Health Promotion Wave (HPW) was developed in 1989 in response to two major concerns. The first was adolescent morbidity and mortality statistics. In 1987 Robert Blum documented the serious health threats facing adolescents in the United States. According to Dr. Blum, adolescents have been the only population not experiencing improved health status over the last 30 years. With all the advances made in medicine and biotechnology, all other age groups are living longer and healthier lives—except adolescents. While death due to infectious diseases has decreased significantly, the increase in deaths due to violence (automobile fatalities, homicides, suicide) among adolescents has more than offset any potential reduction.[1]

Among 5-24 year-olds, only four causes account for nearly three-quarters of all mortality and a great amount of morbidity and social problems. Motor vehicle crashes cause 31% of all deaths among this age group (half of these are alcohol-related), homicide causes 18%, suicide causes 12% and other injuries (such as falls, fires, drowning) cause 11%.[2] Additionally, every year nearly one quarter of all new HIV infections, one quarter of all new infections with other sexually transmitted diseases, and one million pregnancies occur among our nation's teenagers.[3]

Among adults 25 and older, the leading causes of death are heart disease, cancer and stroke. Thus, only six types of behaviors cause the most serious problems that afflict the United States, behaviors that are most often established during youth, placing them at significantly increased risk for serious health problems, both now and in the future. They include:

- Tobacco use
- Unhealthy dietary behavior
- Inadequate physical activity
- Alcohol and other drug use
- Sexual behaviors that can result in HIV infection, other sexually transmitted diseases, and unintended pregnancies
- Behaviors that may result in intentional injuries (violence and suicide) and unintentional injuries (motor vehicle crashes). [4]

The second concern leading to the development of HPW was in response to the call from physician groups, health specialists, administrators, and policy-makers for a "new kind of health education—a sophisticated, multifaceted program that extends years beyond present lectures about personal hygiene or the four basic food groups."[5]

Education is the most common prevention strategy, and clearly schools offer the greatest access to young people to provide health education.[6] However, the traditional Health Instruction Model (i.e. information only) originally believed to be sufficient to change behavior has not been effective. Health scientists have found that lack of knowledge was only one of many important factors that influence health—and often not the most important. A review of several theoretical models for health education found other elements more critical, including perceived threat of illness, attitude toward health care, social interactions and norms, and knowledge about the disease.[9]

Analyses of effective health education programs have found that effective programs were based on social learning theory and focused on skill training, integrated school instruction with local community efforts, combined group instruction with activities directed at individuals, and allocated at least one hour per week to health instruction throughout the school year. [6, 8-11]

Sussman & Johnson's research[12] identified the following **content areas as necessary for effective curriculum:**

- **Normative education:** e.g., helping students realize that drug use is not the norm
- **Social skills:** Decision-making, communication skills, and assertiveness skills are especially important during the late elementary and middle school years.
- **Social influences:** helping students recognize external pressure, such as advertising, role models and peer attitudes.
- **Perceived harm:** understanding the short-term and long-term consequences of behaviors.
- **Protective factors:** supporting the development of positive aspects of life such as helping, caring, and goal setting.
- **Refusal skills:** learning ways to refuse risky behaviors effectively while maintaining friendships.

Other factors identified as crucial elements include:

- **Interactive techniques** rather than lectures or other forms of one-way communication.
- **Strategies that engage students in self-examination** and learning, such as role plays, simulations, brainstorming, small group activities, cooperative learning. [13]

Figure 1: Educational Strategies for Health Instruction Goals

Instructional	Goal Description	Strategic Methods
Health consciousness	Raising awareness	Lectures Group Work Mass Media Displays Exhibitions
Knowledge	Understanding specific information	Lectures One-on-one teaching Displays Exhibitions Written material
Self-awareness Attitude change Decision-making	Clarifying values about Health	Group Work Ranking Role Playing Simulations Categorizing Decision-making Problem-solving
Behavior change	Implementing a decision	Group Work Self-monitoring Identifying costs & benefits Setting targets; Evaluating progress Devising group strategies Self-help groups
Social action	Changing the environment to facilitate healthy behaviors	All above strategies plus: Lobbying Pressure groups Collective health action

Ewles and Semmett developed a model matching instructional goals with those strategies known effective in attaining specific goals (Figure 1).[14]

Howard Gardner's 'Theory of Multiple Intelligences' suggests that learning has more to do with the capacity for solving problems and fashioning products in a naturalistic setting. Several of Gardner's points are important to remember when planning instruction:

- *Each person possess all seven intelligences*
- *Most people can develop each intelligence to an adequate level of competency*
- *Intelligences usually work together in complex ways*
- *There are many ways to be intelligent within each category.*

Figure 2 is an outline of classroom applications of Gardner's theory.

Figure 2: Seven Ways of Teaching from Gardner's "Theory of Multiple Intelligences"

Intelligence	Teaching Activities	Teaching Materials	Strategies
1. Linguistic	Lectures, discussions, word games, story telling, journal writing	Books, computers, books on tape	Read about it, write about it, talk about it, listen to it
2. Logical / Mathematical	Brain teasers, problem solving, science experiments, mental calculation, number games, critical thinking	Calculators, math manipulatives, science equipment, math games	Quantify it, think critically about it, conceptualize it
3. Spatial	Visual presentations, art, imagination games, mind-mapping, metaphor, visualization	Graphs, maps, videos, art materials, cameras, picture library	See it, draw it, visualize it, color it, mind-map it
4. Bodily / Kinesthetic	Hands-on learning, drama, dance, sports, games, relaxation exercises	Building tools, clay, sports equipment, manipulatives, tactile learning resources	Build it, act it out, touch it, get a "gut feeling" of it, dance it, perform it
5. Musical	Super-learning, rapping, songs	CD player, tapes, instruments	Sing it, rap it, listen to it, play it
6. Interpersonal	Cooperative learning, peer tutoring, community involvement, social gatherings, simulations	Board games, party supplies, props for role-play	Teach it, collaborate on it, interact with respect to it
7. Intrapersonal	Individualized instruction, independent study, options in course of study, self-esteem building	Self-checking materials, journals, materials for projects	Connect it to your life, make choices about it, self-analysis

In addition to the well-recognized and accepted social learning theories and health belief models is a more recently developed Transtheoretical Model of Behavior Change, developed by Prochaska and colleagues who have studied behavior change for over two decades.[15-17] Their work has revealed that behavior change evolves through different stages:

Stage 1: Precontemplation (individuals do not believe they have a problem. They often construct defenses that aid in denying the problem.

Stage 2: Contemplation (individuals acknowledge having a problem and begin to deliberately increase awareness and knowledge related to the problem).

Stage 3: Preparation: (individuals reevaluate themselves with respect to the problem, develop commitment to change, and construct a detailed plan for change).

Stage 4: Action: (initiating behavior change).

Stage 5: Maintenance: (some vigilance is still required to avoid slips or setbacks).

Different processes educators can use to apply this model include:

- **Consciousness-raising:** providing information and giving feedback to increase awareness
- **Emotional arousal:** case histories or personal testimony of someone who has solved a problem; role-playing.
- **Self-reevaluation:** envisioning oneself without the unhealthy habit.
- **Commitment:** accepting one's personal responsibility for change and believing that one can make the change (self-efficacy theory)
- **Active problem-solving:** help students establish cues and rewards for healthy behaviors and remove or minimize contact with triggers for unhealthy behaviors
- **Counter-conditioning:** substituting a healthy behavior for an unhealthy behavior
- **Helping relationships:** giving and receiving help is a process that is important in every stage of change
- **Behavior change skills:** self-monitoring (an essential skill for self-awareness; effective goal setting (helps students plan for change); "relapse prevention skills" (coping skills, time management, conflict resolution, assertiveness, and decision-making).

Twenty years of public and private funding for prevention efforts have provided researchers the opportunity to also identify ineffective prevention strategies. Strategies such as scare tactics, providing only information, large assemblies, and didactic presentation of material have **not** been shown to be particularly effective.[18]

HPW was developed using a combination of the following two models for health education. The first is health education as defined by the **National Professional School Health Organizations**[19] This definition includes:

1. A planned, sequential, pre-kindergarten to grade 12 curriculum based on students' needs and current health concepts and societal issues,
2. Instruction intended to motivate health maintenance and promote wellness and not merely to prevent disease,
3. Activities to develop skills and individual responsibility for one's health,
4. Opportunities for students to develop and demonstrate health-related knowledge, attitudes, and practices,
5. Integration of the physical, mental, emotional, and social dimensions of health as the basis for study of the 10 content areas: community health, consumer health, environmental health, family life, growth and development, nutritional health, personal health, prevention and control of disease, safety and accident prevention, and substance use and abuse, and

6. The use of program planning, including formative and summative evaluation procedures, and effective management system, and resources.

The second model is the **Centers for Disease Control and Prevention's** definition of the key elements of comprehensive health education[20]:

1. A documented, planned, and sequential program of health instruction for students in grades kindergarten through twelve.
2. A curriculum that addresses and integrates education about a range of categorical health problems and issues at developmentally appropriate ages.
3. Activities that help young people develop the skills they need to avoid: tobacco use; dietary patterns that contribute to disease; sedentary lifestyle; sexually behaviors that result in HIV infection, other STDs and unintended pregnancy; alcohol and other drug use; and behaviors that result in unintentional and intentional injuries.
4. Instruction provided for a prescribed amount of time at each grade level.
5. Management and coordination by an education professional trained to implement the program.
6. Instruction from teachers who are trained to teach the subject.
7. Involvement of parents, health professionals, and other concerned community members.
8. Periodic evaluation, updating, and improvement.

References

1. Blum, R., M.D., PhD. Contemporary Threats to Adolescent Health in the United States. J of American Medical Association, June 26,1987—Vol 257, No.24.
2. Division of Adolescent and School Health, Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance—United States, 1999. Sept., 2000.
3. Institute of Medicine, Committee on Prevention and Control of Sexually Transmitted Diseases, Eng TR, Butler WT, eds. Hidden Epidemic: Confronting Sexually Transmitted Diseases. Washington, DC: National Academy Press; 1997.
4. Centers for Disease Control and Prevention. National Center for Chronic Disease Prevention and Health Promotion. School Health Programs; An Investment in Our Nation's Future; 2000.
5. The National Commission on the Role of the School and Community in Improving Adolescent Health. Code Blue; Uniting for a Healthier Youth. Alexandria, VA: National Association of State Boards of Education; 1989.
6. Dryfoos J. Adolescents at Risk: Prevalence and Prevention. New York, NY: Oxford University Press; 1990.

7. Parcel GS. Theoretical models for application in school health education research. J Sch Health. 1984;54(6):39-49.
8. Bandura, A. Self-efficacy: Toward a unifying theory of behavior change. Psychological Review, 84, 191-215; 1977.
9. Bremburg S. Does school health education affect the health of students? In: Nutbeam D., et al, eds. Youth Health Promotion: From Theory to Practice in School and Community. London, England: Forbes Publications Ltd; 1991:89-107.
10. Duryea EJ. Decision making and health education. J Sch Health. 1983;53(1):29-30.
11. Payton, JW, Wardlaw, DM, et al. Social and Emotional Learning: A Framework for promoting Mental Health and Reducing Risk Behavior in Children and Youth. Jr Sch Health, May 2000, Vol 70, No. 5:179-185.
12. Sussman, S, & Johnson, C. (1996). Drug abuse prevention: Program and research recommendations. American Behavioral Scientist, 39 (7).
13. Bosworth, K. & Sailes, J. Content and teaching Strategies in 10 selected drug abuse prevention curricula. J Sch Health, 63(6), 247-253; 1993.
14. Ewles I, Semmett I. Promoting Health: A Practical Guide to Health Education. New York, NY: John Wiley and Sons; 1985
15. Prochaska, J.O., DiClemente, C.C., & Norcross, J.C. (1992). In search of how people change: Applications to addictive behaviors. American Psychologist, 47 (9), 1102-1114.
16. Prochaska, J. O., Norcross, J.C., & DiClemente, C.C. (1994). Changing for Good: A Revolutionary Six-Stage Program for Overcoming Bad Habits and Moving Your Life Positively Forward. New York: Avon Books.
17. Prochaska, J. O., Redding, C.A., & Evers, K.E. (1997). The transtheoretical model and stages of change. In K. Glanz, F. M. Lewis, & B.K. Rimer, Health Behavior and Health Education: Theory, Research, and Practice (2nd ed.) (pp. 60-84). San Francisco: Jossey-Bass Publishers.
18. Tobler, N. & Stratton, H. Effectiveness of school-based drug prevention programs: A meta-analysis of the research. Journal of Primary Prevention, 17(3), 1997.
19. National Professional School Health Education Organizations. Comprehensive school health education. J Sch Health. 1984; 54 (8); 312-315.
20. Centers for Disease Control and Prevention. National Center for Chronic Disease Prevention and Health Promotion. Comprehensive School Health Education.