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South Africa [Folder 1] [2]

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Areas of Potential CDC-South Africa Collaboration in HIV/STD Prevention

1. OPERATIONS RESEARCH/TECHNICAL ASSISTANCE:

**Behavior Change Models
STD Case Management
Surveillance
Epidemiology
Program Evaluation**

2. CAPACITY BUILDING/TRAINING

**Training for Primary Health Care Nurses
Training in STD Case Management
Decentralization of Public Sector Health Care**

3. POLICY GUIDANCE/DEVELOPMENT

**Confidentiality
Universal precautions
Counseling and Testing**

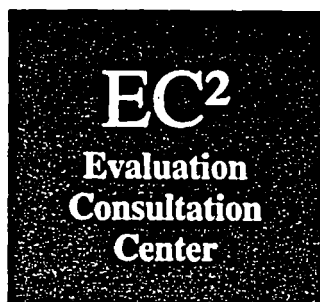
4. COMMUNITY PLANNING

5. PARTNER NOTIFICATION

DASH-Funded National Organizations

- ★ Advocates for Youth
- ◆ American Association for Health Education
- ◆ American Association of Colleges for Teacher Education
- ◆ American Association of Community Colleges
- American Association of School Administrators
- ◆ American College Health Association
- American Medical Association
- American Nurses Association
- American School Health Association
- ◆ Association of American Colleges and Universities
- Association of State and Territorial Health Officials
- ◆ BACCHUS and GAMMA Peer Health Education Network, Inc.
- ★ Cities in Schools, Inc.
- Comprehensive Health Education Foundation
- Council of Chief State School Officers
- Education Development Center, Inc.
- ETR Associates
- ★ GIRLS Incorporated
- ◆ National Association for Equal Opportunity in Higher Education
- ★ National Association of Community Health Centers, Inc.
- National Association of State Boards of Education
- ◆ National Association of Student Personnel Administrators
- ★ National Coalition of Advocates for Students
- National Conference of State Legislatures
- National Education Association Health Information Network
- ★ National Network for Youth
- National School Boards Association
- National School Health Education Coalition
- Public Education Network
- Sexuality Information and Education Council of the United States
- ◆ United Negro College Fund

- ◆ - focus on university populations
- ★ - focus on youth in high-risk situations
- - focus on in school youth



GUIDELINES FOR SCHOOL
HEALTH PROGRAMS:
STRATEGIC PLAN FOR
DISSEMINATION AND
IMPLEMENTATION



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SUMMARY

This plan is intended to provide a framework for activities conducted to facilitate schools' implementation of CDC's guidelines for school health programs to promote healthy eating and physical activity and to prevent tobacco use and addiction. The plan was developed using information from a review of the relevant literature on diffusing innovations in educational settings and discussions with representatives of national organizations and DASH's infrastructure states. The plan includes three phases:

Phase I: Dissemination of guidelines to professional audiences (1995-1996). Build awareness of the guidelines recommendations among relevant professional audiences by publishing the guidelines in professional journals, presenting them at professional conferences, and publicizing their availability in professional newsletters.

Phase II: Dissemination of abridged guidelines and action steps to key target audiences (1997). Through easy-to-read materials and mass media support, build awareness among key target audiences (administrators and planning committees, parents, and teachers) of steps they can take to implement the guidelines.

Phase III: Implementation of specific guidelines recommendations (1996+). Stimulate implementation of specific recommendations by 1) developing and disseminating technical assistance materials and services, 2) training state and local education staff and/or partners in using the materials and services, 3) supporting local efforts by using mass communication and other outreach activities to provide ideas and information on making changes consistent with the recommendations, and 4) periodically reviewing the literature and field practice to keep recommendations up-to-date.

This plan begins with brief analyses of target audiences and the environment in which the guidelines will be implemented. It then describes objectives, strategies, and potential program components for each phase, and presents a more detailed framework for action to support the implementation of the two guidelines areas ranked by informants as the highest priorities. It concludes with a discussion of evaluation followed by a summary of the approach taken.



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School-Based Programs to Reduce Sexual Risk Behaviors: A Review of Effectiveness

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Synopsis

This review was undertaken in recognition of the mounting public health and social problems associ-

ated with adolescent sexual behavior and the importance of basing school-affiliated programs designed to reduce sexual risk-taking behavior on sound research. The authors were commissioned by the Division of Adolescent and School Health within the Centers for Disease Control and Prevention, Public Health Service, to review carefully the research on these programs and to assess their impact on behavior.

The authors identified 23 studies of school-based programs that were published in professional journals and measured program impact on behavior. They then summarized the results of those studies, identifying the distinguishing characteristics of effective programs, and citing important research questions to be addressed in the future.

Not all sex and AIDS education programs had significant effects on adolescent sexual risk-taking behavior, but specific programs did delay the initiation of intercourse, reduce the frequency of intercourse, reduce the number of sexual partners, or increase the use of condoms or other contraceptives.

These effective programs have the potential to reduce exposure to unintended pregnancy and sexually transmitted disease, including HIV infection. These programs should be replicated widely in U.S. schools. Additional research is needed to improve the effectiveness of programs and to clarify the most important characteristics of effective programs.

WE ARE SEXUAL HUMAN BEINGS from birth, but during adolescence, sexual feelings change and intensify. Those sexual feelings can add a vital dimension to the lives of adolescents, a dimension that has many positive elements. There can be those wonderful and intense feelings of being attracted to someone else, there can be great caring and great pleasure, and there can be the opportunity for growth that comes from an intimate relationship with another person. These positive elements should not be forgotten or ignored.

Unfortunately, there can also be many negative consequences of adolescent sexual behavior. Some of

them, such as feelings of exploitation, dissatisfaction, and guilt are not easily quantified; other negative consequences are dramatized by the following statistics.

More than 40 percent of women in the United States become pregnant before they reach 20 years of age (1). More than a million American teenagers become pregnant each year, producing one of the highest teenage pregnancy rates of any western industrialized country ("United States and Cross-National Trends in Teenage Sexuality and Fertility Behavior," unpublished data of the Alan Guttmacher Institute, New York, 1986 and reference 2). In 1990,

the U.S. birth rate among 15- to 17-year-olds was 38 per 1,000 females; the birth rate for 18- to 19-year-olds was 89 per 1,000 females (3). Among white adolescents ages 15 to 19, the out-of-wedlock birth rate has risen steadily every year since 1970; among black adolescents, it is higher than among whites and has risen since 1981.

In addition, among all sexually active people, teenagers have the highest rates of sexually transmitted disease (STD) of any age group (4); in 1991, the rate of gonorrhea among 15- to 19-year-old females was 22 times higher (1,043 per 100,000) than the rate for women ages 30 or older (48 per 100,000) (5). Approximately one in four young people have been infected by any STD by age 21 (4). An increasing number of adolescents are becoming infected with the human immunodeficiency virus (HIV). Although relatively few of the reported acquired immunodeficiency syndrome (AIDS) cases have occurred among adolescents, about one-fifth have occurred among persons in their twenties (6). Because the average incubation period is about 10 years, many of these 20-29-year-olds were infected as teenagers.

These immediate consequences of adolescent sexual behavior, in turn, have long-term effects upon the lives of young people. Pregnancy among school-age youth can reduce their completed level of education, their employment opportunities, and their marital stability, and it can increase their welfare dependency (7). HIV and other STDs among youth can affect their physical health, their subsequent ability to bear children, and even their chances for a normal lifespan. AIDS has quickly become one of the three leading causes of death among women and men 25 to 44 years old in this country (6).

Because the incidence of pregnancy and STDs among teenagers is so great, these consequences affect not only the individuals involved and their families, but also overall welfare dependency, unemployment, and medical costs in the United States. For example, each year through just three programs alone—Aid to Families and Dependent Children (AFDC), food stamps, and Medicaid—the United States spends more than \$25 billion on families with children born in preceding years to teenagers (8).

Educational Programs

Faced with the magnitude of these problems, our nation through its educational institutions has responded during different eras with prevention programs. As long ago as the early 1900s there was concern that young people were having premarital sex and that the rates of "venereal disease" (VD) were

increasing. Believing that accurate information about VD would prevent youth from engaging in sex, some schools implemented VD education (9).

However, many more schools began developing programs to address adolescent sexuality during the 1970s when adolescent sexual behavior, unintended pregnancy, STDs, and their consequences were better measured and publicized. Schools responded far more dramatically when AIDS became a prominent problem in the latter part of the 1980s. The advent of AIDS affected the willingness of some schools to cover certain topics, as well as the overall design of some programs.

Currently, 46 States either strongly recommend or mandate the teaching of sexuality education, while all 50 States either recommend or mandate AIDS education programs (10,11). According to a national study by the Alan Guttmacher Institute in 1988, about 85 percent of all schools offer sexuality education. Of those schools offering sexuality education, between 85 and 100 percent included instruction on abstinence, contraception, pregnancy, STDs, and HIV-AIDS (12). The two messages most commonly emphasized were "the importance of abstinence and how to resist pressures to become sexually active" and "responsibility regarding sexual relationships and parenthood." In 1991, 83 percent of the students in the national Youth Risk Behavior Survey reported that they had been taught about AIDS-HIV in school (13).

Several hundred schools also implemented school-based clinics providing reproductive health services. By 1993, more than 400 clinics had been opened in high schools and middle schools throughout the country (14). Although this number represents a very small proportion of all schools in the country, the number is continuing to grow. According to a 1991 study of these clinics, more than 60 percent provide counseling, referral, or followup for family planning methods, and about 28 percent write prescriptions for birth control pills, but fewer than 20 percent dispense contraceptives on site (15).

During the 1990s an increasing number of high schools began making condoms available to students as part of their HIV-AIDS prevention programs. Condoms are widely available in schools in some of our nation's largest cities, such as New York City, Los Angeles, and Philadelphia; they also are available in many smaller cities such as Falmouth, MA, Commerce City, CO, and Santa Monica, CA. According to current unpublished research at ETR Associates, by the fall of 1993, condoms were available in more than 375 schools in 47 cities nationwide. This number represents a very small

proportion of all schools, but it, too, is rapidly increasing. Although making condoms available in schools remains very controversial, 65 percent of the American adult population supports condom availability in schools to prevent the transmission of HIV (16).

During most of this century, programs to reduce unprotected intercourse were not carefully evaluated; however, during the last two decades, numerous studies have provided evidence on the effectiveness of different programs.

Recognizing the magnitude of the problems associated with adolescent sexual behavior and the importance of basing programs upon sound research, the Division of Adolescent and School Health (DASH) within the Centers for Disease Control and Prevention (CDC) commissioned a careful review of the research on school-based programs designed to reduce sexual risk-taking behavior. The purposes of the review were (a) to synthesize qualitatively research on the effectiveness of these programs, (b) to identify the distinguishing characteristics of effective programs, and (c) to identify important research questions to be addressed in the future. This paper summarizes that review.

This paper is also the first product in a series of CDC efforts to translate rapidly and apply research to improve the impact of school efforts to reduce sexual risk-taking behaviors. CDC also has established (a) a research registry to catalogue studies about school programs to reduce sexual risk-taking behavior, (b) a meta-analysis of these studies, and (c) means to identify and rapidly disseminate programs that have demonstrated credible evidence of effectiveness in reducing such behaviors.

Methods

The review included a three-step process: (a) assembling a panel of experts in the field, (b) identifying research studies that met specified criteria, and (c) carefully reviewing those studies.

Panel review. The review panel helped identify important studies, assessed those studies during a 2-day working meeting, and subsequently reviewed this paper.

The panel included several nongovernment experts in the field: Marion Howard, PhD, Emory University and Grady Hospital; Douglas Kirby, PhD, ETR Associates; Brent Miller, PhD, Utah State University; Freya Sonenstein, PhD, Urban Institute; and Laurie S. Zabin, PhD, The Johns Hopkins School of Public Health. Also participating on the panel were eight

representatives from CDC: Stephen Banspach, PhD, Janet Collins, PhD, Susan Dietz, PhD, Yvonne Green, PhD, Lloyd Kolbe, PhD, Dan Peterson, PhD, Deborah Rugg, PhD, and Lynn Short, PhD, as well as representation from the National Institutes of Health: Susan Newcomer, PhD.

Criteria for selecting research studies. To limit the studies to be reviewed, we used three criteria. First, the interventions had to be implemented in schools. Schools are the one institution in our society regularly attended by most young people; nearly 95 percent of all school-age children and youths are in elementary or secondary schools (17). Moreover, virtually all youths attend school before they initiate sexual risk-taking behaviors, and a majority are enrolled in school when they initiate intercourse. Thus, many people perceive schools as one public institution with a broad opportunity and responsibility for addressing and reducing sexual risk-taking behaviors.

Second, the research must have been published, or accepted for publication, in a peer-reviewed journal. During the last decade there have been many reports published in newspapers or advocacy newsletters claiming that specific programs dramatically decreased (or increased) pregnancy or birth rates. When these reports were subsequently investigated, they often lacked valid empirical evidence. Thus, restricting this review to peer-reviewed articles helped provide a minimal level of research quality.

Third, the research must have measured reported sexual or contraceptive behaviors or their outcomes (that is, pregnancy rates, birth rates, or STD rates). Although knowledge about sexual topics may be a precursor to behavior change, it appears to be very weakly related to adolescent sexual behavior—one meta-correlation is about .17 (18). Although other educational outcomes such as changes in attitudes, norms, skills, and intentions may be precursors to behavior, even they are not adequate proxies for change in actual behavior.

Sexual and contraceptive behaviors reported on questionnaires or interviews are, of course, not perfect proxies for actual behavior; adolescent females may underreport sexual behavior, while males may exaggerate their sexual behavior. Nevertheless, in general, reports of sexual behavior from well-designed and administered questionnaires are consistent with reports of sexual behavior from in-person interviews; the changes over time in the sexual behaviors of youth are consistent with changes in their pregnancy rates; the reported age of onset of intercourse among seniors in high school is consistent

with the reported age among freshmen (19); and, in monogamous relationships, the reports of one sexual partner are consistent with those of the other sexual partner (20). Thus, reports of sexual behavior do provide useful indicators of actual sexual behavior.

To locate all the important studies meeting these criteria, we reviewed computer searches of appropriate data bases, reviewed all journals commonly publishing articles on this topic, and contacted other researchers in this field.

Results

As a result of these efforts, 23 studies meeting the specified criteria were found. Seven studies used national survey data to examine the relationship between reported exposure to sex and AIDS education programs and various reported behavioral outcomes. Sixteen experimental or quasi-experimental studies evaluated the impact of 32 specific programs upon such behavior. These studies are summarized in two boxes on pages 343-344 and 347-352.

Studies based upon national surveys. These studies (see box 1) are based upon large nationally representative surveys of adolescents. They included retrospective questions both about participation in sex or AIDS education programs and about personal sexual behavior. Thus, these analyses correlated respondents' reports about participation in programs with their reports about sexual behaviors, statistically controlling in a variety of ways for the effects of other characteristics of the respondents.

Because these studies sampled a cross-section of adolescents throughout the country, they also sampled participants in a cross-section of sex or AIDS education programs throughout the country. Thus, they measured the impact of the wide range of sex and AIDS education curriculums as they actually have been implemented by the wide range of teachers in our nation's schools. This representativeness is in contrast to the studies that evaluated model curriculums often taught by teachers who may have volunteered and who typically received specially developed training to teach their respective curriculums.

Studies based upon national surveys have several major limitations. First, they necessarily rely upon the respondents' recall of whether or not they received sex or AIDS education. Because this instruction is sometimes integrated into a variety of other topics and may vary greatly in length, content, and quality, respondents often had to use their own criteria to determine whether they had, in fact, received suf-

ficient instruction to say they had been exposed to a program. These problems undoubtedly added considerable measurement error and possibly bias to the seemingly simple question of whether or not they had been exposed to a sex or AIDS education program. For example, those youth who were most affected by an AIDS educational program may be more likely to remember that program and to report past participation in a program.

Second, most of the surveys failed to measure in any detail the characteristics of the sex or AIDS education instruction that the participants received. Typically the surveys asked three or fewer questions about the content of the students' instruction. Thus, these surveys provided little information about the quality of the programs. Consequently, relatively comprehensive and long-term programs are "averaged together" with brief superficial programs.

Third, with national survey data, controlling for all other explanatory variables that might produce spurious relationships between education and sexual behavior is impossible. For example, there is a belief among some professionals that during the 1970s and 1980s sex education was disproportionately likely to have been taught either in communities where such school instruction was more acceptable or in high-risk schools where there was greatest need. Because this selection bias could never be fully controlled statistically, it could have produced spurious relationships between receipt of sex education and sexual activity; alternatively, it could have obscured relationships indicating desirable effects.

Sexual activity. Five studies based on national surveys examined whether receipt of sex education was related to initiation of intercourse (21-25; Nos. 1, 4-7 in box 1). Their results are mixed.

The most recent study was conducted by Ku and colleagues and focused on 15- to 19-year-old males. They found that the association between sex education and subsequent initiation of intercourse varied with the topics covered (21; No. 1, box 1). Instruction on biological topics or contraception was significantly associated with earlier initiation of intercourse while instruction on AIDS or resistance skills (how to say no to sex) was significantly associated with later initiation of intercourse. When three or all four of these topics were covered, there was not a significant relationship with onset of intercourse, with one exception—instruction on biological topics, AIDS, and resistance skills, in combination, was significantly associated with later initiation of intercourse.

Marsiglio and Mott analyzed data for both sexes

1. Studies of Sex and HIV Education Programs Based on National Surveys of Youth

1. Ku, Sonenstein, and Pleck 1993 (Reference 21) Household survey: 1988 National Survey of Adolescent Males.

Sample characteristics. N=1,880 (74 percent response rate); cross section of U.S. males 15–19 years old; blacks = 15 percent, Hispanics = 9 percent, whites = 73 percent, others = 3 percent; varied income levels.

Survey questions about the program. Ever had a course with instruction on specified topics.

Analytic methods. Logistic regression controlling for background characteristics was used to estimate discrete-time event histories. (N=10,566 person-years).

Results—changes in outcomes.¹

Initiation of intercourse:

- Biological topics –
- Birth control –
- AIDS education +
- Resistance skills +

Use of condoms at first intercourse:

- Biological topics 0
- Birth control 0
- AIDS education 0
- Resistance skills 0

Use of any effective contraceptive method at first intercourse:

- Biological topics 0
- Birth control 0
- AIDS education 0
- Resistance skills 0

Additional comments. Data on the quality of instruction were not gathered. Analyses of all possible combinations of the four topics tended to conform to these reported results.

2. Ku, Sonenstein, and Pleck 1992 (Reference 30) Household survey: 1988 National Survey of Adolescent Males.

Sample characteristics. N = 1,880 (74 percent response rate); cross section of U.S. males 15–19 years old; blacks = 15 percent, Hispanics = 9 percent, whites = 73 percent, others = 3 percent; varied income levels.

Survey questions about the program. Ever had a course with instruction on AIDS, contraceptive use, or resistance skills (3 separate questions).

Analytic methods. Tobit multivariate analysis was used to statistically control for urban residence, ethnicity, age, religion, income, whether behind in school, whether mother gave birth as teenager, AIDS incidence for respondent's State.

Results—changes in outcomes.¹

Number of sexual partners during preceding year:

- AIDS instruction 0
- Contraceptive use 0
- Resistance skills +

Frequency of intercourse during preceding year:

- AIDS instruction 0
- Contraceptive use 0
- Resistance skills +

Condom use during preceding year:

- AIDS instruction 0
- Contraceptive use +
- Resistance skills +

Additional comments. The data also indicated that increasingly large percentages of males used condoms as information about AIDS was disseminated to the public through schools and public awareness campaigns. Data on the quantity or quality of the instruction were not gathered. The relative order of instruction and the initiation of sex was not known.

3. Anderson, et al.: 1990 (Reference 29) School survey: 1989 Secondary School Student Health Risk Survey.

Sample characteristics. N = 8,098 (83 percent response rate); cross section of U.S. students in grades 9–12; males = 46 percent, females = 54 percent; blacks = 14 percent, Hispanics = 17 percent, whites = 63 percent, others = 6 percent; varied income levels.

Survey question about the program. Ever been taught about AIDS–HIV infection in school.

Analytic methods. Logistic regression was used to control for age, ethnicity, gender, and HIV–AIDS knowledge.

Results—changes in outcomes.¹

Number of sexual partners:

- 2 or more in lifetime 0
- 2 or more in last year 0
- Consistent use of condoms 0

Additional comments. The relative order of instruction and the behaviors were not known. Data on the content, quantity, or quality of the instruction were not gathered.

4. Dawson 1986 (Reference 23) Household survey: 1982 National Survey of Family Growth.

Sample characteristics. N = 1,888; cross section of U.S. females 15–19 years old; blacks = 31 percent, whites and others = 69 percent; varied income levels.

Survey questions about the program. Ever had formal instruction about pregnancy and contraception (two separate questions).

Analytic methods. Logistic regression was used to control for mother's education, ethnicity, number of parents in home, income, whether behind in school, religion, region of country, urban residence. Analyses examined whether instruction prior to specified ages was associated with sexual behavior during the following year.

Results—changes in outcomes.¹

Initiation of intercourse:

- Overall and most subgroups 0

continued on page 344

1. Studies of Sex and HIV Education Programs Based on National Surveys of Youth (Continued)

Students 14 years old in 1 of 2 classification systems -
Students 14 years old in second of 2 classification systems 0

Students 15-19 years old 0

Contraceptive use at first intercourse +

Contraceptive use ever +

Current use of contraception 0

Pregnancy:

Sexually experienced 0

Additional comments. Data on the content, quantity, or quality of the instruction were not gathered.

5. Marsiglio and Mott 1986 (Reference 22) Household survey: 1984 National Longitudinal Survey of Work.

Sample characteristics. N = 12,069; cross section of U.S. adults 19-27 years old; males = 50 percent, females = 50 percent; blacks = 25 percent, Hispanics = 16 percent, whites = 59 percent; varied income levels.

Survey questions about the program. Ever had a course with instruction on the menstrual cycle, contraception, and STD (3 separate questions).

Analytic methods. Logistic regression was used to control statistically for ethnicity, economically disadvantaged, residence in the South, rural residence, religion, parents' education. Analyses examined whether instruction prior to specified ages was associated with sexual behavior during the following year.

Results—changes in outcomes.¹

Initiation of intercourse:

15-16-year-olds -

17-19-year-olds 0

Contraceptive use:

Female, 17-18-year-olds +

Pregnancy:

Females 0

Additional comments. Data on the content, quantity, or quality of the instruction were not gathered. If instruction and initiation of sex occurred within the same age, the order was not known, but analyses assumed that instruction occurred first.

6. Furstenberg, Moore, and Peterson 1985 (Reference 24) Household survey: 1981 National Survey of Children.

Sample characteristics. N = 469 (80 percent response rate); cross section of U.S. youth 15 and 16 years old; males = 50 percent, females = 50 percent; blacks = 15 percent, whites

= 85 percent; varied income levels.

Survey question about the program. Ever had a course on sex education at school.

Analytic methods. Analyses compared outcome percentages between groups. There were multivariate analyses with statistical controls for background factors: family income, mother's education, mother's age at first birth, family structure, and community size. Separate analyses were conducted by sex and ethnic group.

Results—changes in outcomes.¹

Initiation of intercourse +

Additional comments. The relative order of sex education and initiation of sex was not known. Data on the content, quantity, or quality of the instruction were not gathered.

7. Zelnik and Kim 1982 (Reference 25) Household surveys: 1976 National Survey of Young Women, 1979 National Survey of Young Women, 1979 National Survey of Young Men.

Sample characteristics. N = unspecified; young people in a cross section of SMSAs; females 15-19 years old and males 17-21 years old; varied income levels.

Survey question about the program. Ever had a course with instruction on contraception.

Analytic methods. Separate Mantel-Haenszel chi-square tests by sex, race, and age were used to assess relationships between sex education instruction and sexual activity, contraceptive use, and pregnancy rates.

Results—changes in outcomes.¹

Sexual activity 0

Contraceptive use at first intercourse:

1976 0

1979 +

Contraceptive use ever:

White females 0

Black females +

Pregnancy rates:

5 of 9 subgroups +

4 of 9 subgroups 0

Additional comments. Data on the quantity or quality of the instruction were not gathered. The relative order of instruction and the behaviors were not known.

¹Significant desirable change at .05 level = +; significant undesirable change at .05 level = -; no significant change = 0.

(22; No. 5, box 1). They found that for older teens ages 17 and 18 years, previous participation in sex education was not associated with subsequently initiating intercourse, but for younger teens ages 15 or 16 years, previous participation in sex education was positively associated with subsequent initiation of intercourse. This association held both for those

teens who reported they had ever had a sex education course and also for those who had ever had a course that specifically included contraception.

A third study by Dawson found less clear results (23; No. 4, box 1). Among females ages 15 to 19 years, there were no significant relationships between subsequent initiation of sex and instruction on

pregnancy only or pregnancy and contraception combined, except possibly among those who received instruction and initiated intercourse when they were 14 years old. Among 14-year-olds, the results varied depending upon the assumption made about the temporal order of instruction and initiation of sex when they took place during the same year.

Two additional studies were based upon national surveys that did not measure the timing of instruction and initiation of intercourse. Thus, the researchers were not able to use more sophisticated and powerful statistical methods (for example, survival, hazard, or event-history models) and were less capable of measuring the impact of instruction. Furstenberg and colleagues found that 15- and 16-year-old students who had participated in a sex education class were significantly less likely to have initiated intercourse than students of similar ages who had not received sex education (24; No. 6, box 1). Finally, Zelnik and Kim concluded that there was not a significant relationship between sex education and sexual experience among 15- to 19-year-old females and 17- to 21-year-old men (25; No. 7, box 1). However, the data presented in their tables reveal that among females ages 15 to 17 years, sex education was significantly associated with a greater probability of having initiated intercourse, while among females ages 18 to 19 years, it was associated with a lower probability of having initiated intercourse. Among males 17 to 18 years old, there was not a significant relationship.

Notably, all of these studies, except that by Ku and colleagues, were based on data collected either during the late 1970s or early 1980s, when abstinence, postponing sexual involvement, and AIDS were not given as much emphasis as they received during the later 1980s and 1990s. Data from the study by Ku and colleagues were collected in 1988 (21).

The two remaining studies based upon national surveys examined different measures of sexual activity, namely number of acts of intercourse during a specified period and number of sexual partners. These measures are directly related to exposure to pregnancy and STD (26-28).

Anderson and colleagues found that AIDS instruction was not significantly related to having had two or more sexual partners ever or during the preceding year (29; No. 3 in box 1). In contrast, Ku and colleagues found that males who had received AIDS instruction with resistance skills engaged in fewer acts of intercourse and had fewer sexual partners than did students who had not previously received such instruction (30; No. 2, box 1). However, instruction about biology topics, AIDS without resistance skills,

and birth control were not significantly related to either the number of partners or the number of acts of intercourse.

In sum, the studies based upon national surveys and measuring the relationship between sex education topics and initiation of intercourse produced some seemingly inconsistent results and suggest that the impact of instruction might vary with the topics covered and with the age of the students. A plausible interpretation is that instruction on resistance skills may delay the initiation of intercourse and possibly reduce both the number of partners and the number of acts of intercourse and that instruction about contraception alone may hasten the onset of intercourse among younger teens, but not among older teens. Notably, the one study that examined the relationship between instruction and frequency of intercourse once it was initiated found that particular topics may reduce the frequency of intercourse (30).

Use of contraception. Six of the studies based upon national survey data examined the impact of sex education on the use of contraception (Nos. 1-5, 7, box 1). Dawson found that instruction about pregnancy and contraception was positively related to use of contraceptives during first intercourse and to use of contraceptives ever, but not to use at the time of the interview (23; No. 4, box 1). Zelnik and Kim found statistically significant relationships between sex education instruction and use of contraception both during first intercourse and during any sexual experience, but only for blacks and not for whites (25). Marsiglio and Mott found a positive relationship between sex education and contraceptive use during the month preceding the interview (23). Ku and colleagues analyzed data on males only and failed to find a significant relationship between instruction on biological topics, birth control, AIDS, or resistance skills, and use of contraception at first intercourse (30).

In addition to these studies of general contraceptive use, three of the cross-sectional studies specifically examined the impact of AIDS education upon the use of condoms. Anderson and his colleagues failed to find a significant direct relationship between AIDS instruction and condom use, but there appeared to be an indirect relationship through knowledge (29). In contrast, Ku and colleagues found that among adolescent males, instruction on AIDS, contraception, and resistance skills was not significantly related to use of condoms at first intercourse but they were significantly and independently associated with greater condom use during the year preceding the interview (30; No. 2, box 1). The data also indicated

that during the 1980s, when information about AIDS was disseminated to the public through schools and public awareness campaigns, increasingly large percentages of males used condoms.

In sum, these results varied both with the particular study and with the time interval of the contraceptive measure (for example, first intercourse versus intercourse during a period preceding data collection). However, four of the five survey data sets did produce some positive significant relationships between participation in a sex or AIDS education program and either contraceptive use or specifically condom use, while the fifth data set revealed a possible indirect effect through greater knowledge.

Evaluations of specific programs. Sixteen studies evaluated specific programs. Although these studies overcome some of the limitations of the studies based upon survey research (for example, assessing whether specific youth participated in some type of sex or HIV education program), they nevertheless measure only the additional effect of the intervention and not the cumulative effect of that intervention plus whatever sexuality and HIV education the youths had previously or subsequently received. In addition, field experiments may increase response bias among the participants—students who participate in a program designed to reduce unprotected intercourse may be less likely to report risk-taking behaviors than students who did not participate.

The 16 evaluations of specific programs are summarized in the box on pages 347–352. The studies varied considerably: they focused upon different goals, included different components, were implemented in different parts of the country, and targeted different populations of youth.

All of the programs that included only educational components (and not additional reproductive health services) were evaluated with experimental or quasi-experimental designs. All of these designs assigned students to program and comparison groups. All used some method of making the program and comparison groups similar before program implementation; some designs included the random assignment of individual students, classrooms of students, or entire schools to treatment or control groups. In all the studies, individual students were followed over time and their pretest and posttest data were linked.

There was a variety of possible criteria for grouping the 16 studies of particular programs (for example, primary program focus, topics covered, and characteristics of additional components). In the box we used a combination of these three criteria that reflects the additive nature of the components in these

programs. The first group of programs includes those that focus upon abstinence and do not discuss contraception; the second group includes sexuality or AIDS education programs that include both abstinence plus contraception (or at least condoms); the third group includes these more comprehensive educational components plus reproductive health services, either at the school or nearby. The additive nature of these programs does not mean that the latter groups include components that are as well developed as they are in the former groups. For example, programs that provide sexuality education only may have a stronger educational component than programs that provide sexuality education plus reproductive health services.

Abstinence programs. Abstinence programs focus upon the importance of abstinence from sexual intercourse, typically abstinence until marriage. Either these programs do not discuss contraception or they briefly discuss failure of contraceptives to provide complete protection against pregnancy and STD.

To date, only three studies of school-based abstinence programs have been published in the professional literature. Postponing Sexual Involvement is sometimes considered an abstinence program, because it does not discuss contraception. However, its evaluation actually measured the impact of two components in combination. Postponing Sexual Involvement and a human sexuality unit that included contraception and was taught a few weeks earlier than Postponing Sexual Involvement. Thus, Postponing Sexual Involvement is included in the second group described subsequently.

Jorgensen and colleagues evaluated the impact of a program called Project Taking Charge (33; No. 1 in box 2). Its 6-month followup did not find a statistically significant impact (at the .05 level) on the initiation of intercourse. The generalizability of this study was limited by its small sample—91 students at two sites.

Christopher and Roosa (31; No. 2, box 2) and Roosa and Christopher (32; No. 3, box 2) examined different implementations of the same abstinence program called Success Express. These two evaluations analyzed posttest data collected only 6 weeks after the pretest data. Because only a small percentage of youth initiate sexual intercourse during any 6-week period, there was not a reasonable chance that Success Express could significantly reduce the initiation of sex among the program's group members below that of the comparison group members during the short period of the studies.

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2. Experimental and Quasi-Experimental Studies of Sex Education and HIV Education Programs

ABSTINENCE PROGRAMS

1. Jorgensen, Potts, and Camp 1993 (Reference 33) Project taking charge.

Sample characteristics. Students in Wilmington, DE, and West Point, MS; N = 91; mean age = 14.4; 7th graders only; males = 47 percent, females = 53 percent; blacks = 43 percent, Hispanics = 7 percent, whites = 45 percent, others = 5 percent; low income.

Program description. The program was implemented in home economics classes. The classroom component included 30 sessions which covered self-development, anatomy and physiology, pregnancy, STD, importance of abstinence prior to marriage, vocational goal setting, family values, and family communication. The evening component included 3 sessions for parents, their adolescent children, and the teachers. It included communication exercises, values exploration, adolescent sexuality, pregnancy, and STD.

Evaluation design. An experimental design was used. Two home economics classes in each of 2 schools were randomly assigned to intervention and comparison groups. The comparison group did not receive any sex education program. Matched questionnaire data were collected at baseline and 6 weeks later. Chi-square tests between intervention and comparison groups at posttest were used. There were separate analyses for students sexually inexperienced at pretest.

Results—changes in outcomes.¹

Initiation of intercourse 0

Additional comments. The small number of classrooms randomly assigned, the small number of students, and the inexplicably large proportion of comparison group students who initiated intercourse during the 6-month pretest-posttest period (50 percent) all limit the internal and external validity of this study.

2. Christopher and Roosa 1990 (Reference 31) Success Express.

Sample characteristics. Students in unspecified locations; N = 320; mean age = 12.8; 6th and 7th graders; males = 39 percent, females = 61 percent; blacks = 21 percent, Hispanics = 69 percent, whites = 8 percent, others = 2 percent; low income.

Program description. The program was implemented in health education classes in 5 schools. Its 6 sessions covered abstinence attitudes, skills, behaviors, self-esteem, family values, peer and media pressure, consequences of sex, how to say no, life goals, and goal-setting skills.

Evaluation design. A quasi-experimental design was used. Both intervention and comparison groups were health education classes at each school. The comparison group received no program. Matched questionnaire data were collected at baseline and 6 weeks later. Analyses included

repeated measures ANCOVA, controlling for sex and grade. There were analyses for the entire sample and separate analyses for sexually inexperienced.

Results—changes in outcomes.¹

Initiation of intercourse 0

Additional comments. The posttest at 6 weeks did not allow sufficient time for a measurable delay in the initiation of intercourse.

3. Roosa and Christopher 1990 (Reference 32) Success Express.

Sample characteristics. Students in unspecified locations; N = 528; mean age = 13; 6th graders = 21 percent, 7th graders = 16 percent, 8th graders = 53 percent; males = 43 percent, females = 57 percent; blacks = 15 percent, Hispanics = 64 percent, whites = 12 percent, others = 5 percent; low income.

Program description. The program was implemented in health education classes in 5 schools and in communities. Its 6 sessions covered abstinence attitudes, skills, behaviors, self-esteem, family values, peer and media pressure, consequences of sex, how to say no, life goals, and goal-setting skills.

Evaluation design. A quasi-experimental design was used. Both intervention and comparison groups were health education classes at each school. The comparison group received no program. Matched questionnaire data were collected at baseline and 6 weeks later. Analyses included repeated measures ANCOVA, controlling for sex and grade. There were analyses for the entire sample and separate analyses for sexually inexperienced students.

Results—changes in outcomes.¹

Initiation of intercourse 0

Additional comments. The posttest at 6 weeks did not allow sufficient time for a measurable delay in initiation of intercourse.

SEXUALITY AND HIV EDUCATION PROGRAMS

4. Walter and Vaughan 1993 (Reference 51) AIDS Prevention for Adolescents in School.

Sample characteristics. Students in New York City; N = 867; 9th and 11th graders; males = 42 percent, females = 58 percent; Asian = 11 percent, blacks = 37 percent, Hispanics = 35 percent, whites = 13 percent, others = 4 percent; low income.

Program description. The program was implemented in general health education classes in 4 schools. It included 6 sessions and was based upon the health belief model, social cognitive theory, and social influence theory. It focused upon correcting facts about AIDS, teaching cognitive skills to appraise risks of transmission, increasing knowledge of AIDS-prevention resources, changing perceptions of frequency of peer risk-taking behaviors, clarifying personal

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2. Experimental and Quasi-Experimental Studies of Sex Education and HIV Education Programs (Continued)

values, understanding external influences, and teaching skills to delay intercourse or to consistently use condoms, or both.

Evaluation design. An experimental design was used. Four high schools were divided into 2 matched pairs. Within each pair of schools, one school provided 9th grade program classes and 11th grade control classes, while the other school provided 9th grade control classes and 11th grade program classes. The control classes received no AIDS prevention program. Matched questionnaire data were collected at baseline and 3 months later. Analyses included *t* tests between intervention and control groups using change scores. Multiple regression was used to control for background characteristics and baseline scores.

Results—changes in outcomes.¹

Abstinence 0

Intercourse with high-risk partner +

Monogamous relationships +

Consistent condom use +

Additional comments. The 3-month posttest did not allow measurement of long-term effects.

5. Thomas, et al. 1992 (Reference 41) McMaster Teen Program.

Sample characteristics. Students in Ontario, Canada; N = 3,290; 7th and 8th graders; males = 48 percent, females = 52 percent; English as primary language = 75 percent; low unemployment area.

Program description. The program was implemented in health classes in junior high schools. Students were divided into small groups with 6–8 students each. The curriculum included 10 sessions which covered adolescent development, peer pressure, gender roles, responsibility in relationships, stages of intimacy, adolescent pregnancy and childbearing, and decision-making. Tutors used group discussions, question and answer periods, films, and role plays.

Evaluation design. An experimental design was used. Twenty-one schools were randomly assigned to treatment and control groups. The control schools received the conventional sex education curriculum. Matched questionnaire data were collected at baseline, 3 months later, and then once a year for 4 years. Logistic regression was used to control for school, school size, sex, and any other variables related to the outcome variables. Treatment group was added last to test its effect.

Results—changes in outcomes.¹

Initiation of intercourse:

At 3 months 0

At 1 year 0

At 4 years 0

Consistent contraceptive use:

At 3 months 0

At 1 year 0

At 4 years 0

Pregnancy rates:

At 3 months 0

At 1 year 0

At 4 years 0

Additional comments. The content of the treatment intervention did not appear much stronger than that of the control intervention. The evaluation was very rigorous; it had random assignment, large sample sizes, high consent rates, short- and long-term followup, low dropout rates, and appropriate statistical analyses.

6. Walker and Vilella-Velez 1992 (Reference 48) Summer Training and Education Program (STEP).

Sample characteristics. Students in 5 U.S. cities; N=4,800; 14 years old = 57 percent; 15 years old = 43 percent; males = 48 percent, females = 53 percent; Asians = 19 percent, blacks = 49 percent, Hispanics = 18 percent, whites and others = 14 percent; low income; academically behind.

Program description. The program included 36 sessions divided equally between 2 summers. They covered life skills education in such areas as sexual behavior, drug use, careers, and community involvement. In sexuality, they focused upon decision-making and the importance of responsible behavior. The intervention also included 90 hours of work (half time) at minimum wage, 90 hours of academic remediation, and 5 to 15 hours of support during the school years.

Evaluation design. An experimental design was used. Youth were randomly assigned to the STEP program or to a guaranteed job during the summer. Matched questionnaire data were collected annually for 5 years.

Results—changes in outcomes.¹

Sexual activity 0

Use of contraceptives 0

Births 0

Additional comments. The evaluation was very rigorous; it had random assignment, large sample sizes, and long-term followup.

7. Kirby, et al. 1991 (Reference 40) Reducing the Risk.

Sample characteristics. Students in urban and rural areas throughout California; N = 758; 9th graders = 27 percent, 10th graders = 56 percent, 11th graders = 9 percent, 12th graders = 6 percent; males = 47 percent, females = 53 percent; blacks = 2 percent, Hispanics = 20 percent, whites = 62 percent; varied income levels.

Program description. The program was implemented in health education classes and included 15 sessions. It was based upon social learning theory, cognitive behavioral theory, and social inoculation theory. It placed a strong emphasis on avoiding unprotected sex either by avoiding sex or using protection. Activities were often experiential; there were many role-playing activities to build skills and self-efficacy.

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Evaluation design. A quasi-experimental design was used. Classrooms of health education students were assigned to program and comparison groups, sometimes randomly. The comparison group received the existing sex education program of equal length taught in that school. Matched questionnaire data were collected at baseline, 6 months later, and 18 months later. Analyses included chi-square tests and *t* tests of change scores over time between intervention and comparison groups at 6 and 18 months. The initial equivalence of the intervention and comparison groups was established with *t* tests or chi-square tests.

Results—changes in outcomes.¹

Initiation of intercourse:

At 6 months 0

At 18 months +

Frequency of intercourse among sexually experienced 0

Contraceptive use among sexually experienced:

At 6 months 0

At 18 months 0

Contraceptive use at 18 months:

Among females +

Among males 0

Among lower-risk youth +

Among high-risk youth 0

Unprotected intercourse among all students:

At 6 months 0

At 18 months 0

Unprotected intercourse among students sexually inexperienced at pretest:

At 6 months 0

At 18 months +

Pregnancy rates 0

Additional comments. Sample sizes for some subgroups were too small for reasonable power.

8. Eisen, Zellman, and McAlister 1990 (Reference 3-4) Teen Talk.

Sample characteristics. Students in Texas and California: N=1,288; 13–14 years old = 22 percent, 15–17 years old = 65 percent, 18–19 years old = 3 percent; males = 46 percent, females = 54 percent; blacks = 22 percent, Hispanics = 51 percent, whites = 17 percent, others = 10 percent.

Program description. The program was implemented by 6 family planning service agencies and 1 school district. The curriculum lasted 8 to 12 hours. It was based upon the health belief model and social learning theory. Factual material, values, feelings, decision-making, and skill-building were covered. Lectures with discussion, role playing, and films were used.

Evaluation design. An experimental design was used. Classes of students were randomly assigned to treatment and control conditions. Control classes received various programs lasting an equal number of sessions. Matched questionnaire data were collected at baseline, immediately after the intervention, and 1 year later. Logistic regression controlling for background characteristics was conducted. There were separate analyses for males and females and for

sexually experienced and inexperienced. Sample sizes lacked much power in these subgroups.

Results—changes in outcomes.¹

Initiation of intercourse:

Overall 0

Males +

Females 0

Contraceptive use among those inexperienced at pretest but initiating sex by followup:

Males:

First intercourse 0

Last intercourse 0

Consistent use 0

Females:

First intercourse –

Last intercourse 0

Consistent use –

Contraceptive use among those sexually experienced at pretest:

Males:

Last intercourse 0

Consistent use +

Females:

Last intercourse 0

Consistent use 0

Additional comments. The combination of varied sex education programs among the comparison groups, small sample sizes for many analyses, and inconsistent results make it difficult to draw conclusions from these results.

9. Howard and McCabe 1990 (Reference 36) Postponing Sexual Involvement (PSI) and Human Sexuality.

Sample characteristics. Students in Atlanta, GA, whose parents attended a public hospital; N=536; 8th graders; 13–14 years old; blacks = 99 percent; low income.

Program description. The program was implemented in regular classrooms and included two components, a 5-hour unit called Postponing Sexual Involvement and a 5-hour unit on human sexuality. The Postponing Sexual Involvement unit emphasized postponing sexual involvement and was designed both to help youth understand social and peer pressures to have sex and to develop and apply resistance skills. It was based on social influence theory and was taught by peers (11th and 12th graders). The human sexuality unit included sessions on human sexuality, decision-making, and contraceptives.

Evaluation design. A quasi-experimental design was used. The intervention group included students from 1 school district which received the program, while the comparison group included students from 3 smaller adjacent school districts which received existing programs. Telephone interviews were conducted in the 8th, 9th, and 12th grades. Matched questionnaire data were collected at baseline and post-intervention. *T* tests between intervention and comparison groups at pretest and posttest were used. The initial equivalence of intervention and comparison groups was established with *t* tests.

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2. Experimental and Quasi-Experimental Studies of Sex Education and HIV Education Programs (Continued)

Results—changes in outcomes.¹

Initiation of intercourse:

- End 8th grade +
- End 9th grade +
- End 12th grade 0

Frequency of intercourse among those who were sexually inexperienced at pretest but initiated sex by followup:

- End 9th grade +
- End 12th grade 0

Frequency of intercourse among those who were sexually experienced at pretest:

- End 9th grade 0
- End 12th grade 0

Contraceptive use among those who were sexually inexperienced at pretest but initiated sex by followup:

- End 9th grade +
- End 12th grade 0

Contraceptive use among those who were sexually experienced at pretest:

- End 9th grade 0
- End 12th grade 0

Additional comments. A limitation of the study was the fact that intervention and comparison groups lived in different geographic areas. Some background characteristics were controlled through sampling procedures to reduce the impact of this difference. Other events or activities that might have affected either the intervention group or comparison group differently were not controlled.

10. Kirby 1985 (Reference 39) Eleven Untitled Sexuality Education Programs in the U.S.

Sample characteristics. Students in schools dispersed throughout the U.S.; total N=2,589, N's for individual programs ranged from 53 to 556; 9th-12th graders; varied gender proportions; all major ethnic groups represented; varied income levels.

Program descriptions. All of the programs were implemented in health or sex education classes. They ranged in length from 5 hours to a full semester. Their contents also varied. Some were mostly knowledge based; a few used role playing to teach communication skills.

Evaluation design. Quasi-experimental designs were used. Comparison groups included other health classes in the same schools. They received either no programs or weaker sex education programs. Matched questionnaire data were collected at baseline, after the program, and in some sites, 3 to 5 months after the program. Analyses included *t* tests between intervention and comparison groups using change scores.

Results—changes in outcomes.¹

Initiation of intercourse 0

Frequency of sex previous month 0

Use of contraceptives:

- None or less effective method used:
10 programs 0
1 program -

Effective contraception used:

- 2 programs +
- 9 programs 0

Pregnancy (measured in 3 sites) 0

Additional comments. This was a study of 15 different sexuality education programs in the U.S. Behavior data, collected from 11, are summarized here. Sample sizes for individual programs were often too small for reasonable power; longer term effects were not measured for the five most comprehensive programs.

11. Schinke, Blythe, and Gilchrest 1981 (Reference 50) Untitled Curriculum.

Sample characteristics. Students in Seattle, WA; N = 36; mean age = 15.9; 10th graders; males = 47 percent, females = 53 percent; ethnicity not specified.

Program design. The program was implemented in small groups in special high school classes. The 14 sessions were based on cognitive-behavioral theory. The curriculum included contraceptive information, problem solving steps, activities to apply information to themselves, the modeling of skills, and practice in communicating decisions about sexual behavior.

Evaluation design. A Solomon 4-group experimental design with random assignment of individual students was used. Matched questionnaire data were collected at baseline, after the intervention, and 6 months following the intervention. Analyses included *t* tests between intervention and comparison groups at baseline, post intervention, and 6-month follow-up. The initial equivalence of intervention and comparison groups was established with *t* tests.

Results—changes in outcomes.¹

Contraceptive use at 6 months:

- Consistent use +
- Use at last intercourse +
- Use of inadequate method +

Additional comments. Sample sizes were too small for reasonable power. Nonsignificant results may not have been reported.

EDUCATION AND SERVICES

12. Kirby et al. 1993 (Reference 59) St. Paul School-based Clinics.

Sample characteristics. Students in St. Paul, MN; N = 1,838 to 2,988, depending upon year; 9th-12th graders; females = 100 percent; ethnicity not specified; income not specified.

Program description. The health clinics located in high schools provided comprehensive health services, including reproductive health care. Contraceptives were picked up at a special hospital clinic. The clinics also provided day care for infants.

Evaluation design. A quasi-experimental design was used. In 4 schools, birth rates for 5 years before and 6 years after

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clinics opened were compared; in 1 school birth rates 2 years before and 3 years after the clinic opened were compared. Birth rates were estimated by matching school enrollment records and county birth certificates. Several methods were used to compare pre-clinic and post-clinic birth rates. Tests of significance were conducted.

Results—changes in outcomes.¹

Birth rates 0

Additional comments. Large year-to-year fluctuations in birth rates may have obscured a small clinic impact. St. Paul students had access to relatively good health care and had relatively low birth rates before the clinics opened. Only school-wide effects were measured, even though not all students used the clinics for contraception.

13. Vincent et al. 1987 (Reference 60) School and Community Program for Sexual Risk Reduction Among Teens.

Sample characteristics. Students in a rural county in South Carolina; N = 710; 14–17-year-olds; females = 100 percent; blacks = 58 percent, whites = 42 percent; low income.

Program design. The program was implemented in both the community and K-12 classrooms. In the classrooms, material was integrated into other instruction. About two-thirds of the school staff were given sex education training. Classroom instruction was designed to increase knowledge, decision making skills, communication skills, and self esteem and to align values with those of the community. The focus was not always on sexuality but upon problem solving, risk assessment, and assuming personal responsibility. Peer education was included. The school nurse provided consultation, condoms, and transportation to a family planning clinic. Community groups and churches implemented classes and special events. There were also articles and announcements in papers and on the radio.

Evaluation design. A quasi-experimental design was used. Annual pregnancy rates for 14–17-year-old females were estimated for the years 1977–88, for (a) the western part of the county surrounding the program community, (b) the eastern part of the county serving as a comparison group, and (c) 3 similar counties serving as comparison groups. The Z statistic for proportional differences in pregnancy rates were used to compare intervention and comparison groups.

Results—changes in outcomes.¹

Pregnancy rates +

Additional comments. The small number of 14–17-year-old females, the initial low pregnancy rates of the comparison counties, and difficulty in estimating significance limit the internal validity of these findings. The very small population and the geographic isolation of the county limit the study's external validity.

14. Kirby, Waszak, and Ziegler 1991 (Reference 55) Multiple titles for multiple clinic programs.

Sample characteristics. Students in high schools in Gary, IN; San Francisco, CA; Muskegon, MI; Jackson, MS; Quincy, FL; and Dallas, TX; N ranged from 824 to 1,360;

9th–12th graders; males = 46 percent, females = 54 percent; blacks = 95 percent; low income.

Program design. The clinics, located in high schools, all provided comprehensive health services. Two referred for contraception, 1 prescribed contraception, and 3 dispensed contraception.

Evaluation design. Quasi-experimental designs were used. In 4 sites, school-wide data from schools with clinics were compared with data from similar comparison schools. Schools were matched to the extent feasible. In the remaining 2 sites, school-wide data were collected before and 2 years after the clinics opened. Data were collected through school-wide surveys. Separate analyses were conducted for each sex and race. Multiple regression was used to control for 6 student background characteristics.

Results—changes in outcomes.¹

Initiation of intercourse

Males:

5 sites 0

1 site +

Females:

4 sites 0

1 site +

1 site -

Frequency of sexual activity

Males:

6 sites 0

Females:

6 sites 0

Use of contraceptives

Condoms:

4 sites 0

2 sites +

Pill (females only):

5 sites 0

1 site +

Pregnancy:

6 sites 0

Additional comments. The evaluation designs were weak. School and community differences may have affected the comparison between clinic schools and comparison schools in unknown ways. Other community-wide activities and changes may have affected the pre- post comparisons. Only school-wide effects were measured, even though not all students used the clinics for contraceptives.

15. Zabin et al. 1986 (Reference 56) Self Center.

Sample characteristics. Students in Baltimore, MD; N = 6,596; 7th–12th graders; males = 45 percent, females = 55 percent; blacks = 99 percent; low income.

Program description. Clinic staff made presentations to each homeroom at least once per year, provided individual consultation in the school health suites during the school day, and provided a full range of reproductive health services (group discussions, individual counseling, contraceptive services, pregnancy testing, referrals) at the clinic located across the street from the high school and a few

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2. Experimental and Quasi-Experimental Studies of Sex Education and HIV Education Programs (Continued)

blocks from the junior high school. Most student contacts were through the small-group discussions.

Evaluation design. A quasi-experimental design was used. One junior and one senior high school were selected for the program group; another junior and senior high school were selected for the comparison group. Questionnaire data were collected from students schoolwide in the fall before the program was implemented and the three following springs. Pregnancy rates were analyzed for only 28 months. Life table analysis was used to adjust for age related differences in some tables. Many analyses were based upon years of exposure to the program. Multiple tests of significance were used to compare intervention and comparison groups.

Results—changes in outcomes.¹

Initiation of intercourse:

Females +

Males not provided

Contraceptive use:

Time from first intercourse to clinic attendance +

Use of contraception at last intercourse:

Females +

Males +

Pregnancy among high school females +

Additional comments. Some higher risk students dropped out between the first fall survey and 3 subsequent spring school surveys. The program schools (one of which was, in part, a magnet school) may have differed in unknown ways from the comparison schools. An additional middle school opened nearby. Some sample sizes were small.

16. Edwards et al. 1980 (Reference 58) St. Paul School-Based Clinics.

Sample characteristics. Students in St. Paul, MN: N = approximately 1,000; 9th–12th graders; females = 100 percent; ethnicity not specified; low and middle income.

Program design. The clinics were located in 1 junior-senior high school and 2 high schools. They provided comprehensive health services, including reproductive health care. Contraceptives were picked up at a special hospital clinic. The clinics also provided day care for infants.

Evaluation design. A quasi-experimental design was used. Pregnancy and birth rates for the first year each clinic was open were compared with the rates for subsequent years. Both pregnancy and birth rates were estimated by clinic staff from their personal knowledge of students' pregnancies and births. No tests of significance were conducted.

Results—changes in outcomes.¹

Birth rates +

Additional comments. The internal validity of these results were limited by the small number of baseline years, incomplete knowledge of pregnancies and births, and lack of tests of significance.

¹Significant desirable change at .05 level = +; significant undesirable change at .05 level = -; no significant change = 0.

In sum, given the studies published to date, there is not sufficient evidence to determine if school-based programs that focus only upon abstinence delay the onset of intercourse or affect other sexual or contraceptive behaviors.

Sexuality and AIDS-STD education programs. These programs differ from the abstinence programs in that they discuss both abstinence and contraception; the sex education programs typically include discussions of different methods of contraception while the AIDS education programs typically include discussions of condoms. (The McMaster Teen Program did not include methods of contraception as a specific topic, but it did allow questions on contraception and it did cover other sexuality topics, for example, stages of intimacy, adolescent pregnancy, and parenting.)

Initiation of intercourse. Of the eight evaluations of individual sexuality or AIDS education programs, five measured the impact of the programs upon the

initiation of intercourse (34–41; Nos. 5, 7–10, box 2). None of these five programs significantly hastened the onset of intercourse. This finding is particularly important, given that two of these programs focused upon middle school youth, all of them included youth in grade 10 or lower, and all included youth 16 years old or younger. These data strongly support the conclusion that sexuality and AIDS education curriculums that include discussions of contraception in combination with other topics—such as resistance skills—do not hasten the onset of intercourse.

Furthermore, the two curriculums that specified delaying the onset of intercourse as a clear goal—Postponing Sexual Involvement (42) and Reducing the Risk (43)—successfully reduced the proportion of sexually inexperienced students who initiated sex during the following 12 to 18 months (36,40; Nos. 9 and 7 in box 2). Notably, both groups also received instruction on contraception. Thus, these findings should reduce concerns that such instruction may encourage youth to have intercourse. They also demonstrate that some, but not all, programs can

delay the initiation of sex.

Frequency of sexual activity. Of the eight studies of sex and AIDS education programs, four measured the impact of the programs upon the frequency of sexual activity among those who had initiated intercourse (Postponing Sexual Involvement, Reducing the Risk, STEP, and Kirby untitled curriculums) (36,37,39,40,45; Nos. 9, 7, 6, 10 in box 2). None of the programs significantly increased or decreased the frequency of intercourse among those who were sexually experienced prior to the curriculum. However, Postponing Sexual Involvement, but not Reducing the Risk, significantly reduced the frequency of intercourse among the relatively small proportion of students who initiated intercourse after the curriculum was implemented. That is, for this sample of students who initiated intercourse, the program group had a smaller mean frequency of intercourse than did the comparison group. (The other two studies did not report similar information for students who initiated intercourse after the program.) These results should somewhat reduce concerns that instruction about contraception increases frequency of intercourse.

Use of contraception. All eight evaluations measured program impact upon contraceptive use. The McMaster Teen Program (41) and STEP (47,48) had no significant impact upon contraceptive use. Teen Talk (49) and the Kirby untitled curriculums found inconsistent or mixed results (34,39). Postponing Sexual Involvement, in combination with instruction on human sexuality and contraception, increased use of contraception among those who initiated intercourse after the program, but not among those who were sexually experienced at pretest (36,37). Reducing the Risk increased contraceptive use among sexually experienced females and lower risk youths, but not among males or higher risk youths (40). The Schinke-Blythe-Gilchrest untitled curriculum increased use of contraception among all sexually experienced students (50). And AIDS Prevention for Adolescents in School, a curriculum developed by Heather Walter and her colleagues at Columbia University, increased condom use among all sexually experienced youths (51).

In addition, the primary goal of Reducing the Risk was to reduce unprotected intercourse, in part through delaying the onset of intercourse and in part through increasing the use of contraception. Accordingly its evaluation examined the impact upon a composite measure involving both abstinence and use of contraception. Results indicated that the curriculum significantly reduced unprotected intercourse among

students sexually inexperienced at pretest (40).

In sum, the data from all eight studies indicate that some, but not all, of these programs increased contraceptive use. Only two of the eight programs significantly increased contraceptive use among all sexually experienced youths, but two additional curriculums increased contraceptive use among specific groups of students.

Characteristics of effective education programs. The varying effects of different programs lead to the question: what are the distinguishing characteristics of effective programs? Because of the relatively few studies and the variation among their target populations, methodological rigor, and statistical power, any observations of commonalities among effective programs must necessarily be preliminary and tentative.

Four programs clearly had a positive impact upon behavior: the Schinke-Blythe-Gilchrest curriculum, Postponing Sexual Involvement, Reducing the Risk, and AIDS Prevention for Adolescents in School. A review of these curriculums indicates that they share the following characteristics, which may be linked to their success.

Effective programs included a narrow focus on reducing sexual risk-taking behaviors that may lead to HIV-STD infection or unintended pregnancy. All four effective programs focused upon a few specific behavioral goals, such as delaying the initiation of intercourse or using protection; relatively little time was spent addressing other sexuality issues, such as gender roles, dating, and parenthood.

Effective programs used social learning theories as a foundation for program development. In general, the effective programs were based upon theoretical approaches that have been demonstrated to be effective in influencing other health-risk behaviors; for example, social cognitive theory (52), social influence theory (53), social inoculation theory (54), and cognitive behavioral theory (50,52). When applied to sexual behavior, social learning theories posit that behavior such as delaying the initiation of intercourse or using protection will be affected by an understanding of what must be done to avoid sex or to use protection (knowledge), a belief in the anticipated benefit of delaying sex or using protection (motivation), the belief that particular skills or methods of protection will be effective (outcome expectancy), and the belief that one can effectively use these skills or methods of protection (self-efficacy).

Social learning theories give considerable recognition to the fact that youths gain these understandings and beliefs directly through education and indirectly

by observing the behavior of others. In addition, social influence theories address the societal pressures on youths and the importance of helping youths understand and resist those pressures. Thus, these programs go far beyond the cognitive level: they focus on recognizing social influences, changing individual values, changing group norms, and building social skills.

Effective programs provided basic, accurate information about the risks of unprotected intercourse and methods of avoiding unprotected intercourse through experiential activities designed to personalize this information. Although increasing knowledge was not the primary goal of these programs, all four provided basic information that students needed to assess risks and avoid unprotected sex. Typically, this information was not unnecessarily detailed or comprehensive. For example, the curriculums rarely provided detailed information about all methods of contraception or different types of STD. Instead, they emphasized the basic facts needed to make behaviorally relevant decisions.

This information was provided through active learning methods of instruction, not through didactic instruction. Students were involved in numerous experiential activities: small group discussions, games or simulations, brainstorming, role-playing, covert rehearsal, written rehearsal, verbal feedback and coaching, locating contraceptives in local drugstores, visiting or telephoning family planning clinics, and interviewing parents.

In addition to these experiential activities, several curriculums used peer educators or videos with characters (either real or actors) who resembled the students and with whom the students could identify. All of these activities helped the students personalize the information.

Effective programs included activities that address social or media influences on sexual behaviors. The effective programs discussed social pressures to have sex. They took several forms. Postponing Sexual Involvement, the Schinke-Blythe-Gilchrest untitled curriculum, and AIDS Prevention for Adolescents in School addressed media influences (for example, how sex is used to sell products and how television shows often suggest that characters have unprotected intercourse but don't experience the consequences). At least one program, Reducing the Risk, discussed situations that might lead to sex. All of the curriculums discussed "lines" that are typically used to get someone to have sex and both AIDS Prevention for Adolescents in School and Reducing the Risk discussed social barriers to using protection (for example, embarrassment about buying condoms).

Effective programs reinforced clear and appropriate values to strengthen individual values and group norms against unprotected sex. The effective programs focused upon and continually reinforced specific values or norms (that is, postponing sex, avoiding unprotected intercourse, using condoms, and avoiding high-risk partners).

Critically, the values and norms expressed in these programs were tailored to the age and experience of the target population. As an example, Postponing Sexual Involvement was developed for middle school youths and focused upon delaying intercourse; given that the majority of middle school youths in the targeted areas had not yet initiated intercourse, the message was appropriate for most students. The Schinke-Blythe-Gilchrest curriculum and Reducing the Risk, on the other hand, were designed for high school students and explicitly emphasized that students should avoid unprotected intercourse, either by not having sex or by using contraception if they did have sex. Finally, AIDS Prevention for Adolescents in School targeted higher risk youths, many of whom were already sexually active, and emphasized the importance of using condoms and avoiding high-risk situations.

The importance of promoting values and norms that are age- and experience-appropriate is demonstrated by the fact that Postponing Sexual Involvement, which emphasized delay in initiating intercourse, did not reduce the frequency of intercourse nor increase the use of contraceptives among those students who had already had sex. Thus, it was an ineffective curriculum for sexually experienced youths. Similarly, AIDS Prevention for Adolescents in School, which emphasized condom use, did not affect abstinence. Thus, it was less effective for sexually inexperienced youths. In other words, the norms emphasized in the curriculum needed to match the experience of the students.

The effective programs used a variety of instructional strategies to reinforce specific values and norms. For example, instruction that emphasized the negative consequences of engaging in sex or unprotected sex provided the proper knowledge base for these norms; the discussion of lines used to get someone to have sex and the effective responses strengthened norms against such lines; the role-playing activities that ended successfully in the avoidance of unprotected intercourse reinforced the norms against unprotected sex; small group discussions which appraised possible risk-taking scenarios and reached consensus about their excessive risk further reinforced peer norms against risk-taking behavior. In addition, a few programs provided

combined both education and reproductive health services (55-60: Nos. 12-16, box 2). Four of these studies examined programs in two to six schools. Both the educational and reproductive health services varied considerably among these programs. Some programs offered students services on campus; others offered them across the street or nearby. Some referred students for contraceptives; others provided prescriptions for contraceptives; others dispensed contraceptives. The outcomes measured and the quasi-experimental designs also varied among the studies. Consequently, inferences should be drawn cautiously from these studies.

Only two studies measured the impact of school-based clinics and school-linked clinics upon sexual and contraceptive behaviors (55,56). In Baltimore, an adolescent reproductive health clinic, called the Self Center, provided educational, counseling, and reproductive health services in that clinic and educational and counseling services in two schools, a junior high school that was four blocks away and a high school that was across the street. In both schools, the staff implemented a peer education program and after-school group discussions, while in the clinic the staff provided individual counseling, group counseling, and contraceptive services (56,57). According to the survey data collected from the program schools and the matched comparison schools, there was a delay in the onset of sexual intercourse among those youths who had not yet initiated sex.

The study by Kirby and colleagues evaluated the impact of six school-based clinics located on six school campuses in different parts of the country (55). They were comprehensive health clinics, not family planning clinics, and they provided a wide range of primary health care services appropriate for adolescents. Two of them referred students for contraceptives; one wrote prescriptions that could be filled at a nearby Planned Parenthood clinic; and three dispensed contraceptives in the school clinics. The quality of their education programs varied from site to site.

An analysis of survey data collected from the clinic schools and comparison schools (or survey data collected before and after the clinic opened) revealed that in general, clinic presence was not significantly associated with initiation of intercourse or frequency of intercourse. Among males in five of the sites, there were no significant differences in the percent who had initiated intercourse nor in the age of first intercourse. In the sixth site (which dispensed contraceptives), the males in the clinic school were less likely than males in the comparison school to have initiated intercourse. Among females, there were

no significant differences in four of the sites. In one site (which only referred students for contraception) clinic school females were more likely to have initiated intercourse. In the sixth site (which prescribed contraceptives), clinic school females were less likely to have initiated intercourse than comparison school females. Among neither sex in any of the schools was clinic presence significantly associated with frequency of intercourse.

The data from the study by Kirby and his colleagues in combination with the data from the study by Zabin and her colleagues indicate that providing reproductive health services either on campus or nearby neither hastens the onset of intercourse or increases the frequency (55,56).

The Zabin study also indicated that the Self Center increased the use of contraception among those who had initiated sex (56). The results of the Kirby study were more mixed (55). At one site where the clinic focused upon high-risk youths, emphasized pregnancy prevention, and dispensed oral contraceptives, there was a significantly greater use of oral contraceptives among females than among females in the comparison school. However, there was no difference in condom use. At two other sites which dispensed both condoms and oral contraceptives but did not have strong educational components, no significant differences were found in use of condoms by male students or use of oral contraceptives by female students between the clinic and comparison schools. At the site which prescribed contraceptives and had a strong educational component, male students reported higher rates of condom use and female students reported higher rates of contraceptive use than did their counterparts in the comparison school. At the fifth site, which had a strong educational component and referred students for services, clinic presence was associated with greater use of condoms. Finally, at the last site which had weak educational and clinic components, there were no significant differences in condom or contraceptive use.

Given these inconsistent results, we cannot determine conclusively the impact of school-based or school-linked reproductive health services. However, it is clear that there is a substitution effect—some of the students who obtained reproductive health services from the school clinic or school-linked clinic would have obtained them elsewhere if the clinics had not been there. Given that the largest behavioral effects were observed in those sites that had the strongest educational components, we found that these data are also consistent with the hypothesis that the presence of a strong educational component is more critical than provision of reproductive health services.

All five studies examined the impact of their programs upon either pregnancy or birth rates. The Zabin study found that after the Self Center opened, there was a continued small increase and then a large decrease in pregnancy rates for 2 years (56) in contrast to a large increase in pregnancy rates in the comparison schools that continued throughout the 28-month observation period. Furthermore, students who were in the program schools longer (and thus exposed to the program longer) demonstrated greater decreases in pregnancy rates than students who were in the program schools a shorter period. However, the validity of these findings on pregnancy rates is limited by the few years of pregnancy data collected.

Kirby and colleagues found that clinic presence was not significantly related to the pregnancy rate in any of the six school-based clinic sites, after background characteristics of the students were statistically controlled (55).

Edwards and her colleagues gave a great impetus to school-based clinics with a report that birth rates declined in three different schools after clinics providing reproductive health care (including prescriptions for contraception) were opened (58). However, these conclusions were based upon only 1 baseline year for each school and upon the staffs' knowledge of births among students. Subsequently, Kirby and colleagues overcame these limitations by generating birth rates from school and public records for 5 baseline years and multiple post-clinic years (59). That study found large year-to-year variations in school-wide birth rates, but no evidence indicating that the clinics significantly reduced birth rates.

Finally, in a small rural South Carolina community, a comprehensive school and community campaign was implemented (an unpublished paper by H. P. Koo and colleagues entitled "Reducing Adolescent Pregnancy Through School and Community-based Education: Denmark, South Carolina Revisited" and reference 60). Teachers, administrators, and community leaders were given training in sexuality education; sex education was integrated into all grades in the schools; peer counselors were trained; the school nurse counseled students, provided male students with condoms, and took female students to a nearby family planning clinic; and finally, local media, churches, and other community organizations highlighted special events and reinforced the messages of avoiding unintended pregnancy. After the program was implemented, the pregnancy rate for 14- to 17-year-olds declined significantly for several years (60). After parts of the program ended (for example, the school nurse resigned, linkages to contraceptive sources were terminated, and some teachers left the school), pregnancy rates returned to prepro-

gram levels (Unpublished paper "Reducing Adolescent Pregnancy Through School and Community-based Education: Denmark, South Carolina Revisited").

In sum, it remains unclear whether school-based or school-linked reproductive health services, either by themselves or in addition to education programs, significantly decrease pregnancy or birth rates.

Future Directions for Research

This review provides some guidance to educators, but it leaves many important questions unanswered. Additional research is needed to address these questions more definitively. Methodologically sound studies are needed:

- to determine more definitively the relationships among particular topics of instruction, the students' ages, and sexual and contraceptive behavior;
- to investigate further which additional characteristics of curriculums are particularly important in reducing risk-taking behaviors;
- to determine whether curriculums emphasizing abstinence until marriage effectively delay the onset of intercourse and, if so, whether they are more or less effective than curriculums that include clear messages about both abstinence and contraception;
- to assess more definitively and accurately the impact of different approaches to improving access to reproductive health services;
- to assess more accurately the impact of all of these educational and reproductive health service approaches on pregnancy, birth, STD, and HIV rates;
- to assess the durability of measured effects, and to determine whether reinforcement, for example, booster sessions, is necessary and effective in sustaining desired effects.

In addition to these questions that arise directly from this review, other questions also need to be answered: What is the impact of additional program components, such as parent programs, peer programs, after-school discussion sessions, and individual counseling? Are programs more or less effective when they are taught by teachers, the students' peers, or outside experts? Are there appropriate and acceptable ways to target students so that they receive instruction more relevant to their personal experience? What is the impact of program location (school-based or school-linked) and the location of its sponsor (school, clinic, or other community agency)? How can school-based programs be reinforced by community-wide efforts and vice versa?

What is the impact of programs designed to improve the students' life options (for example, the "I-Have-A-Dream" programs)? What is the impact of programs that legitimize condoms and contraceptives (for example, school condom availability programs)? Conversely, do school-based clinics that refrain from providing contraceptives delegitimize contraceptives? If effective programs are integrated into more comprehensive skill-based health education programs, will they be more or less effective? Are there generic skills, norms, and values that can be taught that will reinforce effective programs? What should be the characteristics and instructional content of programs for elementary school youths? How is program effectiveness affected by teaching both students and their potential sexual partners? How can effective programs be maintained and replicated with fidelity? How effective are programs when they are modified slightly to meet local needs? What are the processes needed to institutionalize effective programs in schools?

Our ability to reach definitive conclusions was limited by the few rigorous studies of individual programs, by methodological limitations of individual studies, and by inconsistent results among some of the findings. Additional research needs to employ more valid and statistically powerful methods. Recent studies and studies in progress have demonstrated both the importance and the feasibility of (a) randomly assigning individual students, classrooms of students, or entire schools to program and control conditions, (b) including sufficiently large samples to assure adequate statistical power, (c) tracking youths over sufficient time to measure longer term impact upon initiation of intercourse and contraceptive use, and (d) measuring sexual and contraceptive behaviors. If these research methods are used to address some of the questions posed earlier, then in the future we will have far more definitive answers to some of these questions, and practitioners can have greater confidence in the programs they implement.

Summary and Conclusions

Nearly a century has passed since the first programs to reduce unprotected intercourse were implemented in schools. Subsequently, many approaches have been tried. There has been considerable disappointment, partly because programs have not been nearly as effective as many people had hoped, and partly because program evaluations have been incapable of measuring small effects. However, there is room for some optimism; both programs and evaluation methods have improved considerably

during the past several years, and there is now evidence that a few programs can reduce unprotected intercourse, either by delaying the initiation of intercourse or by increasing the use of condoms and other contraceptives.

There are serious limitations in the research on pregnancy prevention programs, and little is known with much certainty. Nevertheless, our review does support several conclusions about the impact of these programs.

The vast majority of sex and AIDS education programs in the United States include the following topics: abstinence, contraception, pregnancy, STD, and HIV-AIDS. The studies that we have reviewed indicate that these programs do not increase sexual activity. Studies based on national surveys provide consistent evidence that the programs covering these topics did not hasten intercourse when they were implemented among older students; they provide less consistent evidence about their impact among younger students. The studies of specific programs that included instruction on contraception consistently indicated that none of these programs hastened the onset of intercourse. Indeed, all of them either delayed the onset of intercourse or had no effect upon the initiation of intercourse. Furthermore, of the four studies that examined program impact upon frequency of intercourse, none found significant increases in frequency of intercourse, and one found a significant decrease among the relatively small proportion of youths who initiated intercourse after program implementation.

Our review indicates that some programs can increase the use of condoms or other contraceptives. The weight of the evidence from the national surveys indicates that sex education programs do increase the use of contraceptives and AIDS education programs do increase the use of condoms somewhat. However, the data are not always consistent. Studies of specific programs indicate that some, but not all, programs can increase contraceptive or condom use among sexually experienced youths.

The curriculums that effectively delayed the onset of intercourse, increased the use of condoms or other forms of contraception, or reduced sexual risk behaviors in other ways had six common characteristics: (a) theoretical grounding in social learning or social influence theories, (b) a narrow focus on reducing specific sexual risk-taking behaviors, (c) experiential activities to convey the information on the risks of unprotected sex and how to avoid those risks and to personalize that information, (d) instruction on social influences and pressures, (e) reinforcement of individual values and group norms against unprotected sex

that are age and experience appropriate, and (f) activities to increase relevant skills and confidence in those skills. The importance of these characteristics are reinforced by the national surveys indicating the importance of teaching resistance skills.

To date, the published literature does not provide any good evidence indicating whether programs focusing only upon abstinence either do or do not delay the onset of intercourse or reduce the frequency of intercourse.

Because some programs can effectively delay the onset of intercourse and increase the use of contraception, and also because no existing program can prevent most youths from having intercourse during the high school years, programs should both encourage youths to delay or refrain from intercourse and also encourage them to use contraceptives if they initiate intercourse. Programs should be both age- and experience-appropriate. That is, programs for younger adolescents should focus more upon delaying intercourse, while those for older youths should focus more upon condoms and other contraceptives.

Two studies consistently indicate that the provision of reproductive health services either on campus or nearby does not hasten the onset of intercourse nor increase the frequency of intercourse. However, at this time, there is insufficient evidence to determine their impact upon contraceptive use.

There is also insufficient direct evidence to determine whether any of these educational or clinic programs actually decreased pregnancy, birth, STD, or HIV rates. However, there is evidence from at least two studies that some programs delay the onset of intercourse, reduce the number of sexual partners, and reduce the frequency of intercourse or increase the use of protection. If programs have these outcomes, then logically they should also reduce pregnancy, birth, STD, and HIV rates.

In conclusion, research demonstrates that not all school-based sex and AIDS education programs are effective, but that some programs are effective. If these effective programs are implemented in our schools, they can have an important impact upon reducing sexual risk-taking behavior. Clearly, they do not represent a total solution to the problems of unprotected intercourse—families, community-based organizations, churches, and the media all must be involved—but they can provide an effective component in a larger overall strategy to reduce pregnancy, STD, and HIV. The most important characteristics and components of effective programs need to be further delineated, and then programs with these characteristics need to be implemented widely in our nation's schools.

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Building the Capacity of Schools to Improve the Health of the Nation

A Call for Assistance From Psychologists

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During the past several years, about two dozen major reports have called for the nation to reconceive and regenerate its school health programs. Proposals to reform health, education, and social services have included means to improve such programs. This article (a) identifies the leading causes of mortality and morbidity in the United States, (b) delineates 6 categories of behavior established during youth that contribute to these causes, (c) outlines ways in which a modern school health program might prevent such behaviors and address critical health and social problems among students, (d) describes practical research and development strategies that are being established to help schools implement effective school health programs, and (e) suggests how psychologists might help improve these programs.

The most serious and expensive health and social problems that afflict the United States today are caused in large part by behavioral patterns established during youth (e.g., tobacco use, high-fat diets, drug and alcohol abuse, violence, and sexual risk behaviors). Health problems spawned by these behaviors fuel unnecessary health care costs, and unattended health and social problems among America's young people seriously erode their health status, educational achievement, and quality of life. Young people who suffer from physical illness or injury, mental health problems, hunger, pregnancy, alcohol and drug use, or fear of violence are less likely to learn, irrespective of efforts to improve educational methods, standards, or organizations.

Given these challenges, school health programs could become one of the most efficient means the nation might use to prevent the major health and social problems that confront Americans. By preventing health problems that afflict young people and threaten their adulthood, school health programs could help reduce the spiraling costs of health care, improve educational outcomes, and thus improve economic productivity and quality of life. Accordingly, during the past several years, about two dozen major reports have called for the nation to reconceive and regenerate its school health programs, and proposals to reform health, education, and social services have included means to improve school health programs (Kolbe, 1993).

Leading Causes of Mortality and Morbidity in the United States

To understand how schools might improve the well-being of people in the United States, one first must understand the major health problems that afflict the nation (Kolbe, Kann, & Collins, 1993; McGinnis & Foege, 1993). Among 5-24-year-olds, only four causes account for 72% of all mortalities and immeasurable morbidity and social problems. Motor vehicle crashes cause 30% of all mortalities in this age group; other unintentional injuries (such as falls, fires, drownings, and poisonings) cause 12%; and homicides and suicides (i.e., fatal intentional injuries) cause 19% and 11%, respectively (Centers for Disease Control and Prevention [CDC], 1993b). Furthermore, the increased prevalence of sexual intercourse among school-age youth contributes to major health and social problems. Sexually transmitted diseases, including HIV infection, and unintended pregnancies afflict millions of teenagers each year. Pregnant teenagers (especially those who use tobacco, alcohol, or illegal drugs) greatly contribute to the nation's excessive burden of infant mortality and morbidity, and pregnant teenagers and their children are likely to require short- and long-term social services support.

The health problems described above are largely preventable and largely result from three categories of behavior that often manifest adverse health outcomes after a relatively short incubation period. These categories include behaviors that result in unintentional or intentional injuries, alcohol and drug abuse, and sexual risk behaviors. The following examples illustrate the prevalence of a few specific behaviors within each category among the nation's high school students: 35% rode with a drinking driver during the past month; 42% were in a physical fight within the past year; 22% carried a weapon

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during the past month; 9% attempted suicide during the past year; 30% had five or more drinks on at least one occasion during the past month; 33% had used marijuana; 53% had engaged in sexual intercourse; 19% had had four or more sexual partners; and, among sexually active students, 47% had not used condoms during their last sexual intercourse (CDC, 1995c).

A similar analysis for all adults aged 25 years or older revealed that only three causes account for 67% of all mortalities and immeasurable morbidity and social problems. Heart disease causes 35% of mortalities among all adult age groups combined, cancer causes 25%, and strokes cause 7% (CDC, 1993b). These health problems also largely result from only three types of behaviors that often manifest adverse health outcomes, but only after a relatively long incubation period. These categories include tobacco use, excessive consumption of dietary fat and calories, and insufficient physical activity. The following examples illustrate the prevalence of a few specific behaviors within each category among the nation's high school students: 31% smoked cigarettes during the past month, 34% ate more than two servings of food typically high in fat during the previous day, 34% thought they were overweight, and 34% did not engage in vigorous physical activity during the past week (CDC, 1995c).

Thus, only six categories of behavior cause many of the major health problems that confront the nation: (a) behaviors that cause unintentional or intentional injuries; (b) drug and alcohol abuse; (c) sexual behaviors that cause sexually transmitted diseases, including HIV infection, and unintended pregnancies; (d) tobacco use; (e) inadequate physical activity; and (f) dietary patterns that cause disease. These behaviors usually are established during youth; persist into adulthood; are interrelated; contribute simultaneously to poor health outcomes, poor education outcomes, and poor social outcomes; and are preventable.

Modern School Health Programs

One of the most important functions of schools has always been to maintain and improve health (Means, 1975; National Education Goals Panel, 1991; Russell, 1975). In 1918, health was listed as the first of seven Cardinal Principles of Secondary Education established for the United States (Commission on the Reorganization of Secondary Education, 1918). A Gallup survey commissioned by the American Cancer Society in 1993 revealed that adolescents, parents, and school administrators believed education about health was equally or more important than other school subjects (American Cancer Society, 1994).

The existing infrastructure that could be used to improve the well-being of young people in the United States includes approximately 55 state and territorial departments of education, 15,000 school districts, and 100,000 elementary and secondary schools that serve almost 48 million public and private school students every school day, usually during 13 of the most formative years of their lives (U.S. Department of Education, 1993). Rec-

ognizing the potential of such infrastructures in almost every country of the world, the World Bank (1993) concluded that school health programs could become one of the most cost-effective strategies available to improve the health of populations across the globe. The World Health Organization (WHO); the United Nations Children's Fund; the United Nations Education, Scientific, and Cultural Organization; and other international organizations currently are mounting aggressive campaigns to improve school health programs (e.g., see WHO, 1997).

From the late 1800s until the late 1900s, school health programs were conceived as having three components: health services, health education, and the health environment (Johns, 1973; Woodfill & Beyrer, 1991). During the 1980s, more sophisticated conceptions of school health programs were proposed (e.g., Nader, 1990; Stone, 1990). Among the more recent models, CDC (Kolbe, 1993) conceives school health programs to consist of eight interactive components, including (a) health services; (b) psychological, counseling, and social services; (c) health education; (d) nutrition services; (e) physical education and other physical activities; (f) the psychosocial and biophysical environment; (g) health programs for faculty and staff; and (h) integrated efforts of schools, families, and communities to improve the health of students and staff (Allensworth & Kolbe, 1987; American School Health Association, 1994; Kolbe, 1986). This model was developed, in part, to clearly identify distinct school functions that markedly influence health. The model thus serves to identify and involve corresponding professionals who can work collaboratively as equal members of the school health team (Green & Kreuter, 1991), institutions of higher education that provide preservice and inservice training for these professionals, and national professional associations that can work independently and together to improve school health programs.

Schools, by themselves, cannot—and should not be expected to—address the nation's most serious health and social problems. Families, health care workers, the media, religious organizations, community organizations that serve youth, and young people themselves also must be systematically involved. However, schools could provide a critical facility in which many agencies might work together to maintain the well-being of young people, and, in so doing, they might express that the health of young people is as vital to society as are their skills in mathematics and science.

Although each of the eight components is important, health care reform bills introduced, but not passed, by the 103rd Congress (Health Security Act, 1994a, 1994b) largely addressed only two components, health services and health education, which are described in sequence below. During the 20th century, three basic means evolved to provide health services through schools (Fox, Wicks, & Lipson, 1992; Woodfill & Beyrer, 1991): traditional school nurses (Igoe & Campos, 1991); nurse practitioners in schools (Bruhn & Nader, 1982; Robert Wood Johnson Foundation, 1985); and school-based or school-

linked clinics, which are sometimes called school health centers (Blum, Pfaffinger, & Donald, 1982; Dryfoos, 1988; Lear, Gleicher, Germaine, & Porter, 1991; U.S. Department of Health and Human Services, Office of the Inspector General, 1993; U.S. General Accounting Office, 1994). Interest in the third means has been heightened recently because school clinics can increase access to a wide range of health care services, especially for indigent or adolescent students, by providing such services where most young people are located each school day. The most common services provided for students by school clinics include physical examinations, care for acute illnesses, and care for psychosocial and mental health needs. Between 200 and 500 school clinics have been established, and the number is rapidly increasing.

However, a large portion of the nation's 100,000 schools will not implement a school clinic soon, if ever. Unfortunately, there are few national efforts to enable the nation's school nurses and school nurse practitioners to adequately provide essential health services for the vast majority of students who do not have access to school clinics. To address this problem, relevant national nongovernmental organizations and federal agencies recently proposed a series of actions to improve school health nursing services in the United States (National Nursing Coalition for School Health, 1995).

Among the eight components of school health programs, school health education could provide one of the most efficient means available to reduce the risk behaviors described earlier, especially if it is integrated with the other seven components (e.g., integrated with food services to improve dietary behaviors and with physical education to improve physical activity). Many education and health professionals believe that the most effective form of school health education is "comprehensive school health education," definitions of which have been offered by various groups during the past few decades (e.g., National Professional School Health Education Organizations, 1984). The CDC has developed an interim operational definition (U.S. Congress, Office of Technology Assessment, 1991), which suggests that comprehensive school health education includes a documented, planned, and sequential program of health education for students in each grade, kindergarten through 12. It is taught by teachers trained to teach the subject; involves parents, health professionals, and concerned community members; and integrates education about a range of categorical health problems and issues at developmentally appropriate ages. Given the leading causes of mortality and morbidity in the United States, comprehensive school health education helps young people develop the skills they will need to avoid behaviors in the six categories listed earlier.

A recent econometric analysis (Rothman et al., in press) assessed the costs and benefits of three categorical elements of effective, comprehensive school health education programs. The element designed to prevent smoking yielded a cost-benefit ratio of 26.45:1; that is, for each dollar invested, society would save \$26.45 in

avoided health care costs caused by smoking. The element designed to prevent alcohol and other drug abuse yielded a cost-benefit ratio of 5.69:1. The element designed to prevent sexual behaviors that lead to unintended pregnancy and sexually transmitted diseases, including HIV infection and AIDS, yielded a cost-benefit ratio of 5.10:1. The combined effect of these three categorical elements of comprehensive school health education programs would save \$13.84 for each dollar invested. These cost-benefit ratios compare favorably with the ratios of some of the most efficient disease prevention programs. For example, combined measles, mumps, and rubella vaccination programs yield a cost-benefit ratio of 14.0:1, and pertussis vaccination programs yield a ratio of 11.1:1.

Enabling Schools Nationwide to Implement Effective School Health Programs

To help improve all eight components of school health programs, CDC is working with other federal agencies; national nongovernmental organizations; and state and local departments of education, health, and social services to plan and implement four basic, ongoing, interrelated strategies. These strategies include (a) identifying and monitoring critical health-related events and school interventions designed to influence those events, (b) synthesizing and applying research to increase the effectiveness of interventions, (c) enabling relevant constituencies to plan and implement interventions, and (d) evaluating the impact of interventions over time.

Identifying and Monitoring Critical Health Events and Interventions

As depicted in Figure 1, a model of behavioral epidemiology (Kolbe, 1988) conceptually structures efforts to systematically identify and monitor critical health outcomes among youth, health behaviors that contribute to those outcomes, potential cognitive determinants (knowledge, attitudes, and skills) of such behaviors, and school health policies and programs that might influence such determinants. Guidelines then are developed, based on synthesized findings from available research, to help constituencies plan and implement school policies and programs that might most effectively improve measured determinants, behaviors, and health outcomes. The public health surveillance mechanisms depicted in Figure 1 simultaneously provide data required to monitor relevant national health objectives for the year 2000 (U.S. Department of Health and Human Services, 1990) and national education goals for the year 2000 (National Education Goals Panel, 1991).

Illustratively, as shown in the *Health Outcomes* column of Figure 1, in 1993, CDC published *Adolescent Health: State of the Nation, Vol. 1—Mortality Trends, Causes of Death, and Related Risk Behaviors Among U.S. Adolescents* (CDC, 1993a). This report provided comparable data for the nation as a whole and, more

Figure 1
Integrated Efforts to Assess and Improve School Health Programs in the United States

<u>CDC Guidelines for</u>	<u>School Health Policies & Programs to Prevent</u>	<u>Relevant Knowledge, Attitudes, Skills</u>	<u>Health Behaviors</u>	<u>Health Outcomes</u>
School Health Programs to Prevent Tobacco Use and Addiction (CDC, 1994a)	Tobacco use	Tobacco use	Tobacco use	<i>Adolescent Health: State of the Nation, Vol. 3— Leading Causes of Death among All Age Groups Combined and Related Risk Behaviors among Adolescents (a)</i>
School Health Programs to Promote Lifelong Healthy Eating (CDC, 1996)	Dietary patterns that cause disease	Dietary patterns that cause disease	Dietary patterns that cause disease	
School and Community Health Programs to Promote Physical Activity among Young People (CDC, in press)	Inadequate physical activity	Inadequate physical activity	Inadequate physical activity	
Programs to prevent HIV, STD, and unintended pregnancy (a)	Sexual risk behaviors	Sexual risk behaviors	Sexual risk behaviors	<i>Adolescent Health: State of the Nation, Vol. 2— Pregnancy, Sexually Transmitted Diseases, and Related Risk Behaviors among U.S. Adolescents (CDC, 1995a)</i>
Programs to prevent unintentional & intentional injuries (a)	Behaviors that cause unintentional & intentional injuries	Behaviors that cause unintentional & intentional injuries	Behaviors that cause unintentional & intentional injuries	<i>Adolescent Health: State of the Nation, Vol. 1— Mortality Trends, Causes of Death, and Related Risk Behaviors among U.S. Adolescents (CDC, 1993a)</i>
Programs to prevent alcohol and other drug use (a)	Alcohol and other drug abuse	Alcohol and other drug abuse	Alcohol and other drug abuse	

Year 2000 National Health Objectives
Year 2000 National Education Goals

Note. CDC = Centers for Disease Control and Prevention; (a) = not currently developed.

importantly, for each state in the nation to describe the leading causes of death among 10–24-year-olds (i.e., motor vehicle crashes, other unintentional injuries, homicides, and suicides) in each state and the extent to which a probability sample of high school students in the state engaged in behaviors that contribute to those deaths. In 1995, CDC published *Adolescent Health: State of the Nation, Vol. 2—Pregnancy, Sexually Transmitted Diseases, and Related Risk Behaviors Among U.S. Adolescents* (CDC, 1995a), which provided similar comparable national and state data about teenage pregnancies, live births, abortions, gonorrhea and chlamydia infections, and AIDS cases in each state as well as the extent to which a probability sample of high school students in the state engaged in sexual behaviors that contribute to those reproductive health outcomes.

As depicted in the *Health Behaviors* column in Figure 1, the Youth Risk Behavior Surveillance System (Kolbe et al., 1993) was established by CDC to periodically monitor the incidence and prevalence of critical behaviors among youth across the six categories of behavior described earlier. Data from national, state, and large-city probability samples of high school students are generated every odd-numbered year. In 1993, 43 states and territories and 14 large cities generated such data (CDC, 1995c). Data from other populations of youth are generated less often. As part of the 1992 National Health Interview Survey, CDC collected such data from 12–21-year-olds (including youth who were and were not enrolled in school) in a nationwide probability sample of households (CDC, 1994b, 1994c). In 1995, comparable data were collected from students in a probability sample of the nation's colleges and universities.

As depicted in the *Relevant Knowledge, Attitudes, Skills* column in Figure 1, two organizations other than CDC are providing leadership for generating health education standards for 4th, 8th, and 12th graders (Joint Committee on National Health Education Standards, 1995) and for developing knowledge, attitude, and skill measurement items to assess how well students have attained specified standards at each of the three grade levels (Council of Chief State School Officers [CCSSO], 1995). The Association for the Advancement of Health Education is coordinating the former, and CCSSO is coordinating the latter as part of a national effort to create education subject matter standards from which states might select (U.S. Department of Education, 1991).

As depicted in the *School Health Policies & Programs to Prevent* column in Figure 1, in 1994, CDC implemented the School Health Policies and Programs Study (SHPPS) to begin monitoring critical state policies and programs (among all 50 states and the District of Columbia), critical district policies and programs (among a probability sample of the nation's 15,000 school districts), and critical local school policies and programs (among a probability sample of the nation's schools that include Grades 6–12). SHPPS currently provides data

about five components of school health programs: health education (addressing each of the six categories of behavior), health services, nutrition services, physical education, and selected aspects of the health environment (CDC, 1995b). In the future, SHPPS will be expanded to provide data about the other three components as well.

Synthesizing and Applying Research

CDC also is developing a system to iteratively synthesize (Cooper & Hedges, 1994) and apply research in the aforementioned six categories of behavior. For each category of behavior, a research registry is being established to systematically compile studies about the effectiveness of interventions to influence the behavior among youth. Consensus panels are convened to qualitatively summarize the compiled research and to describe characteristics of effective interventions (e.g., Kirby et al., 1994). Quantitative meta-analyses of research are conducted to identify characteristics of effective interventions, and econometric syntheses of research are conducted to assess the cost-effectiveness and the cost-benefit ratio of various interventions (e.g., Rothman et al., in press). Findings from these syntheses then are interpreted into specific guidelines to increase the effectiveness of various elements of school health programs (e.g., CDC, 1994a). Finally, a process has been established to objectively identify interventions with credible evidence of effectiveness, and means are being developed to help constituents use findings from research to increase the effectiveness of their efforts (as outlined in the following section).

Enabling Constituencies to Plan and Implement Interventions

To implement effective school health programs, public- and private-sector health, education, and social service agencies at the national, state, and local levels will need to work together toward common goals. Education agencies have the mandate to improve education outcomes, the authority to establish education policies, and the organizational capacity to implement school programs. Health agencies have the mandate to improve health outcomes, have access to health resources, and use unique strategies and expertise to prevent and address numerous health problems. Social service agencies have the mandate to support disadvantaged persons, have access to social service resources, and use unique strategies and expertise to provide services for disadvantaged persons.

At the national level, the U.S. Department of Health and Human Services, the U.S. Department of Education, and the U.S. Department of Agriculture jointly have established the Federal Interagency Committee on School Health, which includes representatives from more than 30 federal agencies, and the National Coordinating Committee on School Health, which includes representatives from about 30 national nongovernmental organizations. In 1994, Secretary of Education Richard Riley and Secretary of Health and Human Services Donna Shalala pre-

pared and sent to the nation's state governors a joint statement on school health declaring

unprecedented cooperative efforts between our Departments . . . [in] support of comprehensive school health programs . . . [and] call[ing] upon professionals in the fields of education and health and concerned citizens across the nation to join with [them] . . . in a renewed effort and a reaffirmation of our mutual responsibility to our Nation's children. (Riley & Shalala, 1994, p. 136)

In 1992, CDC began providing fiscal and technical support for selected state departments of education and state departments of health to jointly help local school districts implement all eight components of school health programs. By 1995, CDC was providing such assistance to 13 states: Arkansas, California, the District of Columbia, Florida, Michigan, Minnesota, New Mexico, New York, Rhode Island, South Carolina, South Dakota, West Virginia, and Wisconsin. In the future, CDC hopes to provide such support for all states.

As depicted in Figure 2A, CDC provides support for each state to establish a senior policy position in the office of the state superintendent of education (e.g., an assistant superintendent for school health or at least an assistant to the superintendent for school health) to provide leadership for helping local school districts improve and integrate all elements of school health programs (e.g., comprehensive school health education, school health services, and school nutrition services). In addition, CDC provides support for each state to establish a senior policy position in the office of the state commissioner of health (e.g., an assistant commissioner for school health programs or at least an assistant to the commissioner for school health programs) to apply the various resources of the state health department to help local school districts improve school health programs (e.g., through immunization programs, Medicaid, and maternal and child health programs). This increased capacity enables the state health and education agencies to jointly work with local school districts in the state to improve various components of school health programs and gives each state the capability and flexibility to determine and pursue its own unique interests, needs, and actions. To help provide national support for such state efforts, CDC provides fiscal and technical support for three national nongovernmental organizations to work together: CCSSO, which represents the state school superintendents; the Association of State and Territorial Health Officials, which represents the state health commissioners; and the American Public Welfare Association, which represents state human services directors, among others.

As depicted in Figure 2B, CDC also provides support for the state department of education to establish a position for helping school districts coordinate comprehensive school health education programs. As depicted in Figure 2C, CDC provides support for the state department of education to help school districts implement categorical health education programs to reduce sexual risks for HIV infection (although not for sexually

transmitted diseases or pregnancy prevention at this time), tobacco use, dietary patterns that cause disease, and physical inactivity. The U.S. Department of Education provides support for school districts to implement categorical health education programs to reduce drug and alcohol abuse and violence. Few resources, however, currently are provided for categorical health education programs to reduce behaviors that result in unintentional and intentional injuries. The principal function of the state coordinator of comprehensive school health education is to help school districts integrate these various categorical programs as part of a comprehensive school health education program.

To help provide direction and support for national, state, and local efforts to improve school health programs, CDC lends fiscal and technical support for the more than two dozen national nongovernmental education, health, and social service organizations listed in the Appendix, many of which have working affiliates at the state or the local level. A CDC staff person experienced in implementing school health programs is assigned to work with each funded state to help that state accomplish the tasks described earlier and to help the state identify and utilize assistance from other federal agencies and national nongovernmental organizations. Each year, CDC convenes the Annual National School Health Leadership Conference to enable representatives from five types of agencies to collaboratively analyze and plan efforts to improve school health programs. Participants include (a) from each state, a team of representatives from the state education, health, and social services departments; (b) relevant national nongovernmental organizations; (c) relevant federal agencies; (d) national organizations that represent higher education; and (e) philanthropies that provide leadership and support for school health programs.

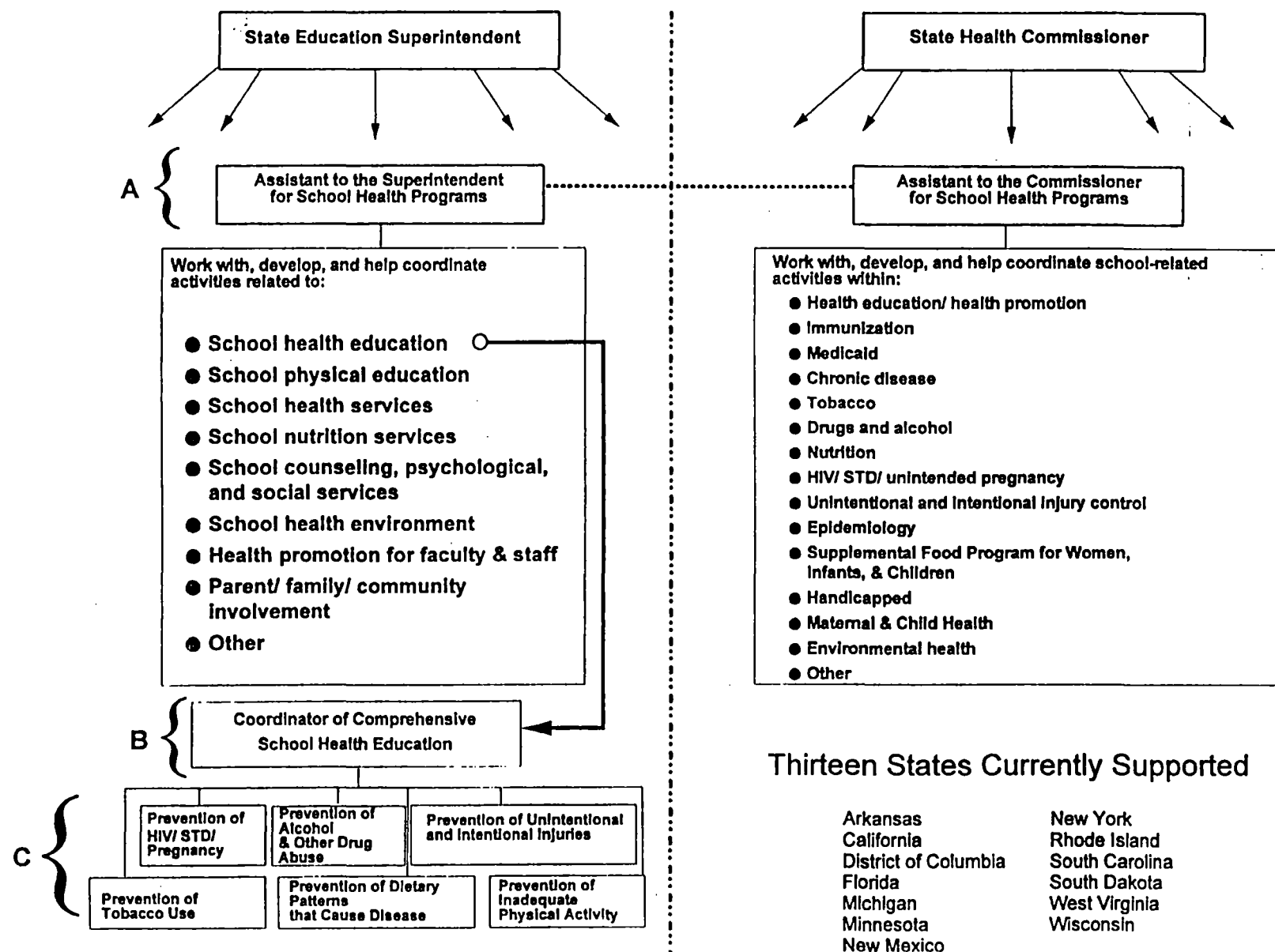
Evaluating the Impact of Interventions

To evaluate and consequently improve the impact of school health programs, CDC conducts three types of research: intervention research, dissemination research, and program evaluations (Collins et al., 1996). CDC supports intervention research to develop and evaluate promising theory-based interventions designed to reduce health risk behaviors among youth. For example, intervention research has evaluated the combined effects of classroom instruction, school environmental influences, peer and family involvement, and integrated school and community efforts to reduce sexual risk behaviors among youth (Main et al., 1994; Schinke, Orlandi, Forgers, Rugg, & Douglas, 1992).

As interventions with credible evidence of effectiveness are identified, CDC supports dissemination research to assess the impact of efforts to help schools implement interventions they have chosen. For example, as part of its "Research to Classroom" project, CDC is studying the effectiveness of efforts to help schools implement HIV prevention programs that have credible evidence of effectiveness.

Figure 2

Development of State Capacity to Improve School Health Programs



Furthermore, as school health policies and programs are implemented by states, districts, and schools, CDC supports naturalistic program evaluations to assess and consequently improve the impact of these efforts (e.g., Academy for Educational Development, 1995; CDC, 1992).

A Call for Assistance From Psychologists

Several types of psychologists could help implement effective school health programs nationwide. Behavioral and social psychologists, for example, could help measure the incidence, prevalence, and interrelations of behaviors in each of the six categories described earlier; design school interventions to modify these behaviors; conduct research to assess the impact of such interventions; and synthesize and apply research findings to improve such interventions.

Educational psychologists, for example, could apply education learning theory to health education curriculum development and instructional techniques, develop health education programs for specific cultural groups, and analyze associations between educational outcomes and various health measures.

Organizational psychologists, for example, could analyze ways to improve the psychosocial organization and climate of schools to foster the well-being of students and staff alike. They also could analyze ways to improve collaboration among members of the school health team; among education, health, and social service agency staff; and among the home, school, and community.

Counseling and clinical psychologists, psychiatrists, and psychiatric social workers, for example, could help individual students who may be establishing risk behaviors (e.g., alcohol or drug abuse), who may be suffering from acute or chronic mental health problems, or who may be coping with acute or chronically stressful home and community environments. Furthermore, such psychologists increasingly could help school students and staff cope with adverse school-associated events (e.g., the suicide or homicide of a student or a staff member).

Vocational psychologists could help students assess their career aptitudes and pursue their career interests. They also could help school staff assess and improve their performance and pursue their career interests.

Child and developmental psychologists might help perform each of the functions described above by addressing the unique characteristics, concerns, and needs of each age group, preschool through high school.

School psychologists, school counselors, and school social workers are trained across many of the disciplines described above specifically to work with school students and school organizations. They are indispensable members of the school health team, and they perform many of the functions described above either independently or in collaboration with the other types of psychologists listed. School psychologists, for example, may assess emotional or behavioral disorders; design individualized education plans for students who have health problems that require such plans; and respond to concerns about

potential neglect or physical, sexual, or emotional abuse of students (see Thomas & Grimes, 1995). School counselors, for example, may help students make the transition into a new school; help students who have conflicts with teachers, peers, or parents; and help students assess their abilities, identify career options, and acquire necessary training (see Allen, Gallagher, & Radd, 1992; Fischer & Sorenson, 1991; Hart & Jacobi, 1992). School social workers, for example, may visit students' homes to help identify problems that impede school performance, help students acquire services provided by various community agencies, and work with families to ensure that students have the support they need (see Freeman, 1995; Gibelman, 1995; National Association of Social Workers, 1983).

In April 1995, CDC and the Education Development Center convened national professional organizations that serve each of the eight components of school health programs to help define the essential functions, staff, and measures of each component. Organizations that collaborated to help define school psychological, counseling, and social services included the American Academy of Child and Adolescent Psychiatrists, the American Public Health Association, the American Public Welfare Association, the American School Counselor Association, the National Alliance for Pupil Services Organization, the National Association of Leadership for Student Assistance Programs, the National Association of School Nurses, the National Association of School Psychologists, and the National Association of Social Workers.

Each of the eight groups of organizations was asked to answer the following questions for that component of school health programs that they serve: (a) What are the essential functions of the component? (b) What are the most critical ways in which staff who implement these functions should work with staff in the other seven components? (c) Which staff should implement these functions, what should their training be, and which national professional organizations should assist them? (d) What specific, critical, and feasible actions should the local school take to achieve the essential functions of the component and to enable staff in different components to work together? (e) What specific, critical, and feasible actions should the local school district, relevant state agencies, and national nongovernmental and governmental organizations take to help the local school implement critical actions? (f) What ongoing measures are available, and should be created, to monitor critical national, state, district, and local school actions? The answers to these questions will be compiled across all eight components and published as a common template for improving school health programs nationwide.

Conclusion

Efforts to improve school health programs will require assistance from psychologists in each of the disciplines listed above, especially from psychologists at institutions of higher education that provide leadership, training, and research for these disciplines. Notably, the U.S. Depart-

ment of Health and Human Services' Maternal and Child Health Bureau recently awarded a grant to the University of California, Los Angeles, Department of Psychology to establish the School Mental Health Project (1996) and awarded a grant to the University of Maryland, Department of Psychiatry to establish the Center for School Mental Health Assistance (Education Development Center, 1996). Psychologists also might provide valuable assistance by supporting efforts of their national professional organizations to improve school health programs; by working with schools, when appropriate, as part of their jobs; and by supporting school health programs as concerned citizens within their own communities. By applying their unique expertise, psychologists could play a pivotal role in building the capacity of America's schools to improve the health of the nation.

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Effectiveness of a Violence Prevention Curriculum Among Children in Elementary School

A Randomized Controlled Trial

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Objective.—To determine if a commonly used violence prevention curriculum, *Second Step: A Violence Prevention Curriculum*, leads to a reduction in aggressive behavior and an increase in prosocial behavior among elementary school students.

Design.—Randomized controlled trial.

Setting.—Urban and suburban elementary schools in the state of Washington.

Participants.—Six matched pairs of schools with 790 second-grade and third-grade students. The students were 53% male and 79% white.

Intervention.—The curriculum uses 30 specific lessons to teach social skills related to anger management, impulse control, and empathy.

Main Outcome Measures.—Aggressive and prosocial behavior changes were measured 2 weeks and 6 months after participation in the curriculum by parent and teacher reports (Achenbach Child Behavior Checklist and Teacher Report Form, the School Social Behavior Scale, and the Parent-Child Rating Scale) and by observation of a random subsample of 588 students in the classroom and playground/cafeteria settings.

Results.—After adjusting for sex, age, socioeconomic status, race, academic performance, household size, and class size, change scores did not differ significantly between the intervention and control schools for any of the parent-reported or teacher-reported behavior scales. However, the behavior observations did reveal an overall decrease 2 weeks after the curriculum in physical aggression ($P=.03$) and an increase in neutral/prosocial behavior ($P=.04$) in the intervention group compared with the control group. Most effects persisted 6 months later.

Conclusions.—The *Second Step* violence prevention curriculum appears to lead to a moderate observed decrease in physically aggressive behavior and an increase in neutral and prosocial behavior in school.

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VIOLENCE is increasingly recognized as a public health problem.¹ Longitudinal studies have demonstrated that there is

continuity in aggressive behavior over time²⁻⁵; children who have aggressive behavior in the elementary school years are more likely to display antisocial and violent behavior as adolescents and young adults. Early intervention has been advocated as most appropriate to break this chain of events.⁶⁻¹¹

One response to this problem has been to implement curricula in schools and other community settings to prevent youth violence.¹² Many school-based violence prevention programs are designed to improve interpersonal problem-solving skills among children and adolescents by training children in cognitive processing, such as identifying the interpersonal problem and generating non-

aggressive solutions.¹³ Despite the growing popularity of school-based curricula on social skills or conflict resolution and violence prevention, there is remarkably little evidence that these programs will have the desired effect of reducing aggressive and violent behavior among children, in either the short term or the long term. Few randomized controlled evaluations have been completed,¹⁴ and rigorous studies have usually evaluated these curricula only as part of a larger experiment,¹⁵⁻¹⁹ which differs from the current practice of implementing these curricula alone in the school setting.

For editorial comment see p 1641.

We evaluated the efficacy of a widely used violence prevention curriculum among elementary school-aged children. The curriculum, *Second Step: A Violence Prevention Curriculum, Grades 1-3*, second edition (Seattle, Wash: Committee for Children; 1992), is designed to prevent aggressive behavior by increasing prosocial behavior. Prosocial behavior reflects competence in peer interactions and friendships and in interpersonal conflict resolution skills. We also sought to determine whether the effects of the curriculum persisted after the completion of the intervention.

METHODS

General Design

The evaluation was conducted as a randomized controlled trial. Schools were chosen as the unit of randomization to minimize the possibility that control classrooms and teachers might be exposed to the curriculum. The primary outcomes of interest were the change from baseline in the rates of aggressive and neutral and prosocial behavior measured by direct observation. We hypothesized that

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Dr Frey and Ms Beland are employees of the Committee for Children, a nonprofit organization that derives income from sales of the curriculum.

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aggressive behavior would decrease and neutral and prosocial behavior would increase more in the intervention group than in the control group.

Site Selection and Randomization

The study was conducted in 12 elementary schools from 4 school districts in King County, Washington. Criteria used to identify schools eligible for the study included the following: (1) the school had no prior experience with *Second Step* or other closely related curricula; (2) the school had at least 4 classrooms of second and third graders; (3) the school faculty and principal approved of the curriculum and evaluation; and (4) the schools agreed to refrain from introducing additional new curricula related to anger management and violence prevention during the study. Schools were recruited either through the district superintendent (3 districts) or directly through the principal (1 district). Schools and classrooms were also selected for their perceived willingness to deliver the curriculum and facilitate the evaluation. Schools were paired according to (1) the school district; (2) the proportion of students receiving free or reduced-cost school lunch; and (3) the proportion of minority student enrollment. After matching, schools in each pair were randomly assigned to intervention or control groups. All second-grade and third-grade classes in the selected schools were eligible to participate. Approximately 2 second-grade and 2 third-grade classrooms were recruited from each of the 12 schools for a total of 49 classrooms in the study.

Subjects

All children in each of the selected classrooms participated in the curriculum and were eligible to participate in the evaluation. Active parental consent was required for enrollment in the study. Parents were told about the curriculum and the observations but were not told about the study hypotheses. Twelve enrolled subjects from each participating classroom were randomly selected for intensive behavioral observation at school as part of the outcome evaluation. These children and their teachers were unaware of their selection for the observation sample.

Curriculum

Thirty *Second Step* lessons, each lasting about 35 minutes, were taught once or twice a week. Each lesson consisted of a photograph accompanied by a social scenario that formed the basis for discussion, role plays, and conceptual activities. Lessons were arranged in 3 units: (1) empathy training, in which students identified their own feelings and those of

others, took others' perspectives, and expressed care and concern; (2) impulse control, in which students were presented a problem-solving strategy and behavioral skills for effecting solutions (eg, apologizing or dealing with peer pressure); and (3) anger management, in which students were presented a coping strategy and behavioral skills for tense situations (eg, making a complaint or responding to an accusation). Role playing, including modeling of the skill by the teacher, student skill practice, feedback, and reinforcement for appropriate skill use, was critical. A home intervention component was not available at the time this study was conducted.

Teacher Training and Implementation

Teachers from the intervention schools participated in a 2-day training session, conducted during fall 1993 by instructors from the Committee for Children. Control schools received funds to purchase classroom materials that were unrelated to social skills or problem behavior for the second and third grades. The curriculum was implemented in the intervention schools between December 1993 and May 1994. All of the classrooms completed the curriculum in a 16- to 20-week period. Twice during the intervention period, 2 investigators monitored and rated the quality of the implementation using a numerical score. The weighted κ statistic for interobserver reliability was 0.60 for these assessments.

Outcome Assessment

Outcome data were collected in 3 periods: (1) before the start of the curriculum during fall 1993; (2) 2 weeks following the conclusion of the curriculum during spring 1994; and (3) 6 months following the curriculum during fall 1994. Three sources of data were used to evaluate the effect of the curriculum on child behavior: teacher ratings, parent ratings, and direct observations of students by trained, blinded observers in 3 settings: the classroom, playground, and cafeteria.

Teacher Ratings.—Teachers completed 2 self-administered instruments for all enrolled subjects at each of the 3 data collection periods: the School Social Behavior Scales (SSBS)²⁰ and the Achenbach Teacher Report Form (TRF).²¹ The SSBS assesses social competence and aggressive/antisocial behavior on a 5-point scale. A higher score on antisocial subscales indicates worse behavior. The TRF is an adaptation of the Achenbach Child Behavior Checklist (CBCL), a commonly used clinical tool for the detection of behavioral problems.²¹ For this study, we used 2 subscales of the externalizing behavior por-

tion of the TRF: the aggression scale and the delinquency scale. Two items related to extreme behavior were eliminated at the request of school administrators. The total raw score was used as a continuous variable in the analysis.

Parent Ratings.—Parents or guardians of enrolled subjects were asked to complete 2 separate self-administered instruments at each of the data collection times: the CBCL and the Parent-Child Rating Scale (P-CRS). The 2 CBCL subscales used were analogous to those used in the TRF: the aggression and delinquency scales.²² The P-CRS is an adaptation of a teacher rating scale that addresses domains of both positive and negative adjustment.^{23,24} Higher scores indicate higher levels of social competence.

Direct Behavioral Observations.—We used the Social Interaction Observation System,²⁵ a behavior coding system modeled after the State-Event Classroom Observation System,²⁶ to capture sequential patterns of social interactions between the observed child and other students or the teacher. The observer watched a given child and recorded all social behavior, with entries in thirty 10-second intervals for a total of 5 minutes. Two observers spent 2 to 4 days in each classroom following the class throughout the day. We attempted to gather at least 60 minutes of observation time for each observed subject during each of the first 2 data collection periods and 45 minutes during the third period. The behavior categories included prosocial and neutral, verbal negative, and physical negative. Prosocial and neutral behavior were grouped together because observers had difficulty distinguishing between these behaviors in the field.

Approximately 10% of the observations were intentionally sampled simultaneously by both members of the observer team. Using the intraclass correlation coefficient, interobserver agreement was assessed across the 3 data collection periods. Mean κ values were 0.92 for neutral/prosocial behavior, 0.50 for physical negative behavior, and 0.45 for verbal negative behavior. Coefficient values between 0.4 and 0.75 are said to indicate fair to good reproducibility and values over 0.75 indicate excellent reproducibility.²⁷

Covariates.—The following covariates were also measured: (1) special education or learning disorders by teacher report; (2) behavioral problems by teacher report; (3) demographic information including socioeconomic status,²⁸ family composition, and primary language spoken at home; (4) classroom atmosphere using the 10-item Classroom Atmosphere Scale²⁹; and (5) academic performance using the academic subscale from the SSBS instrument.

Data Collection.—Both the parent and teacher instruments were self-administered. A combination of monetary incentives, multiple mailings, reminder postcards, and telephone calls were used to increase parent response. If a student moved during the course of the study, all efforts were made to track the student to the new school and to collect parent and teacher surveys.

For each period, the observational data were collected by a team of 8 to 12 observers trained in a 4- to 6-week session. Observers were blinded to the study purposes, hypotheses, and research design. Observers were instructed to have minimal contact with teachers or other school staff. To minimize any effects introduced by the observers' presence in the classroom, there was a 2-hour habituation period on classroom entry on the first day in which no data were collected. Students who moved outside the study schools were not observed.

Data Analysis.—For each primary outcome, the dependent variable was the change between scores measured at baseline (T_0) and those from the second and third periods of data collection, T_1 and T_2 , respectively. Four categories of behavior were included in the analysis: (1) overall negative, (2) physical negative, (3) verbal negative, and (4) neutral/prosocial.

Because schools, rather than students, were randomized, the generalized estimating equation (GEE) regression method was used to adjust for individual level covariates under cluster randomization.^{30,31} The GEE analysis also incorporated the school matching used in the design. Initially, the following independent variables were considered as potentially important in the regression modeling: intervention group, baseline score of the outcome variable of interest, child's sex, relative age for grade, socioeconomic status, presence of behavioral problems known to the teacher, involvement in special education or presence of learning disorders, child's race, academic performance, household size, class size, classroom atmosphere ratings, and quality of implementation.

Preliminary analyses suggested that the only covariates associated with the behavioral outcomes were the baseline behavior score, academic performance, behavioral problems, grade, and sex. These variables and the randomization pairs were included as covariates in the final regression model. No significant interactions between covariates were found. Because children were observed for varying proportions of time in the classroom, playground, and cafeteria, the rate of behavior for the combined settings was standardized using the following equation:

$$[(3 \times \text{classroom rate}) + (\text{playground and cafeteria rate})]/4$$
 This formula was used since about 75% of the observation time occurred in classroom settings and 25% occurred on the playground or in the cafeteria. Rates were expressed as number of behavioral events observed per observation hour.

To estimate the overall effect of the curriculum on the observed behavioral outcomes, a final regression analysis examined the differences for both T_1 and T_2 within the school pair. To obtain adjusted school scores at T_1 and T_2 , GEEs were fitted at each time point with the change score from the baseline as the dependent variable and the previously described covariates (except intervention group) as independent variables. For each outcome, a predicted score was calculated for each child based on the GEE parameter estimates, and the residual from the observed score was obtained as the adjusted score. School averages of these residuals then formed the adjusted school scores at each time point. A final GEE model fitted on the within-pair differences at both T_1 and T_2 was used to test the global null hypothesis that there was no intervention effect at either time point. This statistical approach had been successfully used in another large community-based intervention trial in which cluster randomization was used.³² The P values were derived from a 1-tailed t distribution with 5 df .

In the original study design, the sample size was estimated on the assumption that the between-school variance was less than 15% of the within-school variance. Assuming 30 children per school and 5 pairs of schools, we had 80% power to detect a difference equivalent to 1 within-school SD for any outcome. Six pairs of schools were eventually enrolled to allow for possible attrition.

This study was approved by the institutional review board of the University of Washington and by each of the school districts and schools involved in the study.

RESULTS

Characteristics of the Sample

Overall, 790 students, representing 66% of 1100 eligible students in the 49 classrooms, had parental consent and completed teacher and parent surveys (Figure). Most students who did not participate did not return a permission slip. Participating subjects were similar to all eligible students by sex (54% male) and the proportion receiving free or reduced-cost lunches, but were more likely to be white (79% vs 75%). There were 418 subjects in the intervention schools and 372 in the control schools at baseline (Table 1). The intervention and control

groups were similar with respect to age, sex, teacher-reported behavior problems, number of parents in household, family socioeconomic status, household size, and classroom size. However, a somewhat larger proportion of subjects in control schools were identified as receiving special education services and were African American, while a higher proportion of subjects in the intervention schools were Asian American.

Completion Rates of Surveys

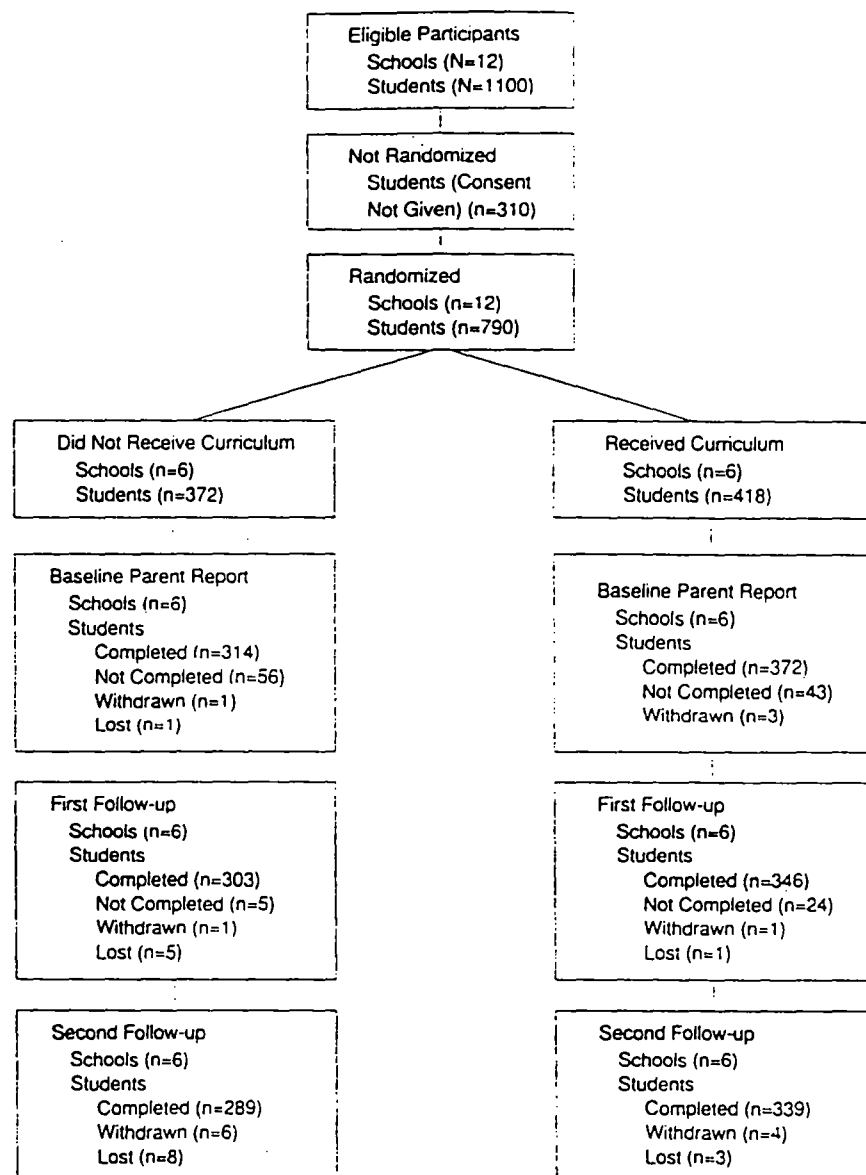
At baseline (T_0), the survey completion rates were 87%, 98.7%, and 99.5% for parents, teachers, and observation sample, respectively. At T_1 , the rates were 82.1%, 95.9%, and 96.1%; and at T_2 , they were 79.7%, 88.7%, and 80.4%. Approximately 5% of the enrolled sample moved from their original school between T_0 and T_1 , and a cumulative 17.3% of the sample (20.7% in control schools and 14.4% in intervention schools, $P=.02$) moved between T_1 and T_2 . Only 2.3% of the sample could not be located at T_2 .

Parent-Reported and Teacher-Reported Data

The unadjusted results of the parent and teacher surveys at baseline and the change between T_0 and T_1 are included in Table 2. The intervention and control schools were similar at baseline in the levels of social competence and aggressive behavior reported by both teachers and parents. There was little change between the baseline and postintervention periods in both the intervention and control schools. The GEE regression analysis affected the results in only trivial ways.

The observation sample consisted of 588 students, which represented a random sample of 12 students from each class. These subjects were observed for a mean of 68 minutes at baseline, 66 minutes at T_1 , and 53 minutes at T_2 . Tables 3 and 4 show the behavioral episode rates and the magnitude of difference in the observed behaviors between T_0-T_1 and between T_1-T_2 for classroom and playground/cafeteria settings, respectively. The mean number of aggressive episodes per child-observation-hour was higher in the playground/cafeteria setting than in the classroom. For example, there was a mean of 0.51 episodes of physical aggression per child-observation-hour in the intervention classrooms (Table 3) compared with 2.20 episodes for the same group in the playground/cafeteria (Table 4).

With regard to behavioral change in the classroom between T_0 and T_1 , 2 of the differences between the intervention and control schools were of borderline significance: for physical negative ($P=.05$) and overall negative behaviors



Profile of the randomized controlled trial. The schools were the units of randomization.

($P=.07$). Rates of negative behavior decreased in the intervention group but increased in the control group.

However, in the playground and cafeteria settings, there were significant differences noted in the effect of the intervention at T_1 . The net adjusted change score difference for physical negative behavior between intervention and control schools was -1.11 episodes per child-observation-hour ($P=.03$). As in the classroom, rates of physical negative behavior decreased in the intervention group but increased in the control group. Similar but nonsignificant trends of this type were also noted for verbal negative behavior. The rate of observed neutral/prosocial behavior in the playground/cafeteria increased by 17.1 per hour more in the intervention group than

in the control group ($P=.02$). Most of this change occurred as a result of increases in prosocial behavior in the intervention group; the control group experienced little change.

When the findings for classroom and playground/cafeteria were combined to estimate a standardized overall rate for all settings, there was both a net decrease in physical negative behavior (-0.46 event per hour, $P=.03$) and a net increase in neutral/prosocial behavior ($+3.96$ events per hour, $P=.04$) between T_0 and T_1 (Table 5).

Effects of the curriculum on observed behavior at 6 months after its introduction (T_2) were evaluated using the same analytic strategy (Tables 3-5). Most of the change score differences between baseline and T_1 were attenuated at T_2 ,

Table 1.—Sample Characteristics by Study Group

Characteristic	Intervention Schools	Control Schools
Schools, No.	6	6
Students, No.	418	372
Male sex, %	56.2	50.8
Mean age, y (SD)	8.2 (0.60)	8.3 (0.64)
Mean socioeconomic status score (SD)	38.0 (11.7)	36.9 (12.6)
Mean household size, No. of persons (SD)	4.46 (1.3)	4.39 (1.2)
Behavior problems, %	17.7	22.8
Special education, %	23.1	30.3
2-parent family, %	86.4	83.6
Ethnicity, %		
White	78.5	80.1
African American	5.3	9.4
Asian/Pacific Islander	10.5	5.9
Hispanic	4.1	3.5
Native American	1.2	1.1
Other/missing	0.4	0

largely because the control group also experienced a decline in negative behavior between T_1 and T_2 . The attenuation of the net increase led to nonsignificant trends, except for physical aggression, in the classroom setting. At 6 months, this rate was significantly lower in the intervention schools than in the control schools ($P=.03$). The decreases in T_0 – T_2 change score differences in negative behavior were mostly a result of further declines in negative behavior among the intervention students with a return of control students to T_0 behavior rates. There was no clear trend for neutral/prosocial behavior rates at T_2 . For all settings combined, there was a net decrease of -0.23 event of physical negative behavior per child-observation-hour ($P=.06$).

A summary analysis examined changes from baseline to the mean of changes from T_1 and T_2 , (T_0 – $[T_1+T_2]$), after adjusting for individual level covariates (Tables 3-5). This process provided a summary measure of the overall effect of the curriculum across the entire period of the study. This analysis indicated a borderline decrease in the playground/cafeteria in physical negative behavior ($P=.05$), a borderline increase in the playground/cafeteria in neutral/prosocial behavior ($P=.05$), and a decrease in physical negative behavior ($P=.04$) across all settings.

COMMENT

The results of this randomized controlled study of *Second Step*, a widely used violence prevention curriculum, provide some encouraging evidence of a modest positive effect. Observed physically aggressive behavior decreased significantly more and neutral/prosocial behavior increased significantly more among

children receiving the curriculum compared with children in the control group. Although these results primarily reflect differences observed on the playground and in the cafeteria, where social encounters are far more frequent, classroom observations showed similar trends. Interestingly, these behavioral changes were not detected by reports from parents and teachers.

We also note with interest that the levels of aggression among students in the control schools rose over the course of the school year. Hence, the change scores reflect not only small to moderate decrements of aggressive behavior rates in the intervention group, but also prevention of a substantial rise in aggressive behavior between the fall and spring. Other investigators employing behavioral observations in a curriculum evaluation noted similar behavior changes among school students in control groups, which may reflect normal evolution of behavior patterns over the course of the school year.³³

The reduction of violent and aggressive behavior among children and adolescents has been the focus of many studies, primarily in the psychological literature.³⁴ Many of these studies have attempted to learn whether social skills training programs improve peer relationships and reduce antisocial or aggressive behavior. Only a handful of studies have used randomized controlled designs. Fewer have incorporated behavior observation measures. The results of these studies have been mixed. The Seattle Social Development Project of 1981 used random assignment of some participants to study the effects of a social skills training program, including parent and teacher training, in 3 elementary schools starting in first grade.³⁵ Outcome measures were primarily based on teacher behavior reports. The intervention was reported to significantly improve scores on the aggressive and externalizing behavior subscales only among white students in the intervention group. However, no baseline measurements of child behavior were collected.

A second study of the effectiveness of social skills training assessed outcomes primarily on direct playground observations and teacher reports (D. J. Pepler, unpublished data, 1997). The sample consisted of 41 children in grades 1 through 6 who had been nominated by their classroom teachers as aggressive and 41 nonaggressive children matched on age, sex, and ethnicity. The aggressive children participated in a social skills training program over 12 to 15 weeks. In contrast to our study, teacher-reported data revealed a reduction in ratings of child behavior problems, but the

Table 2.—Change in Teacher-Reported and Parent-Reported Behavior Scores 2 Weeks After Completion of the Curriculum*

	Intervention Schools		Control Schools	
	Unadjusted Mean Score at T ₀ (SD)	T ₁ -T ₀ (SD)	Unadjusted Mean Score at T ₀ (SD)	T ₁ -T ₀ (SD)
Teacher reports				
Social Skills Behavior Scales				
Interpersonal skills	51.7 (13.7)	1.78 (9.8)	52.1 (13.1)	1.8 (8.9)
Self-management skills	40.3 (9.1)	0.53 (6.5)	39.9 (9.4)	0.54 (5.9)
Hostile-irritable	21.4 (11.0)	0.90 (8.4)	23.0 (12.1)	0.83 (8.1)
Antisocial-aggressive	13.0 (6.2)	0.96 (5.3)	14.7 (8.3)	0.72 (4.8)
Demanding-disruptive	14.5 (8.1)	0.12 (5.5)	15.7 (8.8)	0.16 (5.6)
Teacher Report Form				
Aggressive behavior	6.1 (8.7)	0.31 (5.7)	6.9 (10.3)	0.24 (5.3)
Delinquent behavior	0.95 (1.7)	0.22 (1.5)	1.4 (2.3)	0.16 (1.4)
Parent reports				
Parent-Child Rating Scale				
Acting out	13.6 (5.0)	-0.37 (2.9)	13.1 (5.0)	-0.36 (3.4)
Assertive social skills	18.2 (3.8)	0.23 (2.8)	18.4 (3.6)	0.22 (3.0)
Peer social skills	18.6 (3.7)	0.10 (2.6)	18.8 (3.6)	-0.07 (2.9)
Child Behavior Checklist				
Aggressive behavior	9.5 (6.8)	-0.35 (4.1)	9.5 (7.3)	-0.55 (4.3)
Delinquent behavior	2.1 (1.9)	0.02 (1.46)	2.1 (2.0)	-0.10 (1.5)

*T₀ indicates baseline period prior to curriculum intervention; and T₁, 2-week postcurriculum follow-up period.

postcurriculum playground observations did not demonstrate significant changes in aggressive behavior from baseline. The pattern of results may reflect that the intervention targeted adult-directed group experiences and not peer interactions.

Dolan et al³⁶ conducted a randomized trial of a classroom-based preventive intervention designed to reduce aggressive and shy behavior among first graders. Nineteen schools were randomized within clusters to either intervention or control groups. In addition to the external controls, internal control classrooms were also selected at intervention schools. Outcomes measures included teacher reports and peer nominations of aggressive behavior but no independent behavioral observations were performed. This intervention led to a decrease in teacher-reported and peer-reported aggressive behavior, but the sex-specific effects differed according to the nature of the control group.

There are several possible explanations for the attenuation of the effects of the curriculum on the intervention group between T₁ and T₂. First, the 6-month interval included summer vacation. If the skills were learned, but not reinforced at home by parents, they may not have been maintained. Also, since many of the subjects observed during T₂ were in classrooms with students or teachers not exposed to the curriculum, they may have experienced further barriers in skill advancement.³⁷

The results from direct observations may differ from the parent and teacher data for several reasons. Parent reports may differ since they primarily reflect

observations of their child's behavior at home. We could not ascertain whether the improved behavior was transferred to the home setting. Alternatively, interactions at home with siblings may be more resistant to change unless other family members also receive the curriculum.

The divergence of teacher ratings and behavior observation change scores has been noted by other investigators, though the reasons for the disparity are not clear.³⁸ While teacher reports may be based primarily on classroom observations of children, the direct observations were conducted by blinded observers in multiple settings, including the classroom, playground, and cafeteria. Aggressive behavior is far less common in the classroom than in other school settings such as the playground and cafeteria.³⁹ Teachers may be less aware of aggressive episodes outside the classroom, unless reported to them. Alternatively, subtle changes observed in the children's behavior may also be difficult for the teachers to detect above the background noise of busy classroom interactions. When unblinded, teachers in the intervention group may have higher expectations and rate children more stringently, leading to narrowed differences in ratings between groups. Experimental evidence demonstrates that change scores are better in the intervention group when teachers rate whether students' behavior changed. However, among the same students, change scores between intervention and control groups are similar when teachers' precurriculum and postcurriculum ratings are analyzed.⁴⁰ Our findings reinforce the im-

Table 3.—Rates of Direct Behavior Observations and Change Scores: Classroom Setting*

	Mean Rates of Behavior†			Adjusted Change Scores Differences Between Intervention and Control Groups‡					
	T ₀	T ₁	T ₂	T ₀ -T ₁	P	T ₀ -T ₂	P	T ₀ -(T ₁ -T ₂)	P
Physical negative									
Intervention	0.51	0.48	0.33	-0.22	.05	-0.22	.03	-0.22	.05
Control	0.36	0.71	0.57						
Verbal negative									
Intervention	1.10	0.99	0.77	-0.16	.18	0.06	.66	-0.06	.38
Control	0.88	1.16	0.81						
Overall negative									
Intervention	1.61	1.48	1.09	-0.43	.07	-0.14	.20	-0.28	.16
Control	1.24	1.87	1.37						
Neutral/prosocial									
Intervention	66.29	70.49	73.04	-0.76	.59	7.02	.10	3.09	.22
Control	69.63	72.37	66.24						

*T₀ indicates baseline measurement period; T₁, 2-week postcurriculum measurement period; and T₂, 6-month postcurriculum measurement period.

†Expressed as behavioral events per child-observation-hour.

‡Adjusted for baseline score, grade, sex, behavioral problems, and academic performance.

Table 4.—Rates of Direct Observations and Change Scores: Playground/Cafeteria Setting*

	Mean Rates of Behavior†			Adjusted Change Scores Differences Between Intervention and Control Groups‡					
	T ₀	T ₁	T ₂	T ₀ -T ₁	P	T ₀ -T ₂	P	T ₀ -(T ₁ -T ₂)	P
Physical negative									
Intervention	2.20	1.56	1.49	-1.11	.03	-0.25	.20	-0.66	.05
Control	1.82	2.56	1.85						
Verbal negative									
Intervention	3.26	2.62	2.35	-0.07	.45	0.39	.75	-0.12	.60
Control	2.12	2.58	2.09						
Overall negative									
Intervention	5.46	4.18	3.83	-1.21	.11	0.18	.66	-0.52	.22
Control	3.94	5.15	3.95						
Neutral/prosocial									
Intervention	184.82	204.51	203.89	17.1	.02	6.43	.15	11.9	.05
Control	186.37	188.36	194.73						

*T₀ indicates baseline measurement period; T₁, 2-week postcurriculum measurement period; and T₂, 6-month postcurriculum measurement period.

†Expressed as behavioral events per child-observation-hour.

‡Adjusted for baseline score, grade, sex, behavioral problems, and academic performance.

Table 5.—Rates of Direct Observations and Change Scores: All Settings*

	Mean Rates of Behavior†			Adjusted Change Scores Differences Between Intervention and Control Groups‡					
	T ₀	T ₁	T ₂	T ₀ -T ₁	P	T ₀ -T ₂	P	T ₀ -(T ₁ -T ₂)	P
Physical negative									
Intervention	0.93	0.75	0.62	-0.46	.03	-0.23	.06	-0.34	.04
Control	0.73	1.17	0.89						
Verbal negative									
Intervention	1.64	1.40	1.17	-0.18	.24	0.08	.60	-0.06	.41
Control	1.19	1.52	1.13						
Overall negative									
Intervention	2.57	2.16	1.78	-0.66	.07	-0.09	.35	-0.37	.16
Control	1.92	2.69	2.02						
Neutral/prosocial									
Intervention	95.59	103.98	105.75	3.96	.04	6.68	.09	5.27	.06
Control	98.82	101.37	98.36						

*T₀ indicates baseline measurement period; T₁, 2-week postcurriculum measurement period; and T₂, 6-month postcurriculum measurement period.

†Expressed as behavioral events per child-observation-hour.

‡Adjusted for baseline score, grade, sex, behavioral problems, and academic performance.

portance of using naturalistic observational data in behavioral studies of school children, as well as multiple methods to measure outcomes.⁴¹⁻⁴³

This study had several potential limitations. First, selection criteria for participation may have resulted in an atypical set of schools, classrooms, and students. However, participating schools appeared to resemble the district demographic profile. Second, since we evaluated only the curriculum as a whole, we were unable to determine which compo-

nents of it were responsible for the effects. Third, the overall participation rate of 66% may have also influenced our findings, though it is unlikely that this would exert a differential effect on intervention and control schools. Also, the characteristics of participating students closely resembled those who did not participate. Finally, there is the possibility of error in the observations. An analysis of inter-observer reliability suggested these measures ranged from fair to excellent. Because observers were blinded to treat-

ment group, error in behavior measurement should have affected both treatment groups equally and should not have introduced spurious positive findings; however, it may have caused program effects on some kinds of behaviors to be underestimated or for modest effects to escape detection.

We also sought to minimize the potential for confounding by using a randomized design and controlling for several student level characteristics. A strength of this study was the use of

GEE modeling to analyze the results at a school level while adjusting for individual level covariates.^{30,31,44-46} The use of individual students as the units of analysis would have exaggerated the significance of the effect because of overestimation of the degrees of freedom and an underestimation of the variance.

This study was designed as an evaluation of the program under ideal conditions. The differences in this study may be larger than would be seen if *Second Step* were routinely used without the same attention to training and quality control. It is also possible that differences may be smaller than might be seen

if the curriculum is used as intended, with whole-school implementation over several years.

We conclude that this violence prevention curriculum appears to lead to modest reductions in levels of aggressive behavior and increases in neutral/prosocial behavior in school among second and third graders. Some of these effects appear to persist at 6 months following exposure. However, the impact of this intervention on behavior outside of the school is unknown. Though these results are encouraging, such interventions may need to be accompanied by other interventions in early child-

hood and adolescence to further reduce aggressive behavior.¹¹

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Applying Science to Violence Prevention

Violence in America runs the risk of becoming endemic at very high levels. Each year, approximately 25 500 people die from homicide and 31 000 die from suicide in the United States.¹ Violence is the second leading cause of death for Americans between the ages of 15 and 24 years and the leading cause of death for young African Americans in this age group.² Adolescents and young adults are disproportionately represented among the victims and perpetrators of violence in our society. The average age of both violent offenders and victims has been growing younger and younger in recent years.³ Youth interpersonal violence is also closely associated with the problems of child abuse and neglect, dating violence, substance abuse, suicide, and violence against women.⁴ Because research suggests that violence is also transmitted from one generation to the next⁵ and that aggressive children tend to become violent adults,⁶ we know that if these levels of violence become established now, we will be paying the price for many years to come.

See also p 1605.

The article by Grossman and colleagues⁷ in this issue of *JAMA* is an important addition to the growing body of evidence that indicates we can reduce this cost of violence.⁸ William Foege, the senior public health statesman whose containment strategy played a central role in the eradication of smallpox, has noted that, "The most devastating plague of the 20th century is not AIDS, not Ebola virus, not drug abuse, and not violence. It is the plague of fatalism: the paralytic frame of mind which says that we cannot change the way things are, so why even try."⁹ This sense of fatalism has been one of the biggest barriers to progress in the field of injury control. Injury prevention advocates have sought to surmount this barrier by eradicating the word "accident," because accident implies injuries can neither be predicted nor prevented when they are, in fact, both predictable and pre-

ventable.¹⁰ The article by Grossman et al⁷ helps us understand that in addressing intentional injuries we can change for the better the way that young people behave. This article attacks the sense of fatalism that has been such an obstacle to our efforts to prevent violence.

Grossman and colleagues evaluated an elementary school curriculum designed to reduce aggressive physical acts and increase prosocial behavior. The authors unassertively conclude that their study provides "encouraging evidence of a modest positive effect." Of the 3 evaluation methods used, teacher reports, parent reports, and direct observation, only the latter demonstrated improvement. While further exploration is needed to see why the different methods gave different results, and while the improvements appear small, a closer look at the study finds these "modest" positive effects to be quite substantial.

The point estimates for the changes included 0.23 fewer acts of "negative physical behavior" per hour per student and 6.68 more acts of "neutral/prosocial behavior" per hour per student 6 months after the curriculum was implemented. At 22 students per classroom and 6 school hours per day, the changes amount to about 30 fewer acts of "negative physical behavior" and more than 300 more acts of "neutral/prosocial behavior" per class every day. Teachers across the country would welcome such "modest" changes.

In addition, this modest positive effect may be the most we have any right to hope for from projects like this. To expect more is unrealistic. The curriculum was designed to be implemented in the whole school, yet, in this research, was implemented in just a few classrooms in each school. Students received merely 17 hours of instruction from teachers who only had 2 days of training in this new subject. In contrast to the 17 hours of classroom exposure to the curriculum, some students have experienced many episodes of violence in their families, from their peers, and from the subtle and not-so-subtle allusions and encouragements to violence that exist in our society.

These modest but positive effects should be added to the growing body of evaluated interventions that have already demonstrated positive effects.^{11,12} There are many risk factors for violent behavior, and each of them suggests a separate way that violence might be prevented, whether it is by changing individuals' attitudes, beliefs, and behaviors directly;

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by impacting their social environment of families, peers, and community through education or jobs; or by changing their physical environment, such as by addressing the access of children and youth to alcohol or other drugs and unsupervised access to weapons. None of these by itself will solve all the problems of violence, but they can have an additive effect. In addition, as we learn more about how violence gets passed from one generation to the next and what puts people at risk for these different types of violence, we are seeing that preventing one type of violence can help to prevent other types. A few years ago the notion that so many different types of violence plagued our society contributed to many people's sense of fatalism. Now, the notion of interconnectedness among different types of violence suggests that we have multiple ways to attack the larger problem on many fronts simultaneously and that our progress in one area will contribute to progress in others.

This study also has implications for the broader field of violence prevention. The evaluation demonstrates that high-quality field research can be done. The schools were randomly assigned to treatment and control status. The enrollment rate (66% of eligible students) was good, especially considering the researchers were required to get active informed parental consent. Participation rates were excellent (87%-99% at baseline, 82%-96% at first follow-up, and 80%-89% at second follow-up). The parental response rates were especially impressive given problems other researchers have had soliciting parent participation of any kind. Finally, after the summer vacation, the investigators located 97.7% of the participating students and obtained information from 80% of them. Participation rates such as those are envied by any researchers with field experience.

Finally, this study shows the benefits to society of bringing the talents, methods, and creative energy of public health researchers from the field of unintentional injury to bear on the field of intentional injury or violence. Injuries result from a wide range of causes: fires, falls, motor vehicle crashes, poisonings, and violence. The medical care personnel who care for injured people and help to rehabilitate them back to productive lives realize that the injuries resulting from both violence and unintentional injuries are the same. Grossman and colleagues bring a spectrum of public health disciplines—spanning from epidemiology to pediatric medicine—to the problem of violence prevention. And they join the many disciplines already working on this critical problem: sociology, anthropology, psychology, criminology, education, and public policy.

Should schools that want to adopt a violence prevention curriculum adopt this one? Maybe, but there are other factors to consider. Selection of the curriculum is only part of the work, and some schools do not seem to be ready to commit the resources required.¹³ The administration must support it. Teachers must be given the class time to teach it, and agreement must be reached on what other subjects can relinquish class time for this curriculum. Time and resources must also be set aside to provide the teachers with adequate training and adequate follow-up consultation services. Many curricula exist, but few, if any, of them are marketed on the basis of their proven effectiveness, and very few evaluations have been published.¹⁴⁻¹⁷ Although descriptions of ongoing pro-

grams and evaluations are available,¹⁸ schools have remarkably little hard data to guide them in their selection. Schools should ask not only, "Has this curriculum worked elsewhere?" but "Is it likely to work here?" Schools differ markedly, and just because a curriculum worked in one school is no guarantee that it will work in another. Better, however, to adopt one that has been shown to work than to pick one because it is well marketed. We fear that today too many curricula are being purchased because they are marketed well rather than because they have good content. Schools need to be wary of slick marketing, consider the unique needs of their student body, keep abreast of authoritative recommendations and the scientific literature, and never stop asking, "Where's the proof?"

Our next challenge will be to examine and compare the cost-effectiveness of a wide range of violence prevention interventions. One analysis suggests that parent training and graduation incentives are more cost-effective than the California "3-strikes" law in terms of reducing serious crime.¹⁹ Confirmation and extension of the analysis to more types of interventions, including school curricula, and more focus on violent outcomes would be helpful. Safer homes, safer schools, and safer communities are possible. As far as our children are concerned, leaving violence at its current level is something we cannot afford to do.

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School Health Activities in South Africa

The Division of Adolescent and School Health (DASH) at CDC serves as the WHO Collaborating Center on Health Education and Promotion for School-Aged Children and Adolescents. A senior staff person is assigned to WHO's Division of Health Promotion, Education and Communication, Health Education and Health Promotion Unit (HPR/HEP) to help WHO develop international programs and policies to improve health through schools, and to plan and organize collaborative CDC/WHO efforts in these areas. CDC's assignee to WHO/HPR/HEP, Mr. Jack T. Jones, serves as the School Health Team Leader, organizing concerted efforts among various WHO programs, WHO Regional Offices and international organizations in support of WHO's Global School Health Initiative (see Appendix A). As part of this initiative, CDC and WHO have been working with several countries including South Africa.

Activities:

- 1. WHO and CDC have worked together to convene the first Conference on Health-Promoting Schools in South Africa (January 1996)**

Health-Promoting Schools concept launched in the Western Cape. Experience in organizing a network in South Africa presented at the joint WHO/HQ and WHO/AFRO Consultation on Developing a Network of Health-Promoting Schools in AFRO's Sub-Region III (November 1996). The report of conference is complete.

- 2. WHO and CDC have worked together to convene the first meeting of the Sub-Regional Task Force for the Development of Health Promoting , Cape Town, South Africa (April, 1997)**

The Sub-Regional Network for the Development of Health Promoting Schools includes 15 English speaking countries. It is chaired by Dr. Priscilla Reddy, Medical Research Council, Cape Town, South Africa. Support for South Africa's school health promotion efforts should be given priority because of the leadership position the South African representative holds among persons responsible for school health in neighboring African countries. Successes in school health are likely to be diffused quickly to other countries through the Network. The next Network meeting is scheduled for November 1997 and continued technical and financial support from the United States would ensure the successful development of this new network and enhance school health programs in South Africa and beyond. The report of task force meeting is complete.

- 3. WHO and CDC have worked together to enable two representatives from South Africa to participate in the 4th International Conference on Health Promoting Schools, Jakarta, Indonesia, (July 1997)**

Dr. Priscilla Reddy, Medical Research Council, Cape Town, South Africa will facilitate the school health sessions "Partnerships in Action". Dr. Gonda Perez, Director, Health Promotion will attend and meet with Dr. Lloyd Kolbe, DASH/CDC and Mr. Jack Jones, DASH/CDC seconded to WHO to explore possibilities for collaboration in building national capacities for school health promotion in South Africa.

Appendix A

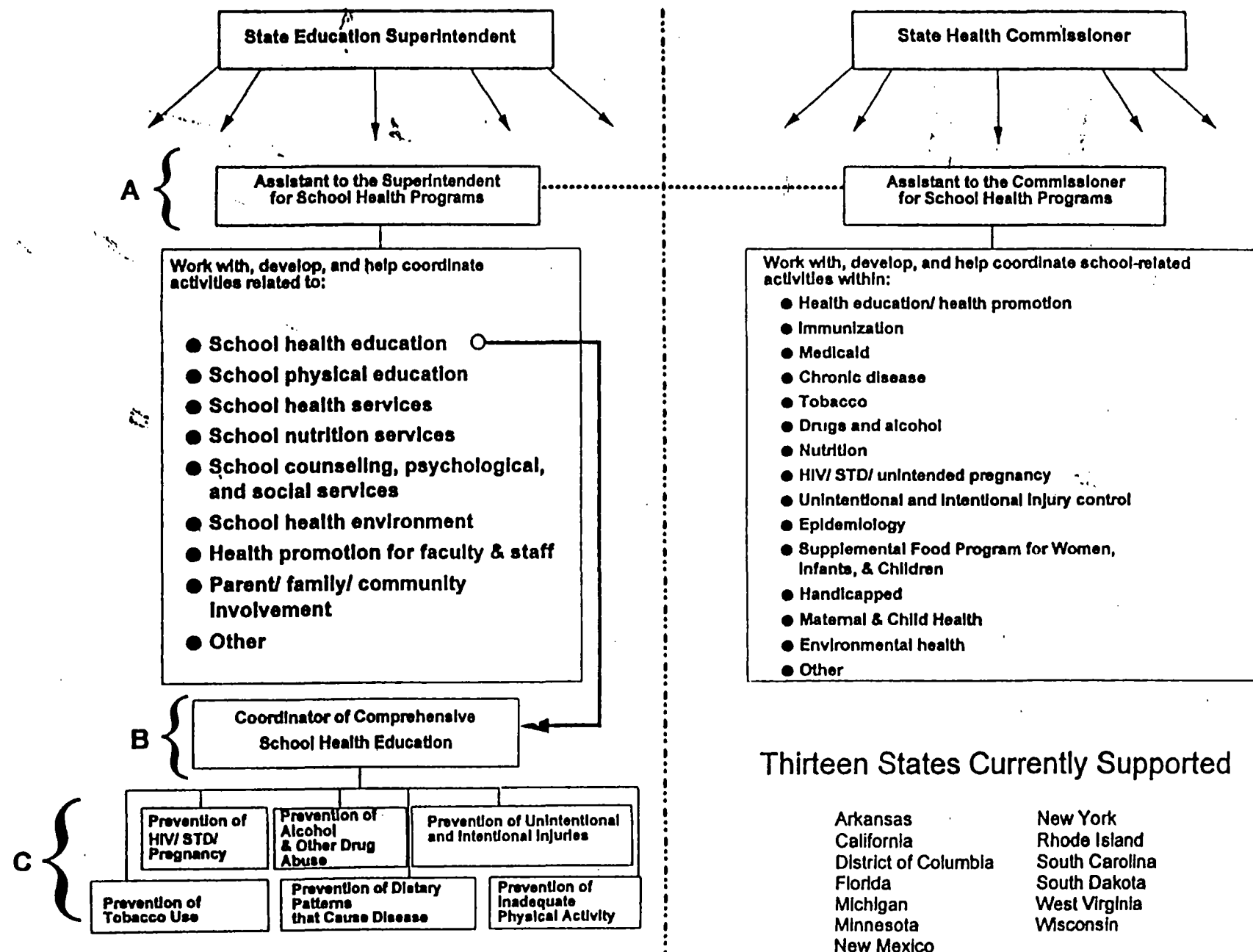
In 1995, WHO convened an Expert Committee on Comprehensive School Health Education and Promotion to review the status of school health programs, strategies used to strengthen them, and research relevant to their improvement. Dr. Lloyd Kolbe, Director, CDC/DASH, served as the Chairperson of the Committee. The Committee made the following recommendations to improve health through schools:

- * Investments in schooling must be expanded.
- * The full educational participation of girls must be achieved.
- * Every school must:
 - provide a safe learning/working environment for students and staff
 - serve as an entry point for health promotion and a location for health intervention
 - enable students to learn critical health and life skills.
- * Policies, legislation and guidelines must be developed to ensure the coordination of resources.
- * Teachers and school staff must be valued and supported to promote health;
- * Communities and schools work together to support health and education.
- * School health programs must be well designed, monitored and evaluated.
- * International support must be further developed.

WHO's Global School Health Initiative involves four strategies to help countries implement the recommendations of WHO's Expert Committee:

1. Building capacity to advocate for improved school health programs.
2. Mobilizing public and private resources for developing "health promoting" schools.
3. Strengthening national capacities, with priority given to countries with the largest school-age populations or special needs.
4. Research to improve school health programs.

Figure 2
Development of State Capacity to Improve School Health Programs



SLTA: will of figure on page 80?

RESEARCH TO CLASSROOM PROJECT
Division of Adolescent and School Health
National Center for Chronic Disease Prevention & Health Promotion
Centers for Disease Control and Prevention (CDC)

Consistent with CDC's practice of applying research findings to prevent disease and injuries, the Division of Adolescent and School Health (DASH) identifies curricula that have credible evidence of reducing health risk behaviors among youth. Once identified, CDC provides resources to ensure that the interventions, including training, are available nationwide for those interested in using them. CDC does not endorse curricula. Schools decide what curricula best meet their students' needs.

Although a selected curriculum might address only specific risk behaviors, CDC encourages schools to incorporate it into a planned, sequential, comprehensive school health education program

DASH's project is on-going, considering new curricula annually. The project involves four phases. In the preparation phase CDC identifies curricula that meet predetermined criteria (see "Criteria for Selection of HIV Prevention Curricula" and "Criteria for Selection of Tobacco Use Prevention Curricula"). From among those identified, a panel of evaluation experts and a panel of program experts help CDC select those that would be appropriate for nationwide dissemination. Following selection, DASH works with the original developers and national organizations to prepare materials for widespread use and to introduce the curricula to CDC-funded state and local education agencies (SEAs/LEAs).

In the pre-implementation phase SEAs and LEAs introduce the newly selected curricula to school decision makers. Schools select curricula that meet the needs of their students. CDC, developers, and national organizations train master trainers from interested SEAs and LEAs. During the implementation phase, interested teachers receive training and then use the curriculum with young people. The maintenance phase includes follow up support for trained teachers and their continued use of the curriculum. On an ongoing basis, CDC, developers, and national organizations provide technical assistance, and school personnel assess their implementation of the curriculum.

The project began in 1992. Currently, the following curricula have been identified as showing evidence of reducing sexual risk behaviors for infection with HIV and other STDs and unintended pregnancies:

Be Proud! Be Responsible
Get Real About AIDS®, high school level, 2nd edition
Reducing the Risk
Becoming A Responsible Teen

In 1997, DASH extended the RTC project to identify the following curricula that show evidence of reducing tobacco use among adolescents:

Life Skills Training
Project Towards No Tobacco Use (Project TNT)

July 1997

U.S. SOUTH AFRICAN HEALTH WORKING GROUP
IMPROVING SCHOOL HEALTH PROGRAMS

JULY 28, 1997

(9)

D. Tobacco and Health Promoting Schools

Four Strategies to Improve School Health Programs

Identify and monitor critical health events

Synthesize and apply research

- o School-Based Programs to Reduce Sexual Risk Behaviors:
A Review of Effectiveness (10)
- o Research to Classroom Project (11)
- o Guidelines for School Health Programs to Reduce Tobacco Use and
Addiction (12)
- o Guidelines for School Health Programs to Promote Lifelong Healthy Eating
(13)

Enable constituents to implement effective interventions

- o Development of State Capacity to Improve school Health Programs (14)
- o Collaboration with National Non-governmental Organizations (15)
- o Guidelines for School Health Programs: Strategic Plan for Dissemination
and Implementation (16)
- o South Africa/WHO/CDC Collaboration to Improve School Health Programs
(17)

Evaluate to improve interventions

U.S. SOUTH AFRICAN HEALTH WORKING GROUP
IMPROVING SCHOOL HEALTH PROGRAMS
JULY 28, 1997
(1)

C. Violence/Health Promoting Schools

- o Leading Causes of Mortality and Morbidity in the United States (2)
- o Six Categories of Risk Behaviors (2)
- o School Health Programs (3)
- o Building the Capacity of Schools to Improve the Health of the Nation (4)
[Four Strategies to Improve School Health Programs]
- o CDC/WHO Partnership to Improve School Health Programs

Four Strategies to Improve School Health Programs

Identify and monitor critical health events

- o Youth Risk Behavior Surveillance System (5)
- o School Health Policy and Program Study (6)

Synthesize and apply research

Enable constituents to implement effective interventions

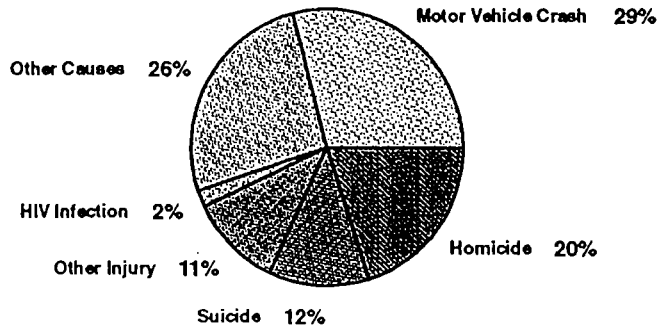
- o Safe America: Fourth National Injury Control Conference
(November 19-21, 1997) (7)

Evaluate to improve interventions

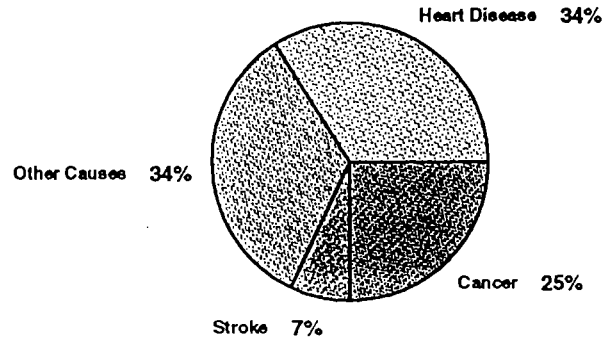
- o Effectiveness of a Violence Prevention Curriculum among Children in
Elementary School: A Randomized Controlled Trial (8)

Leading Causes of Mortality¹ and Morbidity in the United States

Youth Ages 5-24



Adults Ages 25 and Older



1995 United States YRBS Data²

Unintentional and Intentional Injuries

22%	Rarely or never used safety belts
39%	Rode with a drinking driver during past month
20%	Carried a weapon during past month
39%	Were in a physical fight during past year
9%	Attempted suicide during past year

Tobacco Use

71%	Ever smoked cigarettes
35%	Smoked cigarettes during past month
16%	Smoked cigarettes on 20 or more days during past month
11%	Used smokeless tobacco during past month
78%	Not asked proof of age for purchase of cigarettes ⁴

Alcohol and Other Drug Use

52%	Drank alcohol during past month
33%	Reported episodic heavy drinking during past month
25%	Used marijuana during past month
2%	Ever injected illegal drugs
20%	Ever sniffed or inhaled intoxicating substances

Dietary Behaviors

72%	Ate <5 servings of fruits and vegetables yesterday
39%	Ate >2 servings of high-fat foods yesterday
28%	Thought they were overweight
41%	Were attempting weight loss
5%	Took laxatives or vomited to lose or maintain weight during past month

Sexual Behaviors

53%	Ever had sexual intercourse
18%	Ever had four or more sex partners
38%	Had sexual intercourse during past three months
46%	Did not use a condom during last sexual intercourse ³
83%	Did not use birth control pills during last sexual intercourse ³

Physical Activity

36%	Did not participate in vigorous physical activity ⁵
79%	Did not participate in moderate physical activity ⁶
40%	Were not enrolled in physical education class
75%	Did not attend physical education class daily
30%	Exercised <20 minutes in an average physical education class ⁷

¹ 1992 data

² Among high school students only

³ Among students who had sexual intercourse during the past 3 months

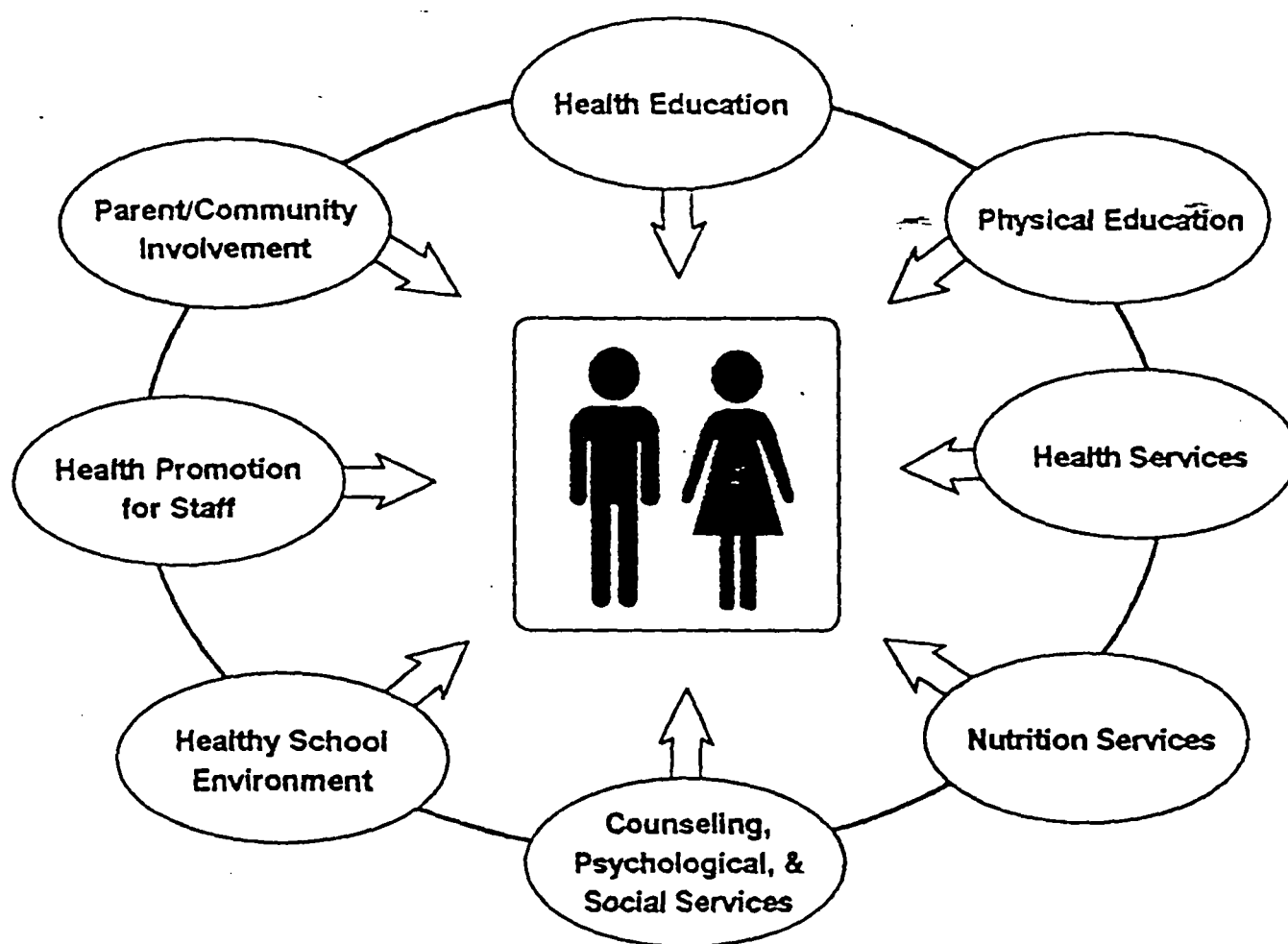
⁴ Among students <18 years of age who currently smoked cigarettes and who purchased cigarettes in a store

⁵ <3 of the past 7 days

⁶ <5 of the past 7 days

⁷ Among students enrolled in PE class

A Guide to Strengthen School Capacity to Implement A Comprehensive School Health Program



U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention



School Health Programs --- An Investment In Our Future

Health Challenges of Youth

The health challenges facing youth today are very different from those earlier in the century. Advances in medication and vaccines have addressed the destruction once caused by infectious diseases.

In the United States, 72% of all adolescent deaths are caused by motor vehicle crashes, unintentional injuries, homicide and suicide.

Damaging Behaviors

Today, behaviors adopted during adolescence largely account for the leading causes of death, disease, and social problems among young people and adults.

Youth are at risk

- 53% of all high school students experienced sexual intercourse.
- Every day, over 3000 young people initiate smoking.
- Every year, more than 30,000 young people die in automobile crashes; nearly 20% rarely or never use safety belts when riding in a car driven by another.

The six behaviors that notably contribute to today's major killers such as heart disease, cancer, stroke, and injuries include:

- ① Tobacco Use.
- ② Improper diet.
- ③ Inadequate physical activity.
- ④ Sexual behaviors that may result in HIV infection, other sexually transmitted diseases, and unintended pregnancies.
- ⑤ Behaviors that may result in intentional injuries (violence and suicide) and unintentional injuries (motor vehicle crashes).
- ⑥ Alcohol and other drug use.

These behaviors place young people at an increased risk for serious health problems both now and in the future.

Our Nation's Schools A Unique Opportunity

Every school day, 46 million young people attend over 100,000 schools across the nation. The size and accessibility of this population suggest our schools could make an enormous impact on the health of the nation.

Given these challenges, school health programs can become one of the most efficient means to prevent the major health problems confronting youth.



Fervor for addressing health among youth has grown in the private sector as well. National health and education organizations, such as the National PTA, the American Cancer Society, and the American Medical Association, actively endorse comprehensive health programs in schools.

Schools could deliver health promotion programs more efficiently than any other institution in society resulting in young people living healthier lives. However, schools cannot single-handedly address the health related needs of our youth.



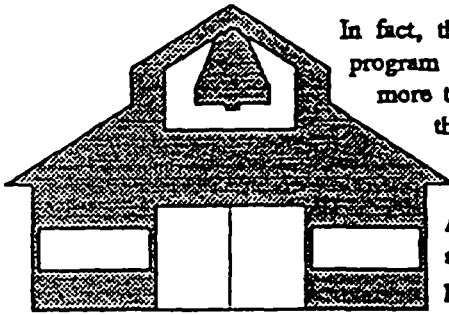
Creating a community environment that truly supports the youth of the Nation in reaching their highest potential can only be accomplished by strong partnerships among families, schools, local government, religious organizations, businesses, and others.

School Health Programs --- An Investment In Our Future

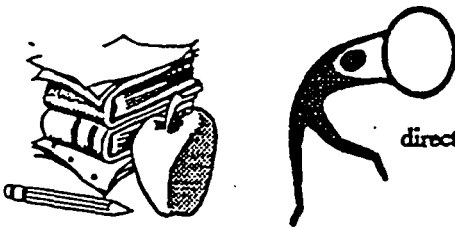
Linking Health and Education

The first National Education Goal states that "By the year 2000, all children in America will start school ready to learn." The intent of this goal is to ensure that children receive the parental, social, and health care support needed so they can enter preschool or kindergarten ready to learn.

School health programs can ensure students in kindergarten through 12 continue to enter school every day healthy and thus ready to learn. In addition, school health program can help achieve the second National Education Goal: "By the year 2000, the high school graduation rate will increase to at least 90%."



In fact, the school health program could help attain more than one-third of the 300 National Health Objectives. Analogously, school health programs could help attain all six of the National Education Goals, either directly or indirectly.



School Health Education Is Cost Effective

Rigorous studies show that health education in schools is effective in reducing the prevalence of health risk behaviors among youth. Implementing school health programs are not without costs, but school health programs can result in an overall savings.

A recent study demonstrated that for every \$1 spent on tobacco education, drug and alcohol education, and sexuality education, the nation saved \$14 in avoided health care costs. This savings compares favorably with the cost-effectiveness of other prevention programs, such as childhood immunizations.

Beyond the Classroom

Health education is only one piece of a school health program. Effective health programs go beyond the classroom. A coordinated school health program organizes and coordinates categorical funding streams. Thus, making individual program goals and objectives more efficient and less fragmented while duplication and critical education gaps can be eliminated. Other potential avenues for improving health through the schools include:



- ✓ Integrating school and community health promotion efforts.
- ✓ Involving parents in program planning, activities, and health-related homework assignments.
- ✓ Building the capacity of school staff to be role models through staff health promotion programs.
- ✓ Linking specific and necessary services such as nutrition, health, and counseling.
- ✓ Actively supporting physical education programs.
- ✓ Providing a safe and healthful environment.

A variety of channels can reinforce health messages and empower young people to speak and act for healthy living. This is the goal of an effective school health program today.

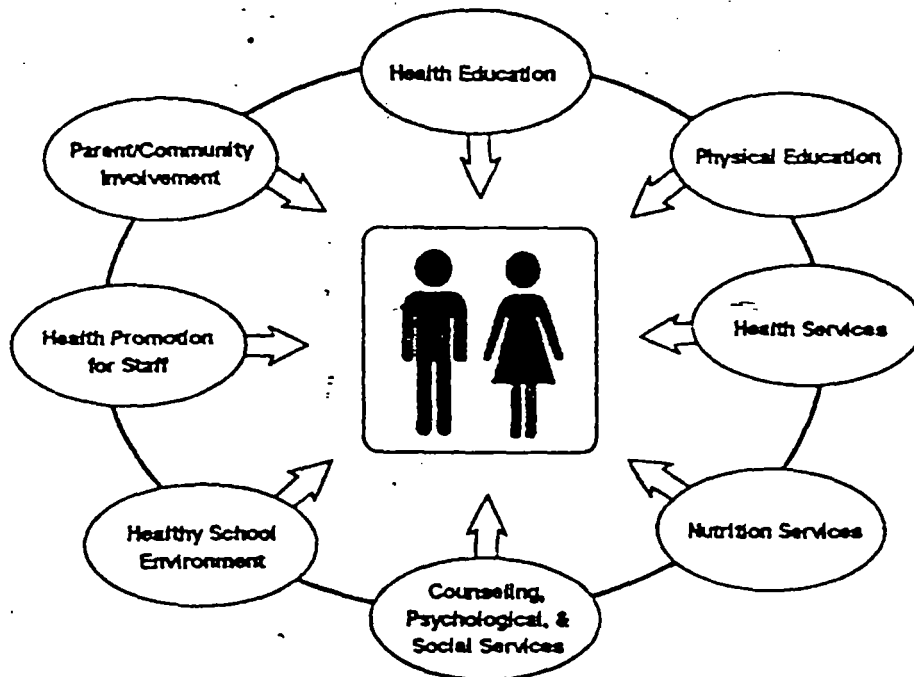
"As we approach the end of a century that produced dramatic advances in medical science, an unacceptably large number of adolescents still experience health problems that limit their ability to lead full, productive lives."

American Medical Association
Profiles of Adolescent Health

School Health Programs — An Investment In Our Future

School Health Programs

In December, 1987 an expanded concept of the school health program was introduced by leaders in the health education field. With this publication came consensus and a significant expansion of the field's view of school health. The following graphic highlights the eight components of a school health program model.



- ① A planned sequential prekindergarten - 12 curriculum that addresses the physical, mental, emotional, and social dimensions of health;
- ② School health services that promote the health of students through prevention, case finding, early intervention, and remediation of specific health problems;
- ③ The school health environment focusing on both physiological and psychological surroundings in which students and school personnel are expected to work;
- ④ Physical education that can serve as a means for maintaining cardiovascular and respiratory efficiency, as well as a method of self expression, stress relief, and social development;
- ⑤ School counseling and psychological services capable of intervening in areas of assertiveness training, life skills training, peer interaction, problem solving, self esteem, and adolescent rebellion;
- ⑥ School nutrition that not only provides breakfast and lunch as indicated, but supports the nutrition education program to help students learn how to select nutritionally appropriate foods;
- ⑦ Schoolsite health promotion to support educators and staff that become interested in improving their own health, thus becoming powerful role models; and
- ⑧ School and community involvement that establishes and promotes collaborative efforts not only within school but with parents, business, and others interested in the health outcomes of students.

THE YOUTH RISK BEHAVIOR SURVEILLANCE SYSTEM

The Youth Risk Behavior Surveillance System (YRBSS) was developed to monitor priority health-risk behaviors that contribute to the leading causes of mortality, morbidity, and social problems among youth and adults in the United States. The YRBSS monitors six categories of behaviors: (1) behaviors that contribute to unintentional and intentional injuries; (2) tobacco use; (3) alcohol and other drug use; (4) sexual behaviors that contribute to unintended pregnancy and sexually transmitted disease, including HIV infection; (5) dietary behaviors; and (6) physical activity.

The YRBSS consists of national, state, and local school-based surveys of representative samples of 9th through 12th grade students, a national household-based survey of 12- through 21-year-olds, and a national mail survey of college students. The state and local surveys are conducted by state and local education agencies as part of cooperative agreement activities with the Division of Adolescent and School Health, National Center for Chronic Disease Prevention and Health Promotion, CDC. The national surveys are conducted by CDC. The school-based surveys are conducted biennially using a self-administered questionnaire. The household-based survey was conducted as a supplement to the 1992 National Health Interview Survey using an audio-tape mode of administration and a similar questionnaire. The college survey was conducted for the first time in 1995 among a nationally representative sample of college students in 2- and 4-year institutions.

Data from the YRBSS are being used to (1) monitor progress in achieving 26 national health objectives for the year 2000, (2) monitor progress in achieving 28 Healthy Community 2000 Model Standards, (3) monitor progress in achieving National Education Goal 7 -- Safe, Disciplined, and Drug-Free Schools, (4) monitor progress in achieving measures of success for the American Cancer Society's comprehensive school health initiative, (5) focus school health education teacher training and instructional programs, and (6) support comprehensive school health programs nationwide.

For more information about the YRBSS, contact Laura Kann at (770) 488-5336.

1994 SCHOOL HEALTH POLICIES AND PROGRAMS STUDY

Introduction to the Study

The School Health Policies and Programs Study (SHPPS), conducted March through June of 1994, is a national survey of school policies and programs at the state, district, and school levels that support comprehensive school health programs. SHPPS provides information about the extent to which school policies and programs are related to the leading causes of morbidity, mortality, and social problems among youth and adults, including (1) behaviors that contribute to unintentional and intentional injuries; (2) tobacco use; (3) alcohol and other drug use; (4) sexual behaviors that contribute to unintended pregnancy and sexually transmitted disease, including HIV infection; (5) dietary behaviors; and (6) physical activity. SHPPS provides baseline data on 14 national health objectives for the year 2000 that can be attained directly by schools in the areas of school health education, school physical education, school food service, school health services, and school health policies. SHPPS also provides information related to National Education Goal 7 – Safe, Disciplined, and Drug-Free Schools.

SHPPS includes mail surveys of state and local education agency policies related to school health in grades kindergarten through twelve, conducted in all states and in a nationally representative sample of districts. The study also includes on-site, structured interviews conducted with school principals, health education teachers, physical education teachers, school food service directors, school nurses, counselors, and other appropriate personnel in a nationally representative sample of middle/junior high schools and senior high schools.

The questionnaires include items to assess the following components of comprehensive school health programs:

- **School health education**—school health education curriculum content, placement of health education within the overall school curriculum, duration of health instruction, health education requirements for students, teacher preparation, and teaching methodologies. The instruments are designed to assess the extent to which school health education focuses on student acquisition of critical knowledge, attitudes, and skills.
- **School physical education**—school physical education requirements for students, physical education curriculum content, teaching methodologies, duration of physical education instruction, class size, facilities, and the content of fitness testing.
- **School food service**—link between the school breakfast and lunch programs and classroom nutrition instruction, other school efforts to promote and provide good nutrition, education and training for personnel involved in food service and nutrition instruction, and efforts to comply with the U.S. Dietary Guidelines for Americans.
- **School health services**—policies for provision and availability of school-based or school-linked health services, maintenance of student health records, and accessibility of school nurses and other health services personnel.
- **School health policies**—policies and procedures related to violence-, tobacco-, and drug-free school environments and HIV infection.

**THE 4th SA-US BINATIONAL COMMISSION HEALTH
SUBCOMMITTEE MEETING : 28 JULY 1997**

**HUMAN RESOURCE DEVELOPMENT
NATIONAL SCHOOL OF PUBLIC HEALTH
PRESENTED BY
DR SJH HENDRICKS**

THE BACKGROUND DEVELOPMENTS TOWARDS A NATIONAL
SCHOOL OF PUBLIC HEALTH

— PARADIGM SHIFT IN OUR APPROACH TO HEALTH FROM THE
OVERT FOCUS ON THE BIOMEDICAL MODEL TO A PUBLIC
HEALTH APPROACH WHICH IS IN LINE WITH THE PRIMARY
HEALTH CARE PHILOSOPHY OF THE NEW INTEGRATED
UNIVERSAL NATIONAL HEALTH CARE SYSTEM.

POLITICAL ENDORSEMENT FROM BOTH HEALTH AND
EDUCATION MINISTRIES FOR ONE NATIONAL SCHOOL OF
PUBLIC HEALTH AND ITS LOCATION AT MEDUNSA

THE EXISTING REGIONAL INITIATIVES LOCATED IN WESTERN
CAPE, KZN AND GAUTENG - COMPLIMENTARY NATURE OF
NATIONAL SCHOOL OF PUBLIC HEALTH

CAPACITY BUILDING IN PUBLIC HEALTH, GOVERNANCE AND
ADVOCACY AND INCLUDING THE RE-ORIENTATION/RE-
TRAINING OF HEALTH PROVIDERS IN THE PHC APPROACH
(EG PHC NURSE RE-ORIENTATION PROGRAMMES)

REINFORCEMENT OF COMMITMENT OF GOVERNMENT TO
STRENGTHEN HISTORICALLY YOUNGER ACADEMIC
INSTITUTIONS

THE INTRODUCTION OF A PUBLIC HEALTH PRACTICE
APPROACH REINFORCED BY COMMUNITY PARTICIPATION
THROUGH A SCHOOL WITHOUT "WALLS" CONCEPT

OUTSOURCING OF SERVICES (TEACHING) TO INVOLVE
ACADEMICS FROM EXISTING REGIONAL SCHOOL INITIATIVES

JOINT APPOINTMENTS OF PERSONNEL EMPLOYED AT
NATIONAL HEALTH DEPARTMENT WITH EXPERTISE AND
TRAINING IN PUBLIC HEALTH

THE VISION OF ONE NATIONAL SCHOOL OF PUBLIC HEALTH
WITH SATELLITE CAMPUSES/INSTITUTIONS (EG EXISTING
REGIONAL INITIATIVES) TO FACILITATE ACCREDITATION OF
PROGRAMMES.

FUNDING FOR A NATIONAL SCHOOL OF PUBLIC HEALTH IS
ESSENTIAL FROM SOURCES IDENTIFIED AND THE ROLE OF BI-
NATIONAL COMMISSION TO PROVIDE PLATFORM FOR SUCH
FUNDING.

*THE 4TH SA-US BINATIONAL COMMISSION :
HEALTH SUBCOMMITTEE MEETING - 28 JULY, 1997*

BIOMEDICAL RESEARCH
Dr O SHISANA / Dr SJH HENDRICKS

- ACUTE SHORTAGE OF BLACK SCIENTISTS IN THE HEALTH SECTOR IN SOUTH AFRICA
- PROCESS OF TRANSFORMATION & NEED FOR CAPACITY BUILDING PROGRAMMES IS A TOP PRIORITY
- THE NEED FOR APPROPRIATE RESEARCH TO BE CONDUCTED ON HEALTH PROBLEMS WITH HIGH INCIDENCE IN BLACK POPULATIONS
- THE ROLE OF THE MEDICAL RESEARCH COUNCIL IN SOUTH AFRICA TO PROMOTE CAPACITY BUILDING AND POSSIBLE ASSISTANCE FROM NIH THROUGH FUNDED SCHOLARSHIPS
- INVESTMENT IN HISTORICALLY YOUNG UNIVERSITIES AND TECHNIKONS ESSENTIAL TO DELIVER ADEQUATE NUMBER OF TRAINED BLACK SCIENTISTS

- THE IMPORTANCE OF EMERGING AND RE-EMERGING INFECTIOUS DISEASES AND THE NEED FOR WELL TRAINED SCIENTISTS TO WORK IN THIS AREA
- THE RESEARCH CAPACITY OF EXISTING INSTITUTIONS IN SOUTH AFRICA WHERE OUTPUT IS TOTALLY INADEQUATE & NEED FOR COMMITMENT OF EARMARK FUNDING TO TRAIN MORE SCIENTISTS

POSSIBLE SOURCES OF SCHOLARSHIP FUNDING IN THE US:

- FOGARTHY FELLOWSHIPS
- FULBRIGHT SCHOLARSHIPS
- WK KELLOGG FOUNDATION FELLOWSHIPS
- NIH FELLOWSHIPS/GRANTS THROUGH US INSTITUTIONS - CONCEPT OF TWINNING
- USIS / USIA / USAID FUNDING

WAY FORWARD

- NEW FUNDING SOURCES TO BE IDENTIFIED
- EXTENSION OF EXISTING SCHOLARSHIP FUNDING TO YOUNG RESEARCHERS
- IMPORTANCE OF LINKING BIOMEDICAL RESEARCH TO SERVICE DELIVERY TO STRENGTHEN THE NEW PRIMARY HEALTH CARE SYSTEM IN THE COUNTRY

NIH/FIC Programs SOUTH AFRICA

AIDS International Training and Research Program

The AIDS International Training and Research Program (AITRP) is now in its ninth year with a \$9.6 million budget for FY 1996. The first five years of the program were focused on training scientists and health professionals in Africa and Latin America across a wide range of scientific disciplines related to building the global capacity for vaccine and other interventions. The focus for the second five years of the program is on collaboration in research abroad with trained foreign researchers and expanding programs in Asia, Eastern Europe and former USSR. Dr. Zena Stein from Columbia University administers a program that is developing the epidemiologic and scientific expertise within South Africa so that local professionals may deal effectively with the HIV/AIDS epidemic and to strengthen collaborative relationships between the U.S. and South African scientists in conducting HIV-related research. To date, 7 pre-doctoral and 3 post-doctoral fellows were supported by this grant, in addition to a postdoctoral microbiologist from the University of Natal that came to the U.S. as a fellow to observe laboratory procedures in AIDS related labs at CDC and NYC. In addition, two one-week in-country courses, Introduction to Epidemiology and Management of HIV/AIDS, were given by U.S. and South African faculty and former Fogarty fellows

Office of AIDS Research Discretionary Funds

In April 1996, the Office of AIDS Research supplemented two Fogarty projects working in South Africa, one titled "Tuberculosis/HIV Pathogenesis: The Impact of TB/HIV Co-infection on HIV Viral Load" in coordination with Dr. Richard Chaisson at Johns Hopkins University, Baltimore, Maryland, and Dr. Zena Stein from Columbia University is working on "Breast-feeding Associated HIV Transmission and HIV-specific T-helper Cell Function."

International Training and Research in Environmental and Occupational Health Program

The International Training and Research in Environmental and Occupational Health Program was designed to train scientists from developing countries to deal effectively with environmental and occupational health problems through epidemiologic research, environmental monitoring, engineering control, and prevention research. In FY 1996 two awards were made to investigators working in South Africa: Dr. Kirk Smith from the University of California, Berkeley, and Dr. Thomas Robins from the University of Michigan. Dr. Smith has developed a program that will enhance capacity building programs to train scientists, physicians, and researchers that include in-country courses and long-term pre and post-doctoral training at UCB leading to the MPH/MS, Ph.D./Dr.PH degrees. The trainee research must be conducted in the home country. Dr. Robins is working closely with the University of Cape Town, the National Center for Occupational Health, and the University of Natal to develop a program that will enhance the occupational and environmental health infrastructure in South Africa, particularly its research and training capacity. The program provides for enrollment of South African

nationals in the University of Michigan's masters, doctoral, and post-doctoral programs with research training activities to be based in South Africa with a particular emphasis on recruitment of individuals expected to occupy key academic research training positions in South Africa. The program will also assist in developing in-country masters degree programs in occupational hygiene and environmental health science.

Emerging and Re-emerging Infectious Diseases Supplement

The administrative supplements to NIAID (or FIC/AITRP) grants was designed to enhance laboratory, epidemiologic, clinical and social science research programs, and to train scientists and public health workers from developing countries and the U.S. counterparts in research control and prevention strategies. Dr. Gilla Kaplan from the Rockefeller University, New York, is expected to have trained a South African fellow associated with the University of Cape Town, in cellular immunological techniques necessary to assess effects of IL-2 treatment in the immune response to tuberculosis. The fellow upon return to South Africa, will assist with an 18-patient, placebo-controlled pilot study of adjunctive immunotherapy with recombinant human IL-2 in multidrug resistant TB patients. This program will facilitate the transfer of state-of-the-art technology for immunological analysis and in medical management of tuberculosis to a trained, capable South African physician.

International Training and Research in Population and Health Program

The International Training and Research in Population and Health Program was designed to train scientists from developing countries to deal with population and health problems through epidemiologic research, prevention research, and social and behavioral factors that influence population.

Dr. Antonio McDaniel from the University of Pennsylvania is working on a project that emphasizes determinants of fertility change, mortality and family structure in South Africa. A workshop to educate South Africans in the use of census and survey data will be held in November 1997. A student from the University of Pretoria will be enrolled at Penn and develop a research project with the help of a faculty advisor, and will be eligible to receive a masters degree upon completion of all requirements.

International Research Fellowships

The International Research Fellowship program has three investigators from South Africa working at U.S. universities. They are Dr. Johannes Moolman (University of Texas), Dr. Malcolm Collins (University of Washington), and Dr. Nancy DeVries (Jackson Laboratories, Bar Harbor, Maine). Dr. Moolman's research focuses on determining whether α_1 adrenergic blockade medication, in addition to angiotensin converting enzyme inhibition in the post-myocardial infarction treatment regimen, is indicated in preventing myocardial remodeling following a large myocardial infarction. Dr. Collins is studying whether sequences within the first intron of the procollagen gene may be involved in the

formation of an active chromatin conformation, classical experiments using cultured cells. Dr. Nancy DeVries is working on a project about the molecular control of mammalian pre-implantation development and has proposed that a cDNA library approach be used to study the expression of genes during the pre-implantation period of embryogenesis.

Fogarty International Research Collaboration Award

The Fogarty International Research Collaboration Award program has two investigators who are currently working in South Africa, Dr. Stuart Sealfon from the Mt. Sinai School of Medicine in New York, and Dr. Kim Wang from the University of Texas at Austin, Texas. Dr. Sealfon is studying the gonadotropin-releasing hormone receptor in fish, amphibian, reptile, bird and protochordate species by molecular cloning which will provide insight into the molecular evolution of gonadotropin-releasing hormone receptors selectivity. This work is being done in collaboration with Dr. Robert Millar at the University of Cape Town Medical School. Dr. Wang is working with Dr. Marlena Kruger at the University of Pretoria, to better understand the physiological and developmental roles of nebulin isoforms in vertebrate skeletal muscles.

Minority International Research and Training Program

The Minority International Research and Training Program is supporting work with South Africa through three U.S. universities. Dr. Eva Smith, in conjunction with Dr. Beverly McElmurry from the University of Illinois, Chicago is working to form an interdisciplinary research team of nurses and other health team members that will be collaborating on implementing a breast cancer research project in black South African women, including barriers to early detection and follow-up care. Dr. Betsy Lozoff from the University of Michigan is developing a training program in research on child health and development with an interdisciplinary biomedical and behavioral approach in collaboration with the University of Natal, Durban. Dr. Lucile Adams-Campbell from Howard University is working on a project that will develop an international research training program designed to enhance the interest of minorities in international collaborative research on populations in South Africa, and also to provide graduate students an opportunity to conduct masters and doctoral theses at an international level in conjunction with the University of Transkei, Medical University of South Africa, and University of Potchefstroom, South Africa.

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Editorial

PREDICTING HIV DISEASE PROGRESSION IN RESOURCE – POOR SETTINGS

Gary Maartens

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In developed countries quantitative viral load is widely used to predict HIV disease progression and to initiate and monitor the effects of combination therapy (1). Serial CD4+ lymphocyte counts are used in conjunction with viral load, and are still used to initiate primary prophylaxis. Combination therapy and viral load monitoring are unavailable in the public sector in Southern Africa, and CD4+ lymphocyte counts are only available in larger centres. Health care workers in resource-poor settings often become fatalistic or despondent about monitoring progression. However, a lot of important prognostic information can be obtained clinically by using simpler laboratory tests.

Why monitor disease progression?

Getting an accurate idea of an HIV infected person's immune status is important in planning management. Clear evidence of significant immune suppression has major prognostic importance. This needs to be sensitively communicated to the patient. If the patient is only able to afford single drug anti-retroviral therapy, this should be commenced as monotherapy has been shown to be effective only with significant immune suppression. Follow up visits should be more frequent and primary prophylaxis considered. Doctors in Sub-Saharan Africa have not widely adopted cotrimoxazole prophylaxis – partly because CD4+ counts aren't available and partly because its benefit is thought to be limited to the prevention of *Pneumocystis carinii* pneumonia, which is uncommon in Africa. However, cotrimoxazole also has multiple other benefits – it prevents or reduces the incidence of toxoplasmosis, bacteria pneumonia, bacteraemia

and *Isospora belli* diarrhoea (2). Tuberculosis also occurs with greater frequency as disease progresses. Given that isoniazid prophylaxis only appears to be effective whilst it is being taken (3), it makes sense to target isoniazid prophylaxis to patients with limited survival and greater risk.

Clinical features

Several clinical features are important in predicting progression to AIDS – these include disappearing lymphadenopathy and oral candidiasis or hairy leucoplakia. Even if no laboratory is available, clinical features yield very important prognostic information. A patient with a CD4+ count of 200/ul and oral candidiasis has a much poorer prognosis than if he/she were asymptomatic. The World Health Organisation's staging system (4) consists of separate clinical and laboratory arms. We have found that the clinical staging system on its own is a powerful predictor of survival and progression to AIDS (5).

Simple laboratory tests

The presence of a low absolute lymphocyte count is an important marker of disease progression and can be used to initiate cotrimoxazole therapy if CD4 counts are unavailable.(5) This is easily obtainable for an automated or manual differential count. Total lymphocyte counts used together with the WHO clinical staging system provides very useful prognostic information. For example, a patient in WHO stage 3 (eg oral candidiasis with no lymphopenia) has a 1 year risk of progression to AIDS of 25% – this almost doubles to 46% if lymphopenia is present (5). The ESR has also been shown to be helpful prognostically (6).

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Summary of the results of the seventh national HIV survey of women attending antenatal clinics of the public health services in South Africa October/November 1996

Background

During October/November 1996, the Department of Health conducted the seventh national annual survey in a series of unlinked anonymous surveys in women attending antenatal clinics of the public health services. These surveys were made possible by the good cooperation and support of the provincial coordinators and a number of laboratories, of which the participants of this years' survey are listed in the acknowledgements. A specified number of routine antenatal blood specimens consecutively received during October/November were serologically screened for HIV antibodies after completion of routine tests. A summary of the results of the seventh national HIV survey are hereby presented.

Results

Based on a sample of 15 044 specimens screened, it is estimated that 14,07% of the women attending antenatal clinics of the public health services nationally were infected with HIV by the end of 1996. In 1995, the prevalence level of HIV infection in this group was 10,44%.

Age-specific rates:

HIV infection has increased in all age groups since the previous year. The highest rates were found in the 20 to 29 year old group with rates of 17,52% of the 20 – 24 and 15,21% of the 25 – 29 year age groups infected. Just more than 12% of the under twenty and 30 – 34 year groups were HIV positive (12,78% in the under twenties and 12,13% in the 30 to 34 year groups) while almost 10% of the 35 – 44 group tested positive for HIV (9,67% in 35 – 39 and 9,94% in 40 – 44 year olds). While HIV infection is clearly present in the 40+ group, prevalence rates must be interpreted with caution as the number of specimens received in this group might not represent this age group.

Province-specific rates:

Levels of HIV infection have increased in seven of the nine provinces with the exceptions being Western Cape and Mpumalanga where the estimates were lower than in 1995. KwaZulu-Natal which has formed the spearhead of the epidemic for the past six years showed a slight increase from 18,23% to 19,90%. A matter for great concern is the HIV epidemic in North West where it is estimated that 25,13% of antenatal clinic attenders were HIV positive.

Whereas good historical data of the epidemic exists in all other provinces, this is not the case in North West where the total province was included in the surveys only from 1995. The rate found in North West might be an over estimate of the true situation, but indications are that levels of HIV infection in North West are higher than previously estimated. This high prevalence rate will be followed up.

More specifically, the level of HIV infection in the provinces are estimated as follows:

Western Cape	1,65%	Northern Cape	6,47%
Northern Province	7,96%	Eastern Cape	8,10%
Gauteng	15,49%	Free State	17,49%
Mpumalanga	15,77%	KwaZulu-Natal	19,90%
North West	25,13%		

Estimated number of infected people:

Based on the results and the validity of generalisation to the population, it is estimated that more than 2,4 million South Africans were HIV positive by the end of 1996. Due to the high levels of HIV infection in North West, the estimated number of HIV infections might be too high. To put this estimate in context, please refer to the comments of Mr Peter Doyle (Metropolitan Life) on the interpretation of the survey (to follow).

1

Summary of the results of the seventh national HIV survey of women attending antenatal clinics of the public health services in South Africa October/November 1996

Continued

For further details, please refer to the table below.

Seventh national HIV survey amongst women attending antenatal clinics in South Africa – October/November 1996

Prevalence rates (%) and 95% confidence intervals (CI) based on the seventh national HIV survey (1996) and comparative figures of the sixth national survey conducted in 1995.

	1996			1995		
	Est (HIV+)	95% CI		Est (HIV+)	95% CI	
		Lower limit	Upper limit		Lower limit	Upper limit
South Africa	14,07	13,35	14,79	0,44	9,86	11,02
Provinces						
Western Cape	1,65	1,06	2,24	1,66	0,94	2,38
Eastern Cape	8,10	6,92	9,28	6,00	4,89	7,11
Northern Cape	6,47	5,05	7,89	5,34	4,10	6,58
Free State	17,49	15,57	19,41	11,03	9,44	12,62
KwaZulu Natal	19,90	17,68	22,12	18,23	16,31	20,15
Mpumalanga	15,77	14,34	17,20	16,18	14,40	17,96
N Province	7,96	6,24	9,68	4,89	4,00	5,78
Gauteng	15,49	13,58	17,40	12,03	10,36	13,70
N West	25,13	22,31	27,95	8,30	6,67	9,92
Age Group						
< 20	12,78	11,33	14,23	9,50	8,15	10,85
0-24	17,52	16,28	18,76	13,12	11,97	14,27
5-29	15,21	13,93	16,49	11,03	9,81	12,25
0-34	12,13	10,67	13,59	8,05	6,79	9,31
5-39	9,67	7,85	11,49	7,37	5,47	9,28
0-44	9,94	5,76	14,12	4,36	1,96	6,76
5-49	5,83	2,25	9,41	7,45	0,00	19,36

LATE PRESS:

Note correction of Western Cape's figures from 1,65 to 3,09. This raises the South African figures by 1%

*Note:

The estimate of HIV prevalence in the 44-49 year group is based on very small numbers.

The survey was conducted by the Directorate: Health Systems Research and Epidemiology, Department of Health with the cooperation of the following laboratories: Border, Eastern Cape, Western Cape, and South African Blood Transfusion Services; South African Institute for Medical Research, and the Virology Departments of the Universities of Cape Town and Natal, Provincial Mankweng (Northern Province) and Bophelong (North West) laboratories.

2

COMMENTARY ON THE 7TH NATIONAL HIV SURVEY – OCT/NOV 1996

Peter Doyle, Metropolitan Life

The most striking feature of these results is the threefold increase in HIV prevalence in the North West Province. This result is unexpected and should be of great concern. It is commented on separately below.

Apart from the North West province, the progress of the HIV epidemic nationally follows expectations. The rate of growth in the provinces of KwaZulu-Natal, Mpumalanga and Gauteng continues to slow down, but at relatively high levels of HIV infection. This indicates a maturing epidemic and not necessarily changes in sexual behaviour.

Growth in HIV infection still appears to be very rapid in the Free State and particularly North West provinces. The result for the North West Province is so extraordinary that the Department of Health should urgently investigate the situation in the province. These results are based on sampling and so perhaps further samples should be tested to verify these results. If the results are confirmed, then the underlying causes of this increase in HIV infection should be explored. The North West Province borders on Gauteng and this rapid growth in infection could have national ramifications.

The overall HIV prevalence for women attending antenatal clinics of 14,07% does not necessarily represent all adults in South Africa. Metropolitan Life estimates that the national level of HIV infection as at the end of 1996 was approximately:

2

COMMENTARY ON THE 7TH NATIONAL HIV SURVEY – OCT/NOV 1996

Continued

Women aged 15 – 45	-	14%
Males aged 15 – 45	-	10%
All adults	-	11%
Total population	-	6%

The estimate of 2,4 million HIV infections in South Africa is higher than forecast. It is influenced by the North West Province where there are an estimated 150 000 more persons HIV-infected than forecast. The national epidemic is no longer doubling each year, but HIV infection is very firmly established in South Africa.

The second phase of the HIV epidemic will be that of AIDS sickness. The effects will be felt not only in the health-care sector, but elsewhere as well. AIDS sickness will also affect communities and families directly, productivity at the workplace and in the longer term, the competitiveness of South Africa's economy. Given the estimate of over 2 million people now HIV-infected in South Africa, the number of AIDS cases can be expected to grow significantly.

Assuming an incubation period of 8 to 9 years on average, we estimate that there will be about 90 000 new AIDS cases in South Africa during 1997 – 20 000 of those amongst children born to HIV-infected mothers.

3

Representativeness of studies of antenatal clinic attenders versus female blood donors – A Tanzanian study

Source: Kwesigabo G, Killewo JZJ and Sandstrom A. Sentinel surveillance and cross sectional survey on HIV infection prevalence: A comparative study. East Afr. Med J 1996; 73(5)298-302.

Despite widespread use of sentinel surveillance systems in monitoring the magnitude of HIV-1 infection in populations, little is known of how the trends they produce compare with those of the larger populations which they profess to represent. The objective of this study, therefore, was to assess how useful sentinel surveillance data on HIV-1 infection might be in estimating the magnitude of HIV-1 infection in the general population. To achieve this, results from a population based study on HIV-1 infection in Bukoba town were compared with those from antenatal mothers and blood donors, all from the same town. The studies were done during the period of 1987-90. The overall HIV-1 prevalence was highest in the general population sample at 24,2% (95% CI 20.6-27.8) followed by that in antenatal mothers at 22,4% (95% CI 20.6-25.2) and lowest in blood donors at 11.9% (95% CI 9.1-15.3). Seroprevalence among antenatal clinic attenders was significantly lower than that of females from the general population sample ($p=0.016$). Prevalence among female blood donors did not differ significantly from that of females from the general population sample ($p=0.06$). Blood donor males had a lower HIV-1 seroprevalence when compared to that from the general population males ($p=0.038$). The age group 25-34 years had the highest prevalence of HIV-1 infection in all the three populations indicating that this group is at the highest risk of HIV infection and that the three populations show a similar trend of age specific prevalence. From these findings, it is noted that female blood donors as a sentinel population represent more closely estimates of HIV-1 seroprevalence of females in the general population than antenatal clinic attenders or male blood donors. Further studies are proposed in different settings in order to come up with guidelines on the methodology of using sentinel surveillance populations in monitoring HIV-1 infection.

This comparative study has analysed data from three population categories and has shown that from the overall and the age adjusted sex-specific prevalence estimates, the prevalence among female blood donors closely represents that of the females of the general population. However, the prevalence among antenatal attenders and that among male blood donors seems to underestimate that of the general population, females and males respectively.

4

Interleukin 2 (immune status stimulant) trial shows promising results – presents a useful complement to anti-viral therapy.

Source: Kovacs JA, Vogel S, Albert JM et al. Controlled trial of interleukin-2 infusions in patients infected with the HIV virus. New Eng J Med 1996; 335(18) 1350-1356

Sixty HIV- infected patients with base-line CD4 counts above 200 cells per cubic millimeter were randomly assigned to receive either interleukin-2 plus antiretroviral therapy (31 patients, 1 of whom was lost to follow-up) or antiretroviral therapy alone (29 patients).

Interleukin-2 was administered every two months for six cycles of five days each, starting at a dosage of 18 million IU per day. Safety and immunologic and virologic measures were monitored monthly until four months after the last treatment cycle. The study showed that intermittent interleukin-2 therapy can lead to substantial and sustained increases in the number and percentage of CD4 cells in HIV-infected patients with base-line CD4 counts of more than 200 cells per cubic millimeter. One year after the beginning of interleukin-2 therapy, the mean CD4 count in the interleukin-2 group was approximately double the base-line value. This increase has been sustained for more than two years by the continued administration of interleukin-2. In five patients, CD4 counts remained above 1000 cells per cubic millimeter for at least 18 months after interleukin-2 was discontinued. To date, no combination of antiretroviral agents has been shown to be capable of inducing increases in CD4 counts of this magnitude.

A crucial observation in this study is that the administration of interleukin-2 did not lead to long-term increases in the plasma viral load. Thus, intermittent interleukin-2 therapy can have a substantial impact on the chief immunologic abnormality associated with HIV infection, the loss of CD4 cells, without leading to an overall increase in the level of HIV. In the control group, the viral load at study entry was predictive of the net change in the CD4 count, a finding that highlights the importance of the plasma viral load as a predictor of future immune status.

The toxicity of interleukin-2 therapy in this study was substantially lower than that reported in an earlier study, in which a dose of 18 million IU per day was given for a longer portion of the study.

At the mean dose of approximately 8 million IU per day in the latter part of the present study, few dose reductions were necessary, and substantial immunologic effects were nonetheless seen.

The availability of potent HIV-protease inhibitors has raised the hope that sustained suppression of viral replication can be achieved with combination antiretroviral therapy.

Maximal suppression of HIV by such regimens may lead to improved CD4 responses to interleukin-2 therapy. Preliminary experience with intermittent interleukin-2 plus indinavir, a recently approved protease inhibitor, suggests that responses to interleukin-2 are enhanced when there is profound suppression of viral replication. Complementing antiretroviral therapy with interleukin-2 is an attractive approach. Since interleukin-2 targets the immune system rather than the virus, alterations in the viral genome should not lead to resistance to the effects of interleukin-2 on CD4 cells. Indeed, some patients have continued to respond to interleukin-2 therapy for more than 50 months (unpublished data).

Although interleukin-2 can have a profound and sustained effect on CD4 counts in HIV-infected patients with base-line CD4 counts above 200 cells per cubic millimeter, the long-term clinical benefits of this increase remain to be established.

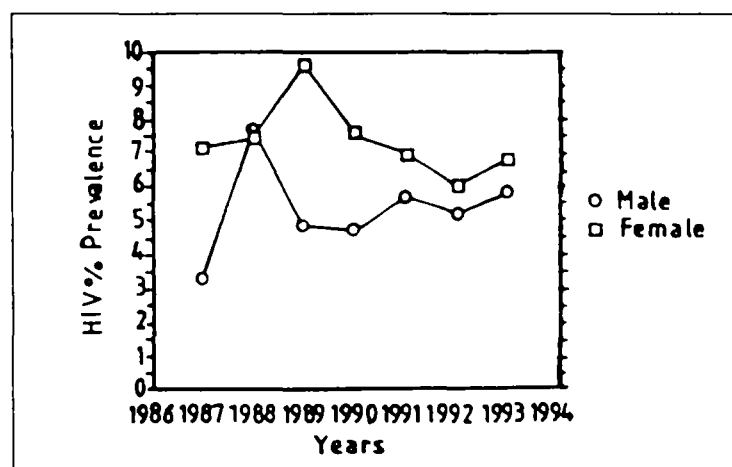
5

Tanzania achieves adequate screening of blood donors to avert HIV-transmission

Source: Lyamula EF, Magesa PN and Mhalu, FS. *Problems and Solutions associated with transmission of HIV via donated blood in Tanzania. Afr. J. Health Sci.* 1996; 3(1) 6-10.

The data on blood donor serosurveys show that a significant proportion of donated units carry the risk of spreading HIV. It has been estimated that in Tanzania, before the introduction of blood donor screening facilities, up to 3000 people might have been transfused with HIV-infected blood. When compared with the total pool of HIV-infected adults in the general population, the proportion infected via blood transfusion is estimated to be less than 10%. Blood transfusion, therefore, plays a small role in HIV transmission. However, this efficient iatrogenic mode of transmission is preventable.

Figure 1: Trend of HIV prevalence among Tanzanian blood donors from 1987-1993



To date, not all countries in Africa are doing routine screening. A survey of blood banking practices among 53 African nations in 1993 revealed that among 33 respondents, 8(24%) reported that they do not screen for HIV-1 for various reasons, including location of their countries in presumed low HIV-1 prevalence regions, and absence of legal liability for knowingly transmitting HIV by blood donation. This means that HIV-infected blood continues to be transfused in some areas of Africa.

Testing blood for HIV antibodies is understood to be taking place in all 181 hospitals in Tanzania since 1989, but not all of them send regular reports to the NACP, mainly due to poor communication. The introduction of mandatory HIV antibody screening has led to a fall in the number of voluntary blood donors in some areas in Tanzania because many prospective donors are hesitant to allow HIV screening of their blood despite the assurance given to donors that HIV antibody screening is done confidentially and anonymously. Records in the national referral hospital blood bank show that while on average there used to be 11,000 donors in a year before 1987, this figure has dropped to 7,500 and 6,400 in 1992 and 1993 respectively.

The cost of HIV antibody test reagents obtained through the WHO-Global Programme on AIDS (WHO)-GPA is less than 10% of the total cost of collecting 500 ml of blood (US\$10) especially when bulk-purchasing is done. Most countries should therefore be able to afford screening donor blood for HIV, provided this aspect is given priority in the planning of health care delivery.

Regular appraisal of the quality of HIV antibody screening is very important. It has been shown in Zambia that without frequent retraining, staff in peripheral hospitals may not be able to perform routine blood transfusion procedures safely. Participation in local and international quality control programmes should be encouraged in order to ensure that test techniques satisfy international standards. In Tanzania, the national HIV reference laboratory in Dar es Salaam has been participating in a WHO/GPA external quality assessment for HIV testing since 1988, and has been doing very well. Introduction of automated

Medical

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Tanzania achieves adequate screening of blood donors to avert HIV-transmission

Continued

test systems, especially in urban areas where there is a rising demand for testing, is one way of increasing productivity of the few skilled staff available in most of the tropical countries in Africa.

In Tanzania, an ELISA robot purchased through support from a friendly donor country will soon be installed in the national reference laboratory, to be used for testing of donor blood, patient samples and for research specimens. The blood bank in Uganda has had a longer experience with use of an automated system which is essential where extensive voluntary testing and counselling is in place.

The decision to communicate HIV test results to blood donors will depend on the laid down guidelines in a national transfusion policy, and made only after repeated and confirmed test results and thorough counselling. Confidentiality must always prevail in such circumstances. One has to be aware of the possibility of people volunteering to donate for the sake of wanting to know their serostatus. This should be discouraged and provision should be made for people who wish to be HIV tested to have such services at their disposal outside the blood transfusion system.

At the moment, it is not the practice to inform blood donors of their serostatus in Tanzania using the blood transfusion services.

Education

6

Integrate HIV prevention and promotion of sexual health into Development Programmes

Source: d'Cruz-Grote D. Prevention of HIV infection in developing countries. Lancet 1996; 348: 1071-1074

*In this thought-provoking review published in the Lancet of HIV-prevention in developing countries, the author, D d' Cruz-Grote from Berlin stresses the need for **contextualised** preventive strategies for women, youth, single-gender migrant groups, and other **marginalised** segments of the population living under economic and social deprivation. Her strategy to reduce the vulnerability of these groups reflects much of the thinking from reproductive health groups such as the Planned Parenthood Association.*

Provision of sexual health education

All individuals should have access to correct, objective, and complete information not only on HIV/AIDS but also on sexual and reproductive health. Young people are achieving physical maturity earlier, continuing their education longer, and marrying later. Consequently, targeting abstinence as the primary goal of HIV prevention is unrealistic, as is implementing HIV/STD prevention in schools with no mention of sex. Recent studies show that comprehensive sexual health education, when implemented before adolescents become sexually active, is effective in encouraging young people to delay sexual activity and to practise safer sex when they are sexually active.

Women's groups repeatedly emphasise the need for women to be informed about their reproductive system if they are to protect themselves from sexually transmitted infection. Participatory community- organising approaches and collective action by women, as used in the Calabar Project in Nigeria, have proved effective not only in encouraging women to voice their anxieties, problems, and needs but also for developing strategies and messages that are appropriate and acceptable. Focus on women alone is not sufficient. Community-organising approaches also offer potential for addressing sexual health concerns of men such as long-distance lorry drivers, members of armed forces, and men involved in the sex industry. Likewise, youth organisations and clubs, which already exist in some communities, have proved useful in providing social support for young girls and in providing space for both girls and boys to

Integrate HIV prevention and promotion of sexual health into Development Programmes

Continued

discuss their anxieties, become conscious of gender issues, and articulate their needs for prevention.

Well-designed sexual health information programmes are also necessary to counter underlying prejudices that lead to stigmatisation and discrimination of people living with AIDS/HIV and for advocacy to convince decision-makers to make HIV/AIDS a priority issue.

Provision of relevant services

Unless STD service provision is reoriented to meet the long-term sexual needs of men and women, prevention of HIV/AIDS will have little chance of success. AIDS has shown that solution to health problems cannot be found by setting up narrow neatly defined programmes such as family planning, HIV prevention, and STD control. Integrated sexual health services should be designed to provide informed contraceptive choices, counselling services, good follow-up care, services for safe abortion, and facilities for the diagnosis and treatment of STDs and reproductive tract infections not only for adults but also for youths. To achieve these goals there must be improvements in health infrastructure and additional supplies of drugs and condoms. Staff should be trained to provide ongoing preventive counselling for those who are HIV negative, and medical assistance, social support, and advice on prevention for people living with AIDS and their families.

Studies on sociocultural and programmatic barriers to seeking health care and decision-making are necessary to make services more accessible and responsive to users' needs. Above all, strong political commitment is imperative to ensure ready access to information, health care, and condom promotion and distribution if interventions are to be successful and sustained.

Creation of supportive social and economic environments

Information about HIV, availability of condoms, and provision of STD services cannot by themselves lead to improvements in sexual health and HIV prevention if prevailing social, economic, and cultural constraints hinder those most in need of these services from using them. These constraints are especially important when one considers women's low economic and social status. One example of the efforts being made to improve women's socioeconomic status with an existing AIDS programme comes from Zambia. Zambian women fish traders are frequently forced to provide sex in addition to cash from fishermen. As a way to protect these women from this form of sexual exploitation, the National AIDS Programme, in collaboration with a women's group and the Zambian Cooperative Federation, have formed an economic cooperative that conducts collective bargaining for fish as well as giving credit to women fish traders. Another important initiative has been implemented in Nigeria. This project, which promotes health, including HIV/STD prevention, through a functional literacy programme and intersectoral collaboration, has improved the health of the women and their children and has strengthened their capacity for income-generation through the provision of loans. Experience gained in empowering women to exercise control over their lives in other areas- eg, family planning- can have implications for HIV/AIDS prevention.

In Bangladesh, through the credit programme of the Grameen Bank, rural women have become economically empowered to exercise greater control over their sexual behaviour as indicated by their increased rates of contraceptive use. Although these examples focus on women, HIV prevention for both men and women will be more effective through such economic enabling approaches.

However, these are only short-term solutions. There will be little progress in improving the economic status of women and in promoting gender equity unless policy revisions are under-

6

Integrate HIV prevention and promotion of sexual health into Development Programmes

Continued

taken to enable access to education for all, and in particular access to education, skills training, and employment opportunities for women. For both men and women, the evidence emphasises the singular importance of education as a means of gaining access to work, earning money, and of improving family welfare and health status and hence of enhancing their capacity to protect themselves from HIV/STDs.

South African Research, News and Views

This section of AIDS Scan is intended to cover local developments, including papers presented at business, medical and other specialist meetings. It will hopefully also provoke debate on views expressed. Readers are welcome to send their contributions to the Research Editor, AIDS Scan, P O Box 1085, Durbanville 7550.

7

Total Lymphocyte counts equal CD4 counts as predictors of HIV-disease progression

Source: Post FA, Wood R and Maartens G (Dept of Medicine, University of Cape Town. CD4 and total lymphocyte counts as predictors of HIV disease progression. O J Med 1996; 89: 505-508.

CD4+ T-lymphocyte (CD4) counts are a standard laboratory marker of disease progression in HIV infection, but expense precludes their use in large parts of the world. Total lymphocyte counts (TLC), in contrast, are widely available. This study compared CD4 and TLC counts as predictors of developing AIDS or death in 831 HIV-positive out patients (582 males and 249 females with both homosexual (males, n=316) and heterosexual (n=515) transmission patterns. The first CD4 count <200/ul and first TLC<1250/ul predicted similar (p=0.52) survival, irrespective of clinical stage. For each clinical stage, a significant difference in progression to AIDS and mortality was predicted by TLC above or below 1250/ul (p<0.03). Survival and progression to AIDS occurred at similar rates in patients with a TLC<1250/ul or a CD4 count <200/ul (p>0.1), and patients with a TLC >1250/ul or a CD4 count >200/ul (p>0.5). A TLC <1250/ul preceded the development of Pneumocystic carinii pneumonia or cerebral toxoplasmosis in 76% of patients. In this longitudinal study, TLC and CD4 counts were equal predictors of disease progression. A TLC <1250/ul could be considered an indication for commencing cotrimoxazole prophylaxis.

8

Insights of HIV infection presentation in the Western Cape

Source: Wood R, O'Keefe EA and Maartens G. The Changing pattern of transmission and clinical presentation of HIV infection in the Western Cape region of South Africa (1984 - 1995). South Afr J Epid Infect 1996; Vol II (4) 96-98.

The clinical spectrum of HIV infection in South Africa has not been well documented. This study, at a major HIV referral clinic in Cape Town, describes the changes in clinical presentation of a large adult urban HIV population (n=1 288) over an 11-year period. From 1984-1991, data were obtained by retrospective chart review and from 1992-1995 were collected prospectively

The attendance of large numbers of patients from each of the three main population groups allows a unique opportunity to compare disease frequency in these groups. During the study period, the change in predominant HIV transmission pattern from homosexual to heterosexual resulted in significant changes in patient demography and HIV presentation. The relative incidence of Pneumocystic carinii pneumonia (PCP) declined (p<0.01), while pulmonary and extrapulmonary tuberculosis increased (p<0.01). Wasting syndrome and HIV encephalopathy were noted to occur less frequently in black patients (p<0.05 and p<0.01, respectively). The presentation of AIDS in Cape Town differed significantly in each of the main population groups and from both Western and African reported series. Kaposi's sarcoma, PCP, oesophageal candidiasis and herpes simplex infections were diagnosed more frequently than previously described in South Africa reports. A knowledge of the local presentation of HIV infection is necessary for the development of appropriate prophylaxis and treatment regimens.

9

Aids Programmes at the workplace: A score sheet for assessing the quality of services. (Cape Town Study).

Source: London L, AIDS programmes at the workplace: A scoresheet for assessing the quality of services. Occup. Med. Vol. 1996; 46(3):216-220.

Little data is available on the extent or comprehensiveness of AIDS prevention activities at South African workplaces. A cross-sectional postal survey was performed of all members of the local occupational health nursing association in the area of greater Cape Town in 1994 to assess the quality of such programmes. Use was made of an index to score services based on their comprehensiveness, using criteria based on recommendations previously identified in the South African literature on AIDS control. The presence of a workplace policy on AIDS was the strongest predictor of high quality AIDS prevention activities. Substantial numbers of companies reported sending staff for HIV-related training, and the presence of training was non-significantly associated with higher quality services with regard to HIV prevention. Treatment of sexually-transmitted diseases (STD's) was reported in slightly over half of the sample. Given the central importance of STD

treatment for the prevention and control of AIDS, improvements in STD management at the workplace may significantly assist attempts at the public health control of the HIV epidemic. In addition, worker involvement in the planning, management and implementation of AIDS prevention activities is also limited at present and needs attention. Recommendations for the use of a scoring system to promote evaluation of AIDS programmes in the workplace are made.

Table 1: Scoresheet for quality of HIV programmes at the workplace

Score Staff has undergone training	1
Treat STDs at the workplace	1
STD counselling	1
Evaluation – either of	
(a) Intention or recognition of need	1
(b) Explicit method for evaluation	2
Counsel family members HIV	1
Appropriate referral for testing	1
Appropriate referral for counselling	1
Appropriate referral for treatment	1
Preventive or promotive activity	
outside workplace	1
Maximum	10

10

Workplace clinics in KwaZulu-Natal- potential to prevent HIV-transmission

Source: Collvin M, Abdool Karim Q and Hoosen A. *Management of sexually transmitted diseases in workplace-based clinics in KwaZulu-Natal – implications for HIV prevention. SAMJ 87(2): 245-249 (South African Journal of Public Health).*

This study was undertaken to determine the adequacy and extent of sexually transmitted disease (STD) management in workplace-based clinics in KwaZulu-Natal and to explore their potential role in HIV prevention. The results showed that workplace-based clinics were widely utilised by blue-collar workers with an average of 10,4 visits per annum (SD = 5.9). Only 51% of clinics sampled provided STD services, with the remainder referring patients to the public health sector. Of those clinics providing treatment for STDs, only 4% of clinics were for STDs. Urethral discharges and genital ulcers were treated according to recommended guidelines in only 8% and 5% of clinics, respectively. Urethral discharges and genital ulcers were partially treated in 69% and 82% of clinics, respectively. Condoms were distributed in 96% of the workplaces – 47% provided them on request and the remainder made them freely available in public places. Partner notification was encouraged in 81% of the clinics, with 38% also providing treatment services for partners.

Conclusions: Approximately 250 000 blue-collar workers in KwaZulu-Natal can be reached through workplace-based clinics, verifying their potential to play a major role in STD management and HIV prevention. Their current role is fairly limited and is influenced by the lack of provision of STD services, poor utilisation of services where they exist and the inappropriate and inadequate treatment of STDs.

The key role-players have indicated a keenness to become more involved and have committed

themselves to the implementation of recommendations that include training, drug availability, budgetary commitment and the establishment of partnerships between worker representatives and top management.

11

Virodene explained – extracts from Prof Folb's letter to the SAMJ

Source: Folb PI, van Gelder A and Swan GE. *Virodene-support misguided SAMJ, 1997:87(4):466.*

Virodene was reported by the investigators to the Medicines Control Council (MCC) to be dimethylformamide (DMF), an industrial solvent used in the plastics industry. It has no known medicinal value, although it has been tested as an anticancer agent in the past and dropped because of its toxicity and lack of efficacy. The work on Virodene in AIDS on which your editorial commented, is unpublished to date, although it has been widely promoted in the press and before ministers of State at a Cabinet meeting. The conduct and interpretation of the work were flawed, and it failed to meet minimum standards of scientific and ethical integrity. The investigators had been refused permission to proceed by the ethics committee of the institution at which they work (the University of Pretoria) on the pertinent grounds that there were serious unresolved safety issues and violations of the international ethical codes governing human experimentation. The research was pursued, nonetheless, in patients with AIDS and in others who were HIV-positive.

The South African Medicines Control Council (the national drug regulatory authority) met three times with the Virodene investigators after they had announced to the public and to the Cabinet that they had discovered "a major breakthrough in the fight against AIDS". The investigators had been asked to present their findings to the MCC, which has a statutory obligation to review and approve clinical trials involving unregistered substances. After comprehensive review of the work and clinical results, the investigators and the MCC agreed that the work should be discontinued and all patients removed from Virodene, until and provided a study could be designed that might offer patients some prospect of success. The MCC is awaiting the investigators' new proposal, and has promised them full support and co-operation in pursuing their work if there is any substance to it.

The MCC's problems with Virodene were comprehensive:

- (i) there is no basis, biological or theoretical, for using DMF as an anti-HIV agent;
- (ii) the dose they administered was miscalculated by the investigators, and in doing so they exceeded the known safety limits of DMF for humans by a considerable factor (between one and two log orders);
- (iii) the drug delivery system they used was crude and uncontrolled;
- (iv) they believed that by administering DMF transcutaneously the toxicological effects of the chemical are minimised, although there is no evidence or biological reasoning that supports that contention;
- (v) there is no way of knowing what the toxic effect of repeated dosing to patients with HIV infec-

tion and AIDS might be, although there is every reason to believe from the reported human and experimental experience that they would be serious and possibly fatal;

- (vi) the trial design precluded any chance of a meaningful result;
- (vii) in reporting their results to the public, and subsequently to the Medicines Control Council, the investigators omitted to give account of the results for 5 of the 13 patients they had treated;
- (viii) they did not understand the results of the 8 cases they did report;
- (ix) the laboratory results were indistinguishable from an artefactual effect of DMF on the polymerase chain reaction for viral DNA, and the results of the CD4 counts were inconsistent and not supportive of the claims they made; and
- (x) the clinical responses could not be distinguished from a placebo effect and from the effect of concomitant treatment.

Most troubling of all, the patients who served as experimental subjects had no way of knowing from the information provided them in the documents, including the informed consent form, that they were being exposed to a chemical that predictably causes acute hepatic necrosis in experimental animals and in humans, especially with repeat exposure, and that it is also a teratogen and probable carcinogen. In the investigational plan there was no provision for ruling out pregnancy before administering DMF to women.

The work-up of Virodene to date has therefore been based on an unscientific approach conducted by investigators lacking the necessary expertise in the fields of AIDS and HIV disease, virology, new drug development, toxicology, clinical trials design and evaluation of their patients. The patients were, as a result, subjected to serious risks without prospect of meaningful results being obtained. The benefits and the safety profile of the drug were misrepresented to patients and to the public.

The patients and the public were hoping, understandably, that there might be truth in the claim that there had been a breakthrough in the treatment of AIDS. They were misled.

12

New services from the South African Insurance Industry. New guide to Financial planning for those with a shortened Life expectancy.

Old Mutual has produced a very useful advice book entitled "Positive Planning Handbook – Financial Advice for People with a Shortened Life Expectancy" in response to the traumatic experience of discovering that there is less time to plan for the individual and his/her dependents needs. Supported by a helpline manned by trained staff this could be of great value to HIV-positive and other patients – call Omucare Helpline – 021-5048181 during office hours.

13

MSD launches Protease Inhibitor (crixivan) in South Africa.

Source: GP Bulletin Jan 1997: 20

A new AIDS medication called CRIVAN* (Indinavir) was launched by MSD at the beginning of November 1996. Indinavir is one of the most potent and highly specific compounds in a new class of AIDS drugs called protease inhibitors. The mode of action of Indinavir differs from earlier AIDS therapies in that it blocks HIV replication at a different stage in the life cycle of the virus. The promising effects of Indinavir on virus level reduction and immune function recovery, combined with the generally good tolerability seen in ongoing clinical trials, could change the standards of AIDS therapy worldwide. Indinavir has been registered both for use as monotherapy or in combination with other antiretroviral products. In interim analysis of data, Indinavir in triple combination with AZT and 3TC provided dramatic suspension of viral load. HIV RNA levels were reduced to below the limit of detection in 80 to 90 percent of patients, a result which has been sustained for 48 weeks. Immune recovery was also substantial as evidenced by a CD4+ cell count increase of 227 cells/mm² over baseline levels at 44 weeks of therapy. The triple treatment was well tolerated with only one discontinuation after 60 weeks of therapy.

**Summary Report on Discussion with Dr. Olive Shisana
During World Health Assembly - May 1977**

Participants:

Dr. Olive Shisana, Director General, Department of Health, S.A.
Ms. Tilly Gorenwild, S.A.
Dr. Jo Ivey Boufford, Acting Assistant Secretary of Health, USA
Dr. Helene Gayle, Director, National Center for HIV, Tuberculosis
and STDs, Centers for Disease Control and Prevention
Ms. Linda Vogel, Director, Office of International and Refugee
Health, USA

Context of Discussion:

The discussion was against the background of the February 1977 meeting of the Informal Health Working of the S&T Committee of the Gore-Mbeki Commission; the letter sent to Dr. Shisana in April 1977 summarizing progress from the U.S. perspective; and the "notes on the Gore-Mbeki Bi-National Commission" prepared by South Africa on May 2, 1977, and which was used as a reference document during the discussion (copy attached).

Introductory Comments:

- o Dr. Shisana advised that she had sent a copy of Dr. Boufford's April letter to all personnel in her Department who are involved in cooperation under the Gore-Mbeki umbrella. She said she is waiting for Dr. Salim Karim to send guidelines. She will be in the U.S. later and will consider whether she can visit Washington, D.C.
- o It was agreed that the discussion that followed would be focused on the various priority areas that have been identified to date.

Emerging and Re-emerging Infectious Diseases (Eries):

W. Henderson
Follow-up
with Dr.
Karim

Dr. Shisana indicated that she is awaiting guidance from Dr. Salim Karim, who had been their lead person for the two Eries workshops, which had been held in April in Cape Town and Pretoria. These workshops had a research orientation and involved several leading U.S. investigators from the United States.

Page 2

Dr Cameron
to advise

Dr. Boufford reiterated that the U.S. needs advice from South Africa regarding next steps regarding the proposed network for surveillance of emerging and re-emerging infectious diseases. The action is on the South Africa side at this time.

Dr Cameron
to give latest
progress

Plans have been made tentatively for a series on Eries surveillance in South Africa. South Africa envisions that the workshop will be held in August 1997. There appears to be an understanding between the two sides that the workshop would target provincial and regional disease surveillance managers, with an initial focus, programmatically on reporting of HIV/AIDS, TB and other "notifiable" notifiable diseases.

Dr Cameron
to give
latest progress
Dr Markubalo
to prepare
progress report

As indicated in the attached summary, issues that need to be addressed by South Africa include: (a) appointment of a head for the disease surveillance unit in the Health System and Research Directorate; (b) completion of appointment of disease surveillance managers in the provincial health departments; (c) assessment of how existing surveillance systems relate to the National Information System (NHIS) and delineation of steps to bring these systems into a formal relationship with the NHIS; and, (d) conduct of in-service basic epidemiology training and initiation of other courses (e.g. data management for provincial, regional and district personnel. Dr. Boufford commented that she liked the idea of training of provincial and regional disease coordinators.

State in
our revised
report

Dr. Shisana said that South Africa would like to request technical assistance under USAID money and asked for advice on leveraging funds from USAID. (Comment: In a June 30 meeting between HHS senior staff and the new USAID Mission Director for South Africa--Mr. Aron Williams--HHS officials (LVogel and RMoore) identified Eries and HIV/AIDS as the highest priorities in health, from the US Department of Health and Human Service perspective for USAID funding in South Africa.) End Comment.

- With respect to the disease surveillance system, Dr. Shisana advised that South Africa wishes to develop the most comprehensive system possible, which would be integrated into a larger comprehensive health information system.

HIV/AIDS:

- Dr. Shisana said that a detailed epidemiology study in the North West Province to identify risk factors for HIV/AIDS is needed in order to identify risk factors. She noted that tourism in the casino area is raising concerns. She said that Sun City is located in that region.

- telemedicine stopped.*
- o Reference was made to Dr. Kotu's visit to the U.S. and the interest he had expressed in the Visible Man project and his desire to establish a mirror site in South Africa, with the involvement of the MRC.
 - o Dr. Boufford reiterated that the U.S. needs to hear from South Africa on what steps might be taken next in this area of cooperation.

OCCUPATIONAL HEALTH:

- o It was noted that the report resulting from the U.S. expert team's working with South African colleagues during February and March should soon be available.
- o It was agreed that the report should be shared between the two governments as a basis for determining next steps.

HUMAN RESOURCES DEVELOPMENT:

- o Dr. Boufford said that the U.S. had a history of difficulty in its efforts to do health manpower planning. She said that the DHHS Agency for Health Care Policy and Research and the DHHS Health Resources and Services Administration were currently studying this issue. She said that the U.K. might also be helpful in this area. She also mentioned Dr. Edward Salzberg, New York State University who prepared a health manpower plan for the New York State. She suggested that Dr. Shisana could either come a few days before the health working group meeting or stay after the Commission meeting for technical discussions or visits on issues of her choice. She said that, since she would be departing from Government service in the near future to take up a position with New York University, Linda Vogel and her staff would make appropriate arrangements in the U.S., based on Dr. Shisana's expressed interests.

XXXXXXXXXX

Attachment

HEALTH PROMOTING SCHOOLS

Situation in South Africa

Areas of Cooperation

- technical assistance to NGOs to improve school HIV prevention programmes.
- extended to include:
 - * the sharing of information on designing and implementing school health programmes;
 - * implementing surveillance systems to identify and monitor critical youth risk behaviours; and
 - * advice on school health policies

- involving the whole community
- addressing health risk behaviours
- provision of behaviour specific knowledge and skills.

* Health Promoting Schools Committee

* curriculum,

* make suggestions for the inclusion of health,

* set up a pilot network of schools to be involved in the

- * Much of the violence is related to substance abuse.
- * 2 - 3 million of children alive
- die of smoking diseases.

The goal: to improve the health status through:

- developing and implementing school policies;
- improve the physical and social environments of schools;
- improving children's capacity to become and stay healthy;

- * Behaviour persists into adulthood.

Some health indicators:

- * 9.5% of pregnant teenagers tested HIV positive.
- * Fatal injury from violence - 87.5 per 100 000 per annum.
- * burden of violence borne by young people and women.

30474W 237970 ZAPIRO




**ZAPIRO'S
NIB**

IMPROVED COLLABORATION IN ERID : USA - SOUTH AFRICA

1. Continued support for courses on surveillance and outbreak response.
2. On the job training for provincial outbreak response teams.
3. Strengthen links for laboratory and disease surveillance of ERID
4. Strengthen links for TB control.
 - * CDC Public Health Advisor.
 - * Capacity building at District level.
 - * MDR TB.
5. Continued collaborative research initiatives.



DEPARTMENT OF HEALTH AND HUMAN SERVICES
Office of the Secretary

Office of Public Health and Science
Office of International and Refugee Health

JUN 12 1997

Memorandum

To: U.S. Health Working Group - Topic Leads, Designated Staff
and International Agency Representatives

From: Director, Office of International and Refugee Health

Subject: Action Items for Gore-Mbeki Working Group Activities
Request for Input - ACTION

The next Gore-Mbeki Binational Commission Meeting is scheduled for July 30, the S&T Committee Meeting on July 29, and the Health Working Group Meeting on July 28, 1997 in Washington, DC.

You and/or your staff are requested to review the attached draft list of action items for your respective priority area, sub-area, or area of concern and interest. To discuss these issues in some detail, I am convening a meeting on Tuesday June 17, 1997 in the Parklawn Building, Room 17-05 (N-vision available) from 2 to 4 p.m.

Attached also are the jointly agreed upon action items (recommendations) that came out of the February 13, 1997 Health Working Group meeting in Cape Town. Please contact Amal Thomas 301-443-1774 to confirm your participation and/or arrange for connection via N-vision.

Sincerely,

A handwritten signature in cursive script, reading "Linda A. Vogel", is positioned above the printed name.

Linda A. Vogel

Attachments

cc: Principals
Agency International Reps

Health Working Group Activities - July 28, 1997 Meeting Agenda

Background: Although not a formal part of the S&T Committee, the Health Working Group (HHS and the Ministry of Health, South Africa), provides a valuable forum for discussion of health science and related issues, which are of mutual interest to both countries.

Health Areas of Interest Identified Under the S&T Committee

- (1) Emerging and Re-emerging Infectious Diseases (ERIDS) Surveillance Infrastructure - Jim LeDuc and David Allen (CDC), Karl Western (NIH)
- (2) Biomedical Research (Scientific Exchanges) - Linda Staheli (NIH)
- (3) Telehealth (Telemedicine) - Dena Puskin (HRSA), Mike Malison (CDC), Elliot Segal (NIH)

Other Areas of Interest Identified by the Ministry of Health During Cape Town Health Working Group Discussion, February 13, 1997

- (1) Substance Abuse Prevention Control - Pat Needle (NIH)
- (2) Occupational Health and Safety (Joint Statement signed) - Ted Meinhardt (CDC)
- (3) Mental Health - Ken Lutterman (NIH)
- (4) Health Promotion
 - School Based Programs - Lloyd Kolbe (CDC)
 - HIV/AIDS - Helene Gayle (CDC)
 - Alternative medicine - Nancy Hazleton (NIH)
- (5) Violence is a Public Health Problem (Joint Statement signed) - Rodney Hammond (CDC)
- (6) Human Resources Development - Roscoe Moore (OIRH), AHCPR and HRSA involvement anticipated.

The results of the Health Working Group meeting on July 28 will be reported on at the S&T Committee Meeting on July 29. If there are any documents to be signed (Joint Statements), Secretary Shalala will sign with the South African Minister of Health on July 30, the day of summation meeting between Vice President Gore and Deputy President Mbeki. Joint statements on mental health, and fetal alcohol syndrome are anticipated. The NIH, National Institute on Aging would like to explore adding chronic or non-communicable diseases associated with aging as a topic for discussion.

Health Working Group - Review of Discussion and Action Items

Science and Technology Committee
US South Africa Binational Commission
13 February 1997

PART I:

1. EMERGING AND REEMERGING INFECTIOUS DISEASES (ERID):

RECOMMENDATIONS:

- 1.1 Strengthen collaboration on increasing capacity in ERID surveillance and outbreak response, e.g. HIV/AIDS, TB, Ebola.
- 1.2 Investigate possibility for increased TB Lab assistance.
- 1.3 Request CDC Public Health Advisor to help with the TB information system
- 1.4 Conduct visits to see DOTS therapy in the United States and at a CDC research site in Botswana.
- 1.5 Support the planned workshop on biomedical research related to ERID planned to be held in conjunction with the African Health Sciences Congress in April. The objective of this meeting is to facilitate collaboration between South African and US researchers in ERID and to assist South African researchers in applying for competitive funding from NIH.
- 1.6 Plan and conduct workshop on surveillance of ERID as soon as possible.

2. BIOMEDICAL RESEARCH:

RECOMMENDATIONS:

- 2.1 Support the current planned workshop on biomedical research related to ERID. The objective of the meeting is to facilitate collaboration between South African researchers in applying for competitive funding.
- 2.2 Explore resource issue for support of ongoing research.

3. TELEMEDICINE

RECOMMENDATIONS:

- 3.1 Identify a group of South Africans to visit the US National Library of Medicine.
- 3.2 Identify a group of South Africans to visit rural telehealth projects in US.
- 3.3 Identify a group of South Africans to attend the annual CDC conference on distance learning in US.

PART II.

USAID –Equity Project

RECOMMENDATIONS:

- 1.1 use “entrance conference” of contract with DOH leadership to explore how some of BNC initiatives that complement the themes of the Equity Project could be advanced.
- 1.2 Conduct discussions on the nature and scope of the USAID HIV/AIDS funding with the Director General and Ministry of Health.

PART III.

1. Violence and Injury Control

RECOMMENDATIONS:

- 1.1 Encourage collaboration between South Africa and US on surveillance of intentional and unintentional injuries and prevention strategies on violence.
- 1.2 Encourage CDC support of the existing WHO center on violence at UNISA.
- 1.3 Encourage collaboration with NIH and CDC on addressing the issue of treatment and rehabilitation of violence victims.
- 1.4 Sign joint statement between the Minister of Health and the Secretary of Health and Human Services on collaboration on violence prevention and control and pursue initiatives outlined.

2.HEALTH PROMOTION:

RECOMMENDATIONS:

- 2.1 Provide technical assistance to South Africa in the development of school based health promotion programs including HIV prevention, tobacco avoidance and surveillance system on risk behaviors.
- 2.2 Examine the possibility of pilot projects for school based health programs conducted by USAID/HHS/WHO/World Bank.

3.SUBSTANCE ABUSE

RECOMMENDATIONS:

- 3.1 Continue fetal alcohol syndrome (FAS) research.
- 3.2 Investigate FAS substance abuse prevention and treatment programs conducted by the Indian Health Service and SAMSA
- 3.3 Explore the development of the recommendations of surveillance system

4.OCCUPATIONAL HEALTH:

RECOMMENDATIONS:

- 4.1 Sign memo of understanding between the Minister of health and the Secretary of HHS and proceed with work program.

5.MENTAL HEALTH

RECOMMENDATIONS:

- 5.1 Review the report made by previous US consultant and ways to implement recommendations.
- 5.2 Conduct a workshop in South Africa to develop and define areas of collaboration especially examples of good practice in community based programs with appropriate partners including WHO, and investigate resource opportunities.

6.HUMAN RESOURCE DEVELOPMENT

RECOMMENDATIONS:

- 6.1 Circulate the two documents on Human Resource Development Plan
- 6.2 Review these documents and recommend areas of potential assistance
- 6.3 Investigate mechanisms to recognize and reward life experience within a career ladder.

OTHER RECOMMENDATIONS:

Both the US and South Africa should conduct, share and maintain an inventory of current collaborations in health

Committee members will utilize existing mechanisms such as videoconferencing and electronic mail to maintain active communication and promote ongoing work between BNA meetings.

LETTER FROM THE PRESIDENT
Townsend Van Fleet, President, Board of Directors

It is indeed an honor and privilege to serve as your new President. Your generous support over the years has given the NYUMBANI children a new lease on life. For that, the children, Father D'Ag and the Board are eternally grateful to you and send their heartfelt thanks.

This past fundraising season was a great success, as Mary Lynn Qurnell and Jack Dugan, the co-chairs of the annual event, did a fantastic job in getting out a near capacity crowd and surpassing last year's total amount. Six board members are retiring this year. We owe each of them our thanks for all they have done over the years to support the NYUMBANI children. To each of you: George Dalferes, Marian Ord, Jack Dausman, Joe Novello, Maggie Petito and Father Bill George, we thank all of you from the bottom of our hearts. We welcome Father Richard Ryscavage, Rene Scopelliti, John and Patti Noel, Jeanine Turner, Charisse Glassman, and Susan Southwick as the newly elected board members.

In closing, I would like to convey the board's best wishes for the holiday season and 1999. We and the Nyumbani children are extremely grateful for your continued support. Please keep us in your thoughts and prayers.

Treasurer's Report

Joseph S. D'Agostino, Ph.D. (Outgoing Treasurer)

My first pleasant duty is to thank sincerely all those who supported the NYUMBANI Hospice/Orphanage this year. Again, your response has been most generous and our records show this. Our year-end Board report will show that our support checks to Nairobi to offset the expenses of the expanding NYUMBANI are at an all time high. We will also show a significant amount added to our endowment fund. (We are looking forward to that day when the endowment fund will be at a level to sustain normal expenses and our annual fundraising will not be quite as frantic.) As the children would say, "Asante Sana" ... "thank you very much"!

Secondly, I am happy to announce that, although all the returns are not yet complete, our Annual Benefit in DC attained a new record return of \$95,000. Our gratitude to those who attended, to those who sent in precious checks, and to those who organized this annual happy evening. I always liken it to a "Hall Filled with Love".

Finally, we will start the New Year 1999 with a new set of officers and the committee has asked Mr. Robert Burke of McLean, Virginia, to serve as your new Treasurer. He is a dynamo with lots of energy, creative new ideas and a long association with Angelo D'Agostino, SJ, MD, and his work in Kenya. I will continue as Bob Burke's assistant in handling the day to day details on the Board's computer files. Your financial team remains at your service.

Please send donations to: NYUMBANI Orphanage c/o 1920 L Street, NW, Suite 600, Washington, DC 20036, not to Father Angelo in Kenya, due to foreign bank charges and problems with theft at the central post office.

NYUMBANI Orphanage
COGRF Board of Directors

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Rev. Richard Ryscavage, S.J.
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Executive Director: Barbara Boggs

NYUMBANI Orphanage is a project of The Children of God Relief Fund, Inc., a 501(c)(3) tax-exempt organization registered in the State of New York as a non-profit corporation. Employer Identification Number: 13-3615655. Contributions tax deductible to the extent allowed by law.

NYUMBANI Orphanage c/o Rev. William L. George, S.J., Georgetown University, 302 Healy Hall, Washington, D.C. 20057
(202) 955-1360

Internet Web Page Address: <http://www.nyumbani.com>

Facsimile/E-Mail Address for Father D'Agostino: 011-2542-718-711/NYUMBANI@AFRICAONLINE.CO.KE

NYUMBANI NEWS

Winter 1998

Dear Friends of Nyumbani,

With the passing of 1998, we begin the last year of this millennium. This fact alone moves us to reflecting on what has been, what is now and what is to come. What has been concerns the little lives of about 200 HIV+ children who have been given a happy, healthy larger length of days which they would otherwise not have known. Those who did leave us, all went peacefully in a loving ambience. What we have now is a little village of joy and peaceful teamwork devoted to the care of 60 children housed at NYUMBANI itself and 60 more in homes spread out in the community around Nairobi (The Lea Toto Community Care Program). For the future we see the growth of that outreach program growing to three or four times the present number - with the help of donors far and wide.

There are so many wonderful happenings that have occurred in the past year that it would require several pages to list them. Yet, a few need to be highlighted: The culmination of a very successful tour by the Washington "team" - George Dalferes, Fr. Bill George, Marion Ord, Jack Dausman, Dr. Joe Novello, and Maggie Petito - who raised the level of activity to new heights by their devotion and creativity. Then there was the success of the untiring U.K. team, i.e., the registration of NYUMBANI in U.K. Thanks to Chris Lowthian, Dick McMichael, "Bimbo" Machiavelli and Keith Norman to name a few. Another item of note is the fact that NYUMBANI was in nomination for the 1998 Conrad Hilton Humanitarian Award. We could have certainly used the \$1 million but recognize the great work of the winner: Medicin Sans Frontieres. As a consolation, however, our Sisters were awarded a \$10,000 grant from the Conrad Hilton Sisters Fund.

This brief note is meant to express the thanks of all the children and the staff in the most sincere manner possible to all the many people near and far who have allowed us to survive and grow by their donations large and small. I wish you could all see our little village and what your help has allowed us to build to keep these children just as healthy and happy as possible. In closing, the sad fact remains that the war on HIV/AIDS is still raging in Sub-Saharan Africa, but while we can't know the future, with your prayers and help we are sure to continue this unique and rewarding mission of mercy into the new millennium and hope for relief.

Happy Holidays, Merry Christmas, and Happy New Year.

Yours sincerely,

A. D'Agostino, S.J., M.D.

A. D'Agostino, S.J., M.D.

Founder & Medical Director

1998 Fundraising Event with Mark Russell and Kathleen Matthews Tops Last Year's Recordbreaking Total



Chris Lowthian, British Airways, describes some of the NYUMBANI fundraising efforts overseas.

"Angels come in all shapes, sizes and colors. Rarely do you hear the flutter of their wings. But, they can be recognized through the good works they do."

Jacquie Bellanti



Kathleen Matthews and Sandy Thurman at the podium.

This year's annual fund-raising dinner, "An Evening With Mark Russell," was the most successful ever, topping last year's recordbreaking total. Kathleen Matthews continued her long-standing commitment to NYUMBANI, by acting as the evening's presenter. Guests gathered at the Columbus Club in Union Station, to hear Mark and Kathleen and show their support for NYUMBANI. As always, Mark entertained everyone with his hysterical political satires set to music. The crowd was lively and audience participation was at an all time high. This year's event was honored by the attendance of special guest, White House National AIDS Policy Director, Sandy Thurman. Ms. Thurman gave a moving endorsement of what she observed at NYUMBANI this past February. Father Angelo presented several guests with gifts from Africa for their continued dedication to NYUMBANI. After the event, guests gathered to buy "Angel Food," the NYUMBANI cookbook, and greeting cards designed by volunteer, Joceyln Malik. The event was a resounding success, bringing together all those dedicated to the work of Father Angelo and the children of NYUMBANI.



Mark Russell entertaining the crowd.



Father D'Ag visits with supporters.



NYUMBANI event participants: left to right, M.Dausman, M.Petito, J.Dausman, M.Qurnell, J. Bryant, G.Dalferes, Fr.D'Agostino, Fr.George, K.Matthews, J.Bellanti, M.Russell, and J.D'Agostino.

News from www.nyumbani.com

November was a busy month for our web site at www.nyumbani.com. Our server recorded a total of 713 hits during the month, with an average of 23 hits per day.

The United States and the United Kingdom top the list of countries who frequent the website. Virginia leads in the state list of most frequent hits, followed by California and Washington.

NYUMBANI'S web site has become a useful tool for generating interest among humanitarians surfing the web. We have received many requests for information from people who have visited our website. Some of this interest may result in volunteer situations at NYUMBANI.

Next time you search the internet, show your support and visit NYUMBANI, *virtually!*

Lea Toto Foster Program

In the Spring of this year, NYUMBANI began a new level of outreach for HIV+ children; the Lea Toto Foster Care program. This program sends social workers to hospitals to identify abandoned HIV+ orphans. The social worker then searches for the abandoned children's relatives. Once these relatives are found, the social worker sets out to convince them of the rewards of helping their sick relative.

The program has been featured in several periodicals and has initiated a local awareness campaign to mark NYUMBANI'S 6th Anniversary. Dubbed, "Red Alert...Families in Need", friends of NYUMBANI have been contacted throughout Nairobi to organize fundraising activities for the Lea Toto program.

"It is about a little piece of the world where goodness and kindness and love are strong and sure, and giving is without a thought of return."

"Never doubt that a small group of thoughtful, committed people can change the world. Indeed it is the only thing that ever has."

Cheri and Tony De La Rosa

Video Footage from NYUMBANI

You may recall the names of Tony & Cheri De La Rosa from California, they were introduced by Angelo at the October 4th event. This year they spent their vacation at NYUMBANI, volunteering and putting together a video of the orphanage.

The De La Rosa's used a digital camera to photograph the land, children, staff and the growing needs of NYUMBANI. They put together a wonderful video encompassing what life is like at NYUMBANI and how the orphanage lives up to its Swahili name for 'home'.

Nyumbani Notes

- Last summer several relatives and friends arranged for Father D'Ag to spend a weekend at their parish church and speak at all the Masses. In each instance, the Pastor arranged for Father D'Ag to have the second collection for the NYUMBANI children. This was very helpful and he was able to raise more than \$60,000 while visiting five parishes. Readers are invited to approach their Pastors and see if they can arrange a visit next summer (1999) between mid-June and Early September. Joe D'Agostino at (703) 934-9698 will serve as a clearinghouse to maintain a calendar of these visits, avoid duplications and secure tickets for his travel to your area.
- Drinking water in Nairobi is being turned off more and more frequently and the children and staff are facing serious problems in drinking, cooking, cleaning, sterilizing, etc. Father D'Ag has begun the exploration of digging a well for drinking water. He specifically asked if any reader could find an individual, corporation or a foundation able to meet the expected expense of \$25,000 to \$30,000. If so, please notify one of the Board members. Thank you.
- In November of this year, NYUMBANI Board Member, Dr. Joseph Bellanti spoke at the Medical & Mental Health Conference in Newport, Rhode Island. Conference organizers, Audrey Drummond and Anita Redlich, arranged for attendees to be introduced to NYUMBANI by Dr. Bellanti and over \$900.00 was donated to the orphanage.

Order your NYUMBANI Cookbook and Greeting Cards Now!

Return to: NYUMBANI c/o 1920 L Street, NW Suite 600 Washington, DC 20036. Checks payable to C.O.G.R.F.
Call 202-955-1360 with any questions.

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