and Clinical Toxicologists jointly published a position paper regarding the use of ipecac,[6] in which they stated that "its routine administration in the emergency department should be abandoned." Although they did not make a definitive statement regarding ipecac in the home, their position statement nevertheless refocused considerable thought, discussion, and debate regarding the appropriateness of this intervention. This reassessment of ipecac administration has stimulated interest regarding activated charcoal as a potential intervention for treating poisonings in the home.

IPECAC

The only recommended method of inducing emesis is administration of ipecac. It is a safe emetic.[7] The amount of a substance removed from the stomach is inversely related to the duration of time from its ingestion to emesis. However, research has shown

PEDIATRICS (ISSN 0031 4005).

that even when ipecac is administered immediately after the ingestion of a substance, it does not completely remove it from the stomach. The most relevant study[8] involved 13 children who were given ipecac as treatment for the ingestion of a potentially toxic amount of a drug. Immediately before ipecac administration, they were given a magnesium hydroxide marker. The mean amount of the recovered marker was 28%, with a range of 0% to 78%, showing poor and unreliable performance. Another study[9] purporting benefit in children has been criticized for its unvalidated methods, which were found to be inaccurate on subsequent analysis.[10] One retrospective study in young children who had ingested acetaminophen supports the hypothesis that earlier emesis results in lower plasma concentrations of the poisonous substance.[11] There are data from adult volunteers that show ranges of 51% to 83% removal of the poisonous substance when ipecac is given at 5 minutes[10,12–15] and of 2% to 59% when it is given at 30 minutes[10,12,13] after drug ingestion.

The induction of emesis is at the least an unpleasant experience. Adverse effects including persistent vomiting, lethargy, and diarrhea were experienced by 13% to 17%, 12% to 21%, and 8% to 13% of individuals who were given ipecac, respectively.[16,17] Lethargy is especially concerning, because it may be a confounder during the observation of a patient who has ingested a substance with the potential to cause sedation. Of greater concern is the administration of ipecac when it is not indicated because caregivers did not first consult with a health care professional[17] or because the health care professional recommended it even when it was not necessary.[18] In one of these studies, the ingestions were nontoxic in 61% of children who were given ipecac without the advice of a health care professional.[17] There are examples of ipecac use when it is contraindicated.[5,17] Unfortunately, the presence of ipecac in the home often results in its inappropriate use. A purported benefit of the use of ipecac in the home is decreased visits to emergency departments for the treatment of the ingestion of poisonous substances by young children. However, this has now been shown not to be the case. In a study published in this issue of *Pediatrics*, Bond[19] found that syrup of ipecac selectively administered in the home will not improve outcome or reduce utilization of emergency services in a large portion of the population served by poison centers.

Another shortcoming of home ipecac therapy is that continued vomiting may result in the child being unable to tolerate other orally administered poison treatments, such as activated charcoal, *N*-acetylcysteine, or whole bowel irrigation. This has the potential of decreasing the efficacy of these interventions. Furthermore, the widespread availability of syrup of ipecac increases the likelihood of intentional misuse of this emetic. Examples include misuse by adolescents with eating disorders[20] and by child caregivers involved with Munchausen syndrome by proxy.[21] Chronic misuse increases the risk of cardiomyopathy.[20] Although uncommon, examples of misuse become less tolerable when clear evidence of benefit from the intervention is lacking.

Administering syrup of ipecac to a young child who has ingested a substance presumed to be toxic is, in most situations, treating a nondisease with a noxious intervention that is, for the most part, safe but has annoying adverse effects. In theory, there would be a small segment of the population of concern that could conceivably benefit from home gastric decontamination. These are patients who are on the brink of intoxication or those who have ingested enough poison to cause moderate toxicity. In this unidentifiable and small group of patients, removal of one third of the ingested dose has the potential to be of benefit. However, there is also the potential for harming a small proportion of the population that is subjected to this intervention in whom it is contraindicated. Furthermore, there is definitely an unacceptable proportion of the population that receives this therapy despite lacking a valid indication. It is notable that no other country promotes ipecac in the home. When all of these factors are considered, it is not surprising that American poison control centers rarely recommend this intervention anymore. In 1985, ipecac administration was recommended for 15% of their telephone consultations, and this percentage has decreased every year thereafter, to 0.7% in 2001.[1]

CHARCOAL

Because of the long history of gastric decontamination in the home, it is not surprising that alternatives to ipecac would be considered, with the most obvious choice being activated charcoal. It is the most effective intervention for reducing the bioavailability of ingested substances.[22] However, there are several factors mitigating against its use. Most importantly, it is poorly accepted by young children, making the administration of the recommended dose problematic. In emergency departments, it is commonly administered by nasogastric tube. Also, during storage, it tends to form sediment in clumps that are difficult to resuspend, which further undermines the ability to administer a therapeutic dose in the home. Because it is often vomited and very messy, caregiver acceptance is an issue.

The published experience with activated charcoal in the home is limited to 3 articles[23–25] and 3 abstracts.[26–28] In all but one[25] of them, the investigators reported difficulty with the administration of the recommended dose of charcoal, with lesser amounts being given from 40% to 80% of the time. One study concluded that "activated charcoal can be administered successfully by the lay public in the home" despite the mean dose accepted by the study children being less than the target dose.[25] An editorial commentary on this study[29] pointed out that the children accepted a subtherapeutic dose of charcoal and that the actual dose was determined subjectively by parental estimation of the residual amount remaining in the bottle. Noteworthy was the observation that the need for home charcoal treatment was an uncommon event, with fewer than 2 children per week meeting the criteria for this intervention in the entire state of Kentucky.[29] In those studies in which times of home and emergency department adminis-

tration were compared, it was found that the mean times were 35 and 65 minutes after drug ingestion, respectively. Whether this 30-minute advantage provides benefit for the patient is uncertain. Because it is reasonable to assume that home-activated charcoal administration will, like syrup of ipecac, be overused and inappropriately used, there should be clear evidence for patient benefit before its implementation as a public health intervention. A recent review of home charcoal treatment concluded that it was premature to recommend this intervention.[22] This was also the thrust of a recent editorial commentary.[29]

TREATMENT OF POISONING IN THE HOME

Because the primary goal should always be to prevent an adverse event, it makes sense to first discuss poison prevention in the home. The following messages should be part of anticipatory guidance during prenatal and well-infant visits:

- Keep potential poisons out of sight and out of reach.
- Always reengage child-resistant closures in the locked mode immediately after using a pharmaceutical or consumer product.
- Never transfer a substance from its original to an alternate container.
- Safely dispose of all unused and no longer needed medications.
- Do not refer to medicines as candy.
- Post the poison control center number near the telephone. The universal telephone number in the United States is (800) 222-1222. Calls are routed to the local poison control center.

Additional information can be obtained from the AAP brochure "Protect Your Child From Poison."

The prevention of all potentially dangerous exposures to harmful substances can never be achieved; therefore, early and effective treatment after the event is a priority. In young children, the routes of exposure include ingestion, skin contact, eye contact, and inhalation. First aid treatment in the home for the latter 3 is straightforward and not controversial. This includes copious irrigation of the skin or eye with tap water for 15 to 20 minutes or safe removal from the potentially dangerous environment in the case of inhalation exposure. The next step is a call for help. If the victim is conscious and alert, call the local poison control center. If the victim has collapsed or stopped breathing, call 911 for emergency transportation to the hospital.

There is controversy regarding home treatment of the ingestion of a potentially toxic substance. Dilution by having the child drink 100 to 200 mL of water or another drink is a routine recommendation for the ingestion of a nonpharmaceutical; however, this is not recommended after the ingestion of a medication, because there is concern that it would hasten the drug's absorption because of earlier exit from the stomach. The next decision is whether further in-home assessment or intervention at a hospital is required. The poison control center will advise the caregiver if this is necessary.

RECOMMENDATIONS

1. Poison prevention should continue as an integral part of anticipatory guidance activities of infant and child health care providers.
2. Syrup of ipecac should no longer be used routinely as a poison treatment intervention in the home.
3. Pediatricians and other professionals who care for children should advise parents to safely dispose of the syrup of ipecac currently in their homes.
4. Current research does not support the routine administration of activated charcoal in the home as efficacy and safety have not been demonstrated.
5. The first action for a caregiver of a child who may have ingested a toxic substance should be to consult with the local poison control center for help by telephoning (800) 222-1222.

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PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

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Pediatrics 2003;112;1182
DOI: 10.1542/peds.112.5.1182