Guidelines for Establishing a Fluoride Mouthrinsing Caries Prevention Program for School Children

GARY S. LESKE, DDS, MS, MPH, and LOUIS W. RIPA, DDS, MS

A PREDICTION IN 1966 by the Undersecretary of Health, Education, and Welfare, Wilbur Cohen, that in 10 years practically the entire nation would have fluoridation (*1*) has proved to be overoptimistic. At that time, 47 percent of the population on public water supplies were drinking water containing optimal levels of fluoride; today that figure is only 60 percent (*2, 3*). Approximately 67 million people are consuming fluoride-deficient public water. In addition, 47 million people are not served by a public water facility (*4*). Many of these people are drinking well water with natural fluoride too low to be of benefit to the teeth. Thus, approximately one-half of the U.S. population is not receiving the benefits of waterborne fluoride.

Obviously, other methods of making fluoride available must be used. One such method is a school-based sodium fluoride (NaF) mouthrinsing program in which rinsing with a 0.2 percent neutral NaF solution once a week is performed under supervision in the classrooms. The advantages of such a program and an outline for planning and implementing one type of program are presented here.

Review of Literature

The use of mouthrinses as a vehicle for applying fluoride in a self-administered preventive program was first proposed by Bibby and co-workers in 1946 (*5*). Since that time a number of different fluoride solutions have been tested in self-application programs (*6–9*). In a study by Torrell and Ericsson (*10*), it was particularly significant that children who rinsed daily with a 0.05 percent neutral NaF solution exhibited a 50 percent reduction in new carious surfaces (DMFs) and children who rinsed every 2 weeks with a 0.2 percent neutral NaF solution exhibited a 21 percent reduction. Horowitz and co-workers (*11*) reported a 16 percent reduction in first-grade chil-

☐ *Dr. Leske is associate professor and Dr. Ripa is associate dean, professor and chairman of the Department of Children's Dentistry, School of Dental Medicine, Health Sciences Center, State University of New York at Stony Brook, Stony Brook, N.Y.* *This study is supported in part by NIH-NIDR Contract No. 1–DE–52460.*

Tearsheet requests to Gary S. Leske, DDS, Department of Children's Dentistry, Health Sciences Center, State University of New York at Stony Brook, Stony Brook, N.Y. 11794.

dren and a 44 percent reduction in fifth grade children in DMF surfaces; these children rinsed with a 0.2 percent NaF solution once a week for 2 school years.

The largest mouthrinse program appears to be in Cuba where 900,000 children rinse 15 times a year in a school-based preventive program (*12*). Recently, the Council on Dental Therapeutics of the American Dental Association reviewed the results of 19 clinical trials in which fluoride rinsing was evaluated for at least 2 years. Based on its review, the council accepted both neutral sodium fluoride and acidulated phosphate fluoride solutions as "effective agents for use in reducing the incidence of dental decay" (*13*).

Horowitz and co-workers (*11*) have summarized the most obvious advantages of a school-based program as follows:

1. Little time is involved for the treatments.
2. The technique of application is easy to learn.
3. Few treatment materials are required.
4. Non-dental personnel with minimal training can easily supervise the procedure.
5. Frequent treatments can be administered easily with minimal interruption of a school's academic program.

Development of a Rinsing Program

The planning and development of a rinsing program must include three factors: (*a*) identification of an appropriate population for rinsing, (*b*) estimation and securing of funds to underwrite the program, and (*c*) recruitment and training of staff to administer program.

The population. Generally, a school rinsing program should be based in a community in which the fluoride in the water supply is below therapeutic levels. Since the therapeutic level is based on the estimated daily water consumption that, in turn, is related to the mean temperature, a therapeutic range, rather than a single level, is usually stated. Thus, the therapeutic level of fluoride of our southern States is 0.7 parts per million (ppm) and in our most northern States, 1.2 ppm. If the concentration of fluoride in a community water supply is not known, it usually can be obtained from the State dental health officer or the local water authority.

Schools located in communities that have fluoridated water but have a large proportion of children who are transported from contiguous fluoride-deficient areas might also be considered for a rinsing program.

Classroom participation should begin in kindergarten and extend to the highest grade within the school system. Participation beyond grammar school, however, may be difficult for both logistical and social reasons. Abbreviated homeroom periods and individual, rather than group, classroom assignments in junior high schools make it difficult to schedule rinsing sessions conveniently. Equally important, active participation in a program that requires rinsing in front of one's peers may not be acceptable to many socially conscious teenagers.

After it is decided to implement a school rinsing program, the following steps are necessary:

- Obtaining the cooperation and participation of school administrators, the local dental society, and local pediatricians;
- Preparing a proposal outlining the rinsing program and describing the obligations and responsibilities of all parties concerned;
- Obtaining letters of endorsement from the local dental and pediatric societies so that the school board members, school superintendents, and principals will be aware of the support of these professional groups;
- Soliciting additional support from local and State dental health department officials;
- Delineating the cooperation expected from the school;
- Apprising school officials that they will have to provide class rolls, aid in the distribution and collection of consent forms, and provide space to store and to mix the fluoride solution; and
- Agreeing on the time scheduled for rinsing and describing the role of homeroom teachers or school nurses if they are to be classroom supervisers.

After approval is obtained from the school administrators, the classroom teachers and other school health personnel must be apprised of the proposed program, and their participation and cooperation must be secured. Only after all necessary support has been obtained can the rinsing population be truly identified.

Funding. Before funds are sought, the cost of the program must be estimated. The overhead of each program will vary depending upon a multiplicity of local factors, such as the number of children participating in the program, whether one or several schools are involved, and whether the project personnel are paid or volunteers.

Expenses for the following items are to be anticipated:

Office equipment
- Desk
- Chair
- Typewriter

File cabinet
Other standard office supplies
Other equipment (at each participating school)
Locked storage cabinet
Dispensing (mobile) cart
Rinsing supplies (at each participating school)
Bottle and pumps
Fluoride
Paper cups
Disposal bags and ties
Personnel
Administrator-coordinator
Rinse monitors
Clerk-typist
Other
Printing
Travel

Office equipment, personnel, and other (printing and travel) need only be located at one central location.

Office costs will depend on the available equipment and supplies that can be used for the project. Likewise, the other major equipment, specifically the locked storage cabinet and the mobile dispensing cart for each school, may not be necessary if a locked closet is available and if another method for dispensing fluoride to the classroom can be devised.

The costs for rinsing supplies are minimal, and they can be lower if the fluoride is mixed by the program personnel. A commercial supplier has estimated a cost of 42 cents per child per weekly rinse for a school year of 36 weeks. The per capita cost of flavored concentrates or pre-mixed fluoride solutions is considerably higher. Other costs to consider are printing costs for letters of consent and informational handouts to school personnel that describe their participation in the program. Travel to and from the schools for various personnel may be a cost item; it should be estimated and computed on a per-mile basis.

For some programs, the greatest continuing expense will be for salaries and fringe benefits of the personnel. Other programs may rely heavily on volunteers.

After the expenses have been estimated for each program year, a source of funding must be sought. Potential sources of funding include voluntary, professional, or governmental agencies. Thus, these programs might be subsidized by district or State dental societies or by funds provided by a city or county health department. In some areas, local school districts are already supporting a rinsing program. If the only direct cost of the program is for rinsing supplies, parents might be asked to contribute 50 cents for each child. However, an effort should be made to establish a permanent funding mechanism to insure continuity of the program.

Staffing. The types of personnel needed for the rinsing program include an administrator-coordinator, one or more rinse monitors, and a clerk-typist. None of the personnel need be professional, that is, dentist, hygienist, or nurse; however, it is desirable that the administrator-coordinator have some experience in the health field. Although the program personnel may be volunteers or salaried, it is recommended that the administrator-coordinator be salaried. The size of the program should determine whether staff should work full time or part time. Responsibilities of personnel for the rinse program are shown in the box.

Administrator-coordinator
Order supplies and maintain inventory
Maintain and update list of program participants
Maintain communication between school authorities and rinse program personnel
Supervise or handle all office duties associated with rinse program
Act as principal personnel supervisor—spot check rinsing at each school.

Rinse monitors.
Mix and dispense fluoride at each school
Maintain local school inventory
Maintain current list of participants—receive new participants and identify dropouts
Supervise rinse sessions, unless supervision is by homeroom teacher, nurse, or other personnel

Clerk-typist
Maintain central file for program, including list of participants in the program
Type all correspondence necessary for maintaining program
Type all required reports to funding agencies, school board, or administrators as needed

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Program Implementation

Participant enrollment. With the successful identification of a rinsing population, assurance of financial support, and the recruitment of staff, the pro-

gram can be initiated. First, parents must be apprised of the existence of the program and the benefits that may accrue from their children's participation. A variety of methods may be used for publicizing the program, such as articles in local newspapers and presentations before parent-teacher organizations. The presentations can include an actual demonstration of the procedure. Additionally, the letters of consent addressed to the parents can provide information about the program.

In order to participate, each child must return a consent form signed by a parent or guardian. The basic elements of information necessary to such consent include:

1. An explanation of the procedures to be followed and their purposes;
2. A description of any attendant discomforts and risks that may occur;
3. A description of any benefits to be expected;
4. An offer to answer any inquiries concerning the procedures; and
5. A statement that the parent is free to withdraw consent, and the child is free to discontinue participation in the program at any time, without prejudice.

Consent forms may be printed on the participating school's letterhead. They should include the signatures of the program administrator-coordinator, the school principal, and the president of the local dental society. The consent form must be signed by the parent and should clearly indicate whether a child will or will not participate. There should also be a space to indicate the child's grade and homeroom teacher so that participating children can be located easily.

The consent forms can be distributed and collected by the homeroom teachers and given to the school nurse or hygienist. Forms can also be mailed directly to parents, but this involves an additional cost. The program coordinator subsequently collects all completed forms and prepares a master list containing the names and homerooms of all participants.

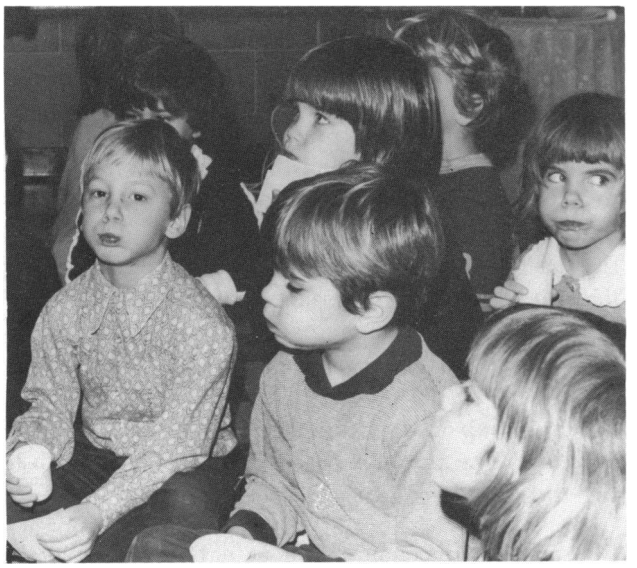
A second distribution of the consent forms to parents who have not responded is usually necessary. In an ongoing rinse program, which we supervised, participation was increased by 5.4 percent as a result of a second distribution to families that did not respond the first time.

Staff training and procedure. Before the program begins in the schools, all persons who supervise the classroom rinsing must have appropriate training. These persons include the rinse monitors and homeroom teachers if they are to be the rinsing supervisors.

Rinse monitor. The preparation of the fluoride rinse solution is the responsibility of the rinse monitor. A 0.2 percent NaF solution is prepared by mixing 3 gm NaF with 1,500 ml tapwater. The 10 ml that each child uses for weekly rinsing contains 9 mg fluoride. Generally, a premeasured packet of NaF powder is added to a premarked container. The container is closed and shaken for 10 to 15 seconds to dissolve all of the powder. The cap is then replaced with a pump that is calibrated to deliver 10 ml of solution. The pump must first be primed by pushing the plunger down a few times.

Classroom supervisor. The actual rinsing may be supervised by the rinse monitors, homeroom teachers, or school health personnel (school nurse or hygienist). We recommend holding two practice sessions, using tapwater as a placebo rinse. During these sessions the children are instructed in the proper rinsing technique. Our experience has shown that some children who did not choose to participate in the program initially, wanted to enroll after seeing the simple rinsing procedure.

The mixed NaF solution can be dispensed into paper cups and taken on trays and carts to the indi-



vidual classrooms, or one dispensing bottle can be brought to each classroom and the cups filled there. In each classroom the names of the participating children are called. Each child receives a disposable cup containing 10 ml of the fluoride solution and a paper napkin. If participation is being recorded, the children's names are checked on a list kept in the classrooms. The rinse monitor or teacher times the rinse for 60 seconds. The children are reminded to swish the solution, to use cheek pressure to force the fluid between the teeth, and not to swallow the solution. After 60 seconds the children expectorate into the paper cups, wipe their mouths with the napkins, and stuff them into the cups to absorb the solution. The cups and napkins are then collected in a disposable bag that is then tied and deposited in the waste basket.

The teacher or rinse monitor may rinse with the children or during collection of the cups and napkins. Rinsing during collection of cups and napkins is preferred, because it allows the teacher freedom to give verbal instructions during the actual rinsing. The procedure generally takes about 5 minutes. The children are reminded not to eat or drink for at least 30 minutes after the rinse.

It is more convenient to rinse early in the morning, because many children do not stay in their homerooms all day, and there is less disruption of the teacher's activity schedule. The same classrooms should rinse on the same day each week. Generally, Mondays should not be designated as a rinsing day, because of school closings for holidays. Mondays, as well as Fridays, are also days of high absenteeism.

Followup

To maintain community interest in the program, followup publicity, such as newspaper articles and talks to PTA groups and the local dental society, may be planned. An ideal time to reinforce the importance of the rinsing program is during National Children's Dental Health Week. Assembly programs on dental health and poster contests can be planned and congratulatory handouts for participation in the program can be distributed to the children. It must also be remembered that each subsequent year of the program will include a new group of kindergarten children who must be inducted into the program.

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