



## Neighbor to Neighbor *Safety Education*

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**P**UBLIC HEALTH WORKERS are constantly on the alert for new approaches to reducing home accidents. A recent family safety study in Contra Costa County, Calif., suggests that neighbor-to-neighbor education offers promising possibilities. This approach

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*A limited number of copies of the full report of the project and the statistical supplement are available upon request.*

brings to health teaching unique qualities: understanding of the people who are to receive the teaching and ability to communicate with them in a meaningful way.

In the family safety study, volunteer mothers made teaching visits to their neighbors. On the basis of this experience, we believe that safety could be taught effectively by volunteers to small groups of their neighbors gathered in neighborhood homes.

Volunteers in the family safety study, especially those under 30 years of age, expressed great interest in the "meeting people" aspect of volunteer work, and many of them were eager to serve as hostesses for meetings of the volunteers. Building on these interests, safety discussions might well be in the form of neighborhood coffee parties. Such gatherings would

provide an opportunity for presentation of information and discussion of safety problems (preferably only one at each meeting) which would have personal meaning to those invited because they have similar type homes, or children of the same age, or a common safety hazard in the area. The parties would also give the mothers a chance to socialize around subjects with reality content.

Sponsorship of safety discussions by an agency—a health department or a safety council, for example—makes it possible for mothers to bring up problems often already of concern to them (such as hazards in neighborhood garages where their children play) without making the problem a personal issue or a complaint against certain neighbors. Volunteers in the family safety study were often told: “I wish you would talk with Mrs. ——. We are friends, but I worry every time my children play at her house.” Sometimes volunteers reported recruiting a friend “because it would be good for her.”

To initiate a neighborhood safety discussion program, the sponsoring agency might recruit one interested mother to serve as the first hostess. The mother would invite some of her neighbors to participate. The single item to be discussed could be selected by a planning group composed of mothers and a representative of the health department or safety council who are acquainted with the accidents most likely to happen in households of the mothers invited (toddlers and household poisons, neighborhood traffic hazards, or kindergarten-age children's curiosity, for example). A trained person, either a staff member or a volunteer, would be needed to present the information and then help the mothers share their experiences and suggest solutions. From one such meeting, it seems likely that a volunteer could be recruited to serve as hostess for another coffee party.

The family safety study indicated that certain types of communities are more appropriate for this approach than others. Susceptible communities are “neighborly” communities, where women are likely to gather informally. They are communities not overly distracted by major social unrest, where mothers are young and have several children. They are communities with families predominantly in the mid-

dle rather than in either the highest or lowest social position.

### **What Was Tried**

The family safety study, conducted by the Contra Costa County Health Department with a 3-year grant from the California State Department of Health, provided an opportunity to try out neighbor-to-neighbor safety education. Neighborhood volunteers or staff public health nurses made teaching visits to families in the county having a child 18 months old. A year later trained interviewers conducted followup visits to these same families and to a control group of similar families. A total of 4,244 families, including 2,603 study families and 1,641 control families, participated, along with several hundred volunteer mothers and about 50 college students.

It was originally planned that some families would receive a reinforcing second visit 1 month after the teaching visit, but this step proved impractical. Both volunteers and staff public health nurses felt that if they did the best teaching job they could on the first visit there was nothing left for the second.

It was hoped that safety teaching in a home interview would be reflected in greater awareness of accidents as serious problems, more information on safety, and safer behavior so that safety would become “a way of life.” The end result desired was a change in behavior that would result in fewer accidents.

### **Selection of Families**

Every birth recorded between June 1, 1957, and May 31, 1958, to a resident of the county was used as an index to a family with a child 18 months old. Of 8,212 such families, two-thirds were assigned to the study group and one-third to the control group by randomizing within census tracts, by month of birth of the index child. Final results indicated no significant differences between study and control families in age of parents, size of family, race, or social position.

Because of the extreme mobility of California families, recorded births proved a very unwieldy index. It was found that 47 percent of

the families had moved at least once during the 30-month period between registration of the birth and the followup visit. Efforts to find these families greatly dissipated the time and energy of both staff and volunteers. If neighborhood safety education were not related to the exacting needs of research, more rewarding ways could be found for selecting families, such as selection by volunteers, by public health nurses, or by churches.

A move out of the county or "address unknown" was the most frequent reason for non-participation in the study (see table). The next most common reason was inability to contact the family. Families were excluded when they could not be contacted after several attempts or when there was not enough volunteer or nurse interviewer time available at the right time of day for contacting the family. Other families were excluded because one parent was a health department employee or a volunteer in the study or because of a known language difficulty or a death that made the visit inappropriate.

Participation of white families was significantly greater than that of nonwhite families. Losses due to a move or inability to contact were greatest in the two lower social positions.

Classification of the families by social position was based on a two-factor index developed by Hollingshead (1), which relates the father's occupation and education on a scale from position 1 (highest) to position 5 (lowest). This index attempts to estimate the position families occupy in the status structure of our society. We were interested in knowing whether families in certain social positions would benefit more from a neighborhood approach than families in other positions.

Participation in the study according to social position was about the same for both years. The percentage distribution for all study and control group families participating the second year was:

<i>Social position</i>	<i>Percent</i>
1 -----	6
2 -----	15
3 -----	22
4 -----	40
5 -----	17
Total -----	100

## Teaching and Followup Interviews

In planning what to teach in the home visit the emotional component of the subject was considered. Education was directed to promotion of safety, a positive concept, rather than avoidance of accidents, a negative concept. Carefulness as an attitude in the home was accented rather than carelessness. Emphasis was placed on planning for safety, with teaching content based on "things you can do," rather than "don't do this."

Teaching content was centered around anticipation of the normal development of a child in the 18- to 30-month period of life. It covered planning for safety in relation to accidental poisoning, burns, and falls in the home.

Poisoning proved to be of most interest to both volunteers and to the mothers visited. We believe this was because they saw poisons as dramatic, personally meaningful, and specific. Possible solutions were seen in relation to location of harmful materials and in methods of storage, which are mechanical changes, more than in relation to changes in behavior.

Because data gathering was the only purpose of the second-year visit, in contrast to both teaching and data gathering the first year, followup visits were made by a small number of highly trained, paid interviewers. In this way, uniformity of data was assured.

It was hoped to be able to show that change did or did not occur as a result of the teaching interview. It was not anticipated that the specific amount of change could be shown. In analysis of data, a level of confidence of 95 percent was considered significant.

## Use of Volunteers

The only qualifications sought in a volunteer were a willingness to do the job and some skill in written communication. No effort was made to recruit persons with a particular background, family experience, or interest, or of a particular age.

Of the several hundred mothers who participated, 96 were interviewed by professional health education staff about a year later for their impressions of the study, their preference in volunteer work, and outcomes of their participation in the safety study.

Many methods of volunteer recruitment were used. The 96 interviewed later were recruited, in order of frequency, by: other volunteers, the project coordinator, the PTA, and the community volunteer bureau. Three in 10 had done volunteer work in health in the preceding year, but a higher proportion were health volunteers a year after the study. Three in 10 had professional background related to the volunteer work, such as nursing, teaching, or social work. They were apt to be young mothers with young children. They were from all social positions.

In each community, one volunteer served as an area leader. Training on how to conduct the visit and on family safety was given to small groups of volunteers by the project coordinator and the volunteer leader. The volunteers were asked to follow the teaching content guide in the order it was presented (since this was a research project), but to interpret individual items in words and ways they found appropriate in their neighborhood. The volunteer's interpretation was influenced by her background, her understanding of her neighborhood, her own interests and personality, and her sensitivity to the situation in the home she was visit-

ing. This was considered an important part of the neighbor-to-neighbor volunteer approach. The volunteers visited families in their own neighborhoods, but usually they were families the volunteers had not previously known.

The statistical requirements of the study did not allow full exploitation of all the educational opportunities and influenced both recruitment and training of volunteers. For example, in some neighborhoods, potential volunteers lacked the necessary skill in written communication. If this educational approach is developed outside a research design, greater use of the unique qualities of volunteers can be anticipated.

We found one important difference in recruiting volunteers for this project in safety than for more typical community health activities. Since there is no generally accepted body of scientific knowledge about safety as there is in many areas of disease prevention, the volunteer is likely to see safety teaching as general rather than specific, and results are harder for a volunteer to visualize. Most potential volunteers had had accidents themselves and were therefore apt to wonder whether they were competent to discuss safety with others. Continuous effort was needed to help volunteers feel:

#### Families eligible, participating, and not participating in the family safety study, Contra Costa (Calif.) Health Department

Group	Eligible <sup>1</sup>	Participating	Not participating				
			Total	Moved and lost	Refused	Unable to contact	Other loss
Total families-----	8, 212	<sup>2</sup> 4, 244	<sup>3</sup> 3, 968	2, 476	325	1, 134	33
First year: <sup>4</sup> Study group-----	5, 480	2, 603	2, 877	1, 511	294	1, 050	22
Second year <sup>4</sup> -----	5, 335	3, 784	1, 551	1, 286	86	153	26
Study group-----	2, 603	2, 143	<sup>3</sup> 460	<sup>3</sup> 321	<sup>3</sup> 55	<sup>3</sup> 69	<sup>3</sup> 15
Control group-----	2, 732	1, 641	1, 091	965	31	84	11
Percent							
Total families-----	100. 0	51. 7	48. 3	30. 1	4. 0	13. 8	0. 4
First year: Study group-----	100. 0	47. 5	52. 5	27. 7	5. 3	19. 1	. 4
Second year-----	100. 0	70. 9	29. 1	24. 1	1. 6	2. 9	. 5
Study group-----	100. 0	82. 3	17. 7	12. 3	2. 1	2. 7	. 6
Control group-----	100. 0	60. 0	40. 0	35. 4	1. 1	3. 1	. 4

<sup>1</sup> All families living in Contra Costa County who had a child born between June 1, 1957, and May 31, 1958.

<sup>2</sup> Includes 460 families in study group who participated the first year but not the second year.

<sup>3</sup> Those who participated the first year but not the second year excluded from totals not participating.

<sup>4</sup> Average family size first year, 5.02; second year, 5.23.

"There is a real accident problem in the home, and this approach may help to solve it. Although my home has had accidents too, I can talk with someone else about accidents. I have the time and the ability." It was hoped that those who were obviously unsuited for this work would screen themselves out.

Recruitment of volunteers was particularly difficult in areas of low social status. In these areas it was evident that association of the study with "government," often the source of income for these families, made it threatening. Other volunteer activities had also been unsuccessful in these same areas.

In one section of the county which gives evidence of unusual social unrest, neighbors seemed to distrust one another. Those in the lowest social position were unaccustomed to volunteering and felt they should be paid. Furthermore, the education of many was so limited that they would have been unable to do the recording necessary for the interview. Those with time and ability to make the visits were reluctant to volunteer in their own neighborhoods. Many of these persons apparently found outlets for a desire to do volunteer work through churches or hospitals, often in a community or a county other than their own.

Recruiting in areas with families predominantly at the top of the social scale also differed from that in areas of middle social position families. Potential volunteers seemed to find the program threatening and frequently answered, "Families here do not need it." And, in fact, the study did indicate that families of the highest social position were more likely to have information on safety and to practice safety in their homes. In addition, we observed that in these neighborhoods homes were farther apart and the mothers had greater access to transportation and activities outside the home. These factors tend to discourage social intercourse within the neighborhood.

### **Safety Information and Attitudes**

Having certain information or holding certain attitudes about safety does not, of course, make a person accident free. But information and attitudes certainly have some bearing on practice. The family safety study, therefore, sought to learn something about these factors

and their possible relation to other influences, such as social position of the family and age of the mother.

Although accidents are the leading cause of death for persons from 1 to 25 years of age, only 6 in 10 families interviewed the second year selected them as the most important cause of death in children. Significantly more families who had had a teaching visit considered accidents important, however, than those who had not been visited. The higher the social position, the more likely the family was to know the importance of accidents in both study and control groups.

An indication of the value put on safety was sought by asking: "What are some of the unsafe situations that bother you in someone else's home, your neighborhood, or your own home?" One-fourth of the families saw no hazards at all or considered cars, traffic, and streets the only hazards. Families in higher social positions were more likely to observe other kinds of accident hazards, and they mentioned a greater number of hazards. This was true in both study and control groups. The age of the mother appeared unrelated to the type or number of hazards noted.

### **Safety Practices**

To learn how well the families could apply information about safety, they were asked in the followup interview for suggestions for the health department and a committee of home builders on how to design safe homes. Interviewers liked this question, and they said that the families welcomed it.

Significantly more families who had had a teaching visit volunteered suggestions of better ways to store dangerous materials—medicines, household products, gardening poisons, and tools—than the control families. This was true for parents of all ages. There were few differences, however, between the two groups of families in suggestions relating to falls, although falls in the home had been discussed in the teaching visits. Ideas suggested by families who had had a teaching visit were rated higher in appropriateness and originality than those suggested by the control group.

Storage of aspirin was selected as a measure

of the effect the teaching visit had on practices, since childhood poisonings were emphasized and since aspirin is found in most homes. A slightly, but statistically significant, larger proportion of families who had had a teaching visit (43 percent) were judged by interviewers a year later to have "very safe" aspirin storage (a locked cupboard or an unusually high shelf beyond the child's reach) than the control families (39 percent). This was true for mothers of all age groups.

Among both the families who had a teaching visit and the control group, mothers 30-39 years old tended to store aspirin more safely than mothers either older or younger. This finding may indicate that these mothers have had more experience with safety planning than younger mothers but that their interest is still oriented toward younger children. Mothers over 40 years, while they may have had considerable experience, are more likely to be oriented toward the needs of older children. These observations suggest that young mothers need new information about accident hazards, while older mothers need a reminder to help them recall the dangers to young children.

Families in the highest social position were more likely to have very safe aspirin storage than families in the lower positions. This was true of both those who had had a teaching visit and those in the control group. At each social level, however, those who had had a teaching visit were more likely to have safe storage than the control families, indicating that the visit benefited families in all social positions.

The apparent improvement in aspirin storage among families who had had a teaching visit was gratifying, but it was somewhat disheartening to note that less than 50 percent of all families had safe aspirin storage at the time there was a 2½-year-old youngster in the home.

To explore possible differences in practice in relation to age of the mother and social position, families were asked what they had tried in their homes to prevent children from being poisoned and from being burned. Families in the highest social position recalled taking significantly more precautions than those in the lowest position. Mothers 30-39 years old recalled taking significantly more precautions than those 20-29 years old.

Answers to the question, "How did you happen to think of (the practices mentioned for poisons and burns)?" offer some clues to motivations for trying safety practices.

Eight percent of the families volunteered something directly associated with the teaching visit the year before. They made comments such as "that lady that was here last year," or "that list," or "the list of poisons," or "I hadn't until that person who was here last year told me." Mothers 20-29 years old were more likely to mention the safety visit than mothers 30-39 years old (9 percent versus 4 percent). This finding suggests that the neighborhood approach to safety might be of greatest value to mothers of this age group.

In both study and control groups experience with accidents was recalled more often than anything else as the motivation for a safety practice. Mothers made such comments as "My baby got into the Clorox and had to have his stomach pumped," or "The child up the street got into the paint thinner in the garage," or "My sister's baby got into the aspirin." Younger mothers were more likely to mention this than older mothers. This question, then, arises: What can be substituted for the emotional involvement resulting from an experience with an accident that will be equally motivating? Perhaps neighborhood discussions of safety in which mothers share their experiences will prove to be one answer.

Older mothers were likely to be less specific in remembering what made them try a safety practice. We may speculate from this observation that older mothers have had accident experiences with an older child which prompted a safety practice but that they have forgotten these experiences.

Although only a small percentage of families (2 percent of study group and 3 percent of control group) mentioned their doctor as the source of motivation for trying a safety practice, these mothers recalled a greater number of ideas they had tried than any other mothers.

Next in importance in relation to the number of ideas tried was the husband's work. Some mothers said, for example: "My husband gets so much safety at work that he makes me do it this way." Some of the volunteers commented that when the husband was at home during

their teaching visit he was apt to be more interested in safety than the wife.

### Evaluation of Volunteers

These findings indicate that home teaching visits resulted in some change in safety information, attitudes, and practices among the families visited. It was the volunteers themselves, however, who benefited most from the study. According to data obtained in the interviews with volunteers a year after the teaching visits, the volunteers were more aware of safety than families visited in the study, or 35 health department nurses who also made safety visits, or 20 volunteers working in health department clinics who were interviewed for comparison.

Safety study volunteers recalled significantly more newspaper stories on safety than the families visited. They suggested significantly more safety ideas for home builders, and these ideas were of a significantly higher quality in relation to appropriateness and originality than those suggested by families in the study or the public health nurses. Significantly more volunteers applied their information on childhood poisons to suggestions for home builders about safe storage of harmful materials.

Some change in safety information, awareness, or practice in their own homes was recognized by 85 percent of the volunteers. A specific change in practice was mentioned by 42 percent. Those who reported a change in practice were more frequently in the age group 20-29 years than in any other age group. The safety education materials which were part of the teaching-visit packet were used with persons other than study families by 6 out of 10 volunteers, although this had never been suggested as part of their assignment. The younger mothers were more apt to use these materials in this manner.

Benefits to the volunteers were also suggested by such comments as: "If it didn't help someone else, it helped me, but I think it helped them." "The interviewers received as much benefit as those who were interviewed." "I realize what can happen hearing the stories from mothers that I visited." "It was always

on my mind, but it took the pictures and the list to make me move it out (Draino and some other cleansers under the sink)." "I was always aware, but never did anything."

### Recall and Reporting of Accidents

Families were asked to recall their accident experience in the home in the month prior to the visit. Findings led to the conclusion that while obtaining this kind of information may have considerable educational value, it is of less value as an indicator of the actual accident experience in the home. We found evidence that both recall and reporting of accidents were influenced by certain concerns and anxieties within the family. The result was an increase in some homes and a decrease in others (2).

### Summary

The family safety study, conducted by the Contra Costa County (Calif.) Health Department, emphasized the use of volunteers to teach safety to families in their neighborhoods. According to information obtained in followup interviews a year later, the teaching visits resulted in an increase in information on safety and an improvement in safety practices among the families visited. It was the volunteers themselves, however, who benefited most from the study.

On the basis of this experience, we believe that neighbor-to-neighbor safety education is a promising approach to reducing home accidents. Neighborhood safety discussions, sponsored by a health agency and led by a trained person, might provide not only information on safety but also the motivation to put this information into practice.

### REFERENCES

- (1) Hollingshead, A. B.: Two factor index of social position. New Haven, Conn., 1957 (printed privately).
- (2) Blum, H. L., and Cavender, C.: Inadequacies in the use of household interviews for recall and reporting of accidents. Contra Costa County Health Department, Martinez, Calif., 1961. Processed.

# Occupational Health

## Notes

### ***Thallium Poisoning***

Poisoning from thallium used in a rodenticide hose was found to be the cause of illness of three children in New Jersey who had been hospitalized for suspected encephalitis. A professional exterminator died after using a thallium bait in his home. It is suspected that he gradually accumulated a fatal dose through frequent use of the product. Investigation revealed widespread use of thallium by exterminator companies. Regulations for its use are being considered.

### ***Lead Hazards***

The method of disposing of an industrial waste product containing lead chloride has resulted in a serious health hazard in a California farming area. For years the waste was dumped into a pond and allowed to evaporate. Occasional flooding of the area has contaminated the soil and ground water of neighboring farms with lead. Autopsies of cattle that died in the area have shown lead in the tissues.

The method of disposal was recently discontinued, and a smelter is being built to refine the lead from the accumulated waste. In starting this operation, workers got lead-contaminated mud from the pond onto their skin and suffered lead poisoning.

The Alameda County Health Department is working on the problem with other agencies.

### ***Methemoglobinemia in a Mental Hospital***

A change in the procedure used in preparing soap gel for enemas was found to be the probable cause of an outbreak of methemoglobinemia in a California State mental hospital. Contrary to usual procedure, on the night preceding the outbreak, soap chips for the gel were heated with a small amount of water close to the boiling point for one or more hours.

State health department investigators learned from the soap manufacturer that this particular product contained a bacteriostatic agent that might conceiv-

ably break down at high temperatures to form a substance that could have caused the outbreak. Chemical analysis proved that such a substance resulted from heating the soap. The substance was evidently absorbed from the enema solution through the bowel wall and produced the oxidized hemoglobin and cyanosis characteristic of methemoglobinemia.

### ***Dynamite Plant Fatalities***

Four sudden deaths occurred within 15 months in a Pennsylvania explosives manufacturing plant. The cause of death in all four employees was listed as acute myocardial infarction. In three of the four employees, the attacks occurred at the beginning of the workday after a period of 24 to 72 hours away from the plant.

A similar pattern of illness and death in explosives plant employees has been reported in the literature. Sudden death and severe angina have been attributed to exposure to ethylene glycol dinitrate used in nitroglycerine to manufacture antifreeze dynamites.

The Pennsylvania Department of Health has begun a statewide study of the dynamite industry, and several cases of sudden death in other dynamite plants are being investigated.

### ***Bladder Cancer***

Hospital records showed that 10 cases of bladder cancer occurred during a 4-year period among employees of 2 chemical plants in Pennsylvania. One plant had manufactured beta-naphthylamine and the other had used it in its operations during this period. The manufacture and use of beta-naphthylamine have recently been banned by the Pennsylvania Advisory Health Board. Low-cost, noncarcinogenic substitutes for this chemical are available.

### ***Garage Ventilation***

Studies conducted in automobile service garages in Indiana indicated that many garages have tail-pipe ventilation systems that are improperly designed, poorly maintained, and have inadequate air volumes to prevent accumulation of carbon monoxide from high-horsepower engines. Such inadequacies have resulted in excessive exposures of workers to carbon monoxide.