

SECTION III - ACTIONS FOR HEALTH

FIFTEEN
PRIORITY ACTIVITIES

Attaining the national goals described in Section II will depend on the development of effective strategies, many of which are applicable to several life stages.

This section is concerned with 15 important activities--grouped into three categories:

- key preventive services which can be delivered to individuals by health providers (Chapter 8);
- measures which can be used by governmental and other agencies, as well as by industry, to protect people from harm (Chapter 9); and
- activities which individuals and communities can use to promote healthy lifestyles (Chapter 10).

All are based on recommendations from a number of working groups recently sponsored by the Public Health Service and reflect the setting of priorities from a national perspective. It must be recognized that in some communities these priorities may need to be modified to local health conditions.

But developing measurable objectives within each of these areas, to be achieved within a reasonable amount of time, ought to do much to provide a better focus--and workable structure for both national and local efforts to promote health and prevent disease.

CHAPTER 8 PREVENTIVE HEALTH SERVICES

People are accustomed to seeking medical care only when they feel ill and ordinarily perceive no need for preventive health services when they feel well.

But we have evidence now that certain key services can do much to preserve health--and that people can be attracted to using them, with striking benefits, when they are offered.

Not by any means has every service delivered in the past in the name of prevention been efficient. Routine annual checkups, although traditional, have not been as effective in reducing health problems as the tailoring of pertinent screening, detection, diagnostic and treatment services to specific risks for individuals at specific ages.

Major progress has been made, however, toward defining what preventive health services should be delivered to the well population, designed for the specific needs of different age and risk groups. Proposed by various expert review panels, they have been modified as new procedures have become available and others found to be less effective.

While the proposals differ in some respects, they are notable for their similarities. What amounts almost to a national consensus on a core of essential preventive services has been developing. One list representative of the current view has been prepared for the Institute of Medicine of the National Academy of Sciences and is summarized in the Background Papers to this Report.

The five priority preventive services discussed in this chapter--family planning, pregnancy and infant care, immunizations, sexually transmissible

diseases services, and high blood pressure control-- are typical of the range of activities, the settings for delivery, and the blend of public and private, individual and organized efforts necessary for a well-rounded prevention strategy.

Other preventive services may also be important and some are discussed in Section II--e.g. testing for serum cholesterol levels or screening for cancer in appropriate risk groups.

The five included here are priority services with potential for substantially reducing death, disease and disability from problems affecting large numbers of people at earlier ages.

Family Planning

All pregnancies should be wanted. Any child whose birth is planned is far more likely to get off to a healthy start in life and to receive the continuing parental love and support needed for healthy development.

Yet, of the more than four million pregnancies a year in this country, one million are terminated by legal abortion. And of the slightly more than three million births, an estimated one-third are unplanned. It appears, then, that half of all pregnancies are mistimed and many are unwanted.

A large increase in demand for abortions has come from women aged 15 to 19.

From 1973 to 1977, reported legal abortions in the United States increased by an annual average of about 15 percent. In 1977, over 1,079,000 were reported--and over 332,000 of these were for women under 20. Although they represent 21 percent of all women of childbearing age, 15 to 19-year-olds accounted for about one-third of all abortions and only 17 percent of live births.

But unwanted pregnancies are not limited to unwed teenagers. Each year, an estimated 300,000

married women have babies they say they do not want. In 1977, there were 190 legal abortions for every 1,000 live births among women who already had given birth to one child. The abortion rate for women with two children was 297--and for women with three children it was 358--for every 1,000 live births.

Unplanned births affect not only the health of children but also the social well-being of mothers. Early child-bearing interferes with educational attainment--and, because education is related to occupation and income, can permanently influence social and economic status.

The association of unwanted births with lower socioeconomic conditions and poverty also persists. And, clearly, having more children than desired can have adverse health and social effects on families.

Contraceptive Efficacy and Safety

Unplanned and unwanted pregnancies can be prevented with relatively safe and effective contraceptives.

Among the most widely used and efficient are male and female sterilization, oral contraceptives ("the pill"), and intrauterine devices (IUDs). Vaginal diaphragms, condoms, and spermicides (foam and jelly) are somewhat less effective but still acceptable and satisfactory.

The efficacy of contraceptives is determined by pregnancy rates among sexually active women correctly using a method. (Many methods require active effort by a woman or her partner and low efficacy can be due to failure to use a method consistently and well rather than to limitations inherent in the method.)

The established efficacy rates are: virtually 100 percent for sterilization; 98 to 99 percent for oral contraceptives; 96 to 98 percent for IUDs; 85 to 90 percent for diaphragm with contraceptive cream

or jelly; 90 percent for condoms; 85 percent for spermicides. Periodic abstinence (rhythm method) is less reliable--about 80 percent dependable when used scientifically and conscientiously.

Actually, most people do not consistently use a contraceptive method correctly, and efficacies may be considerably lower than those indicated above. Often, incorrect use results from inadequate or inappropriate instructions given by professional providers.

Although not all long-term effects may be known for oral contraceptives, the relative safety of the various contraceptive methods is well established except for certain high-risk groups.

Among women under 30, the risk of death associated with the major birth control methods is eight to 12 times lower than the risk of dying as a result of a pregnancy-related circumstance. After 30, risk rises for women who use oral contraceptives and also smoke but remains low for nonsmokers.

In both cases, however, risk is less than that for women who use no method of contraception. Adverse reactions can occur in some cases with use of a particular method; when they do, a different method often is more appropriate.

The Non-Users

Although more women than ever before are users of contraceptives, including more than 80 percent of married women aged 15 to 44, 25 percent of sexually active unmarried women aged 15 to 19 never use contraceptives and about 45 percent use them only occasionally.

Reasons given by teenage women for not using contraceptives are that they can predict the time of month when they are fertile, that they have a low risk of pregnancy, and that contraceptive services are not available.

Yet, in fact the services are widely available. Virtually all primary care physicians provide contraceptives or family planning counseling. There are also an estimated 6,000 family planning clinics in the country, a six-fold increase in the last 10 years.

What is apparently lacking is an effective outreach and information program to enhance practical accessibility and timely use of the services.

Where they are carefully designed and comprehensive, community-based programs serving pregnant teenagers have succeeded in reducing one of the problems of greatest concern--the rate of repeat pregnancies among adolescents. In Delaware and Baltimore, for example, programs which provide education, medical and social services, and infant day care have been reporting one-year repeat pregnancy rates less than half the national 25 percent average for adolescents. Such programs need more study but early results are encouraging.

Primary prevention efforts must also be more effective.

Making family planning information available at the earliest possible age is one need. Peers now are the most common source of information. Unfortunately this information may often be of questionable completeness and accuracy. In theory, parents are the most important potential resource for better information, and efforts should be made to improve both their knowledge and their ability to communicate the knowledge to their children.

Sex education courses should teach males as well as females the importance of assuming responsibility for practicing birth control.

However, only eight States and the District of Columbia now mandate some form of sex education as part of health education curricula, and only 39 percent of the Nation's school districts offer information on human reproduction and sexuality.

A major focus of primary prevention efforts must be on providing contraceptive information and services to all sexually active teenagers in a manner that is accessible, convenient, inexpensive and, perhaps most importantly, is effective in communicating with them.

Finally, family planning involves more than the question of "when" to have a child; for some people, the question is "whether." There are couples at high risk of conceiving a child with an inherited disorder. They may wish to consider that risk in deciding whether or not to have children. Alternatives available to such couples include adoption, artificial insemination, or conception and use of fetal diagnostic measures.

In some cases--such as sickle cell anemia, Tay-Sachs disease, and hemophilia--the important genetic characteristics can be detected before pregnancy through analysis of blood samples (carrier detection). Other genetic disorders, described below, can be detected during the prenatal period through amniocentesis and analysis of amniotic fluid, but detection of an abnormality may require a decision on an abortion.

There should be greater effort by physicians, clinics, other health providers--and by schools--to make the availability of these tests and alternatives more widely known.

Pregnancy and Infant Care

The chance that an infant will be of low birth weight and at increased risk of developmental problems, and perhaps death, is heightened by lack of early, regular, quality prenatal care, as noted in Chapter 3.

Although between 1969 and 1977 the proportion of women receiving prenatal care during the first three months of pregnancy increased from 68 to 74 percent, too many still do not receive care until the last three months--and the greatest risk is for the one to two percent who receive none at all.

From 1950 to 1977, infant mortality dropped from 30 to 14 deaths per 1,000 live births. While some of the improvement was due to greater availability of regionalized intensive care units for newborns, better prenatal services have clearly played an important role.

Maternity and Infant Care (MIC) Projects--part of a national effort to provide assistance to vulnerable populations--have consistently been associated with declines in low birth weight incidence and infant mortality.

In Birmingham, Alabama, for example, after the MIC project began in 1967, prenatal clinics available for low income pregnant women increased and the proportion of women receiving prenatal care during the first trimester rose from 24 percent in 1968 to 39 percent in 1978. Although direct cause and effect relationship cannot be determined, infant mortality in this area dropped from 25 deaths per 1,000 live births in 1965 to about 14 in 1977--and infant deaths during the first month of life went from 19 to 10 per 1,000 live births, a 47 percent decrease.

In Denver, Colorado, infant mortality was 28 per 1,000 live births when the MIC project began in 1965; by 1972, it was down to 17 and the incidence of low birth weight also had declined.

Prenatal Care

What are the important services needed during pregnancy?

They include thorough assessment of any special risks because of family history or past personal medical problems; physical examination and basic laboratory tests; amniocentesis where indicated; and counseling on nutrition, smoking, alcohol use, exercise, sexual activity, and family planning (Figure 8-A).

Through a prospective mother's carefully recorded medical experience and family history, it is

Figure 8-A
Preventive Services for
The Pregnant Woman and Fetus

	SERVICES	INITIAL VISIT ¹	SUBSEQUENT VISITS ²
HISTORY	General Medical	•	
	Family and Genetic	•	
	Previous Pregnancies	•	
	Current Pregnancy	•	•
PHYSICAL EXAMINATION	General	•	
	Blood Pressure	•	•
	Height and Weight	•	•
	Fetal Development		•
LABORATORY EXAMINATIONS	VDRL	•	
	Papanicolaou Smear	•	
	Hemoglobin/Hematocrit	•	
	Urinalysis for Sugar and Protein	•	•
	Rh Determination	•	
	Bloodgroup Determination	•	
	Rubella RAI Titre	•	
	Amniocentesis (for women over 35) ³		
COUNSELING WITH REFERRALS AS NECESSARY AND DESIRED	Nutrition during Pregnancy	•	•
	Nutrition of Infant, including Breastfeeding	•	•
	Cigarette Smoking	•	•
	Use of Alcohol, Other Drugs during Pregnancy	•	•
	Sexual Intercourse during Pregnancy	•	•
	Signs of Abnormal Pregnancy	•	•
	Labor and Delivery (including where mother plans to deliver)	•	•
	Physical Activity and Exercise	•	•
	Provisions for Care of Infant	•	•
	In Response to Parental Concerns	•	•
LABOR AND DELIVERY ⁴			
POST-PARTUM VISIT (including family planning counseling and referral, if desired)			

¹Initial visit should occur early in the first trimester

²Subsequent visits should occur once a month through the 28th week of pregnancy; twice a month from the 29th through the 36th week; and once a week thereafter.

³If desired, amniocentesis should be performed at about the 16th week for women who are over 35 or who have specific genetic indications.

⁴Although not a "preventive service," labor and delivery should be included in a package of pregnancy-related services

possible to identify factors which may put mother and fetus at special risk for avoidable problems.

About 80 percent of women at high risk of having a low birth weight infant can be identified in the first prenatal visit, and action can be taken to reduce the risk. Without such care, as noted in Chapter 3, an expectant mother is three times as likely to have a low birth weight child.

Through family history, risk can be identified for several inherited diseases, including Down syndrome, Tay-Sachs disease, and metabolic disorders, all discussed in Chapter 3.

Women with histories of such problems as repeated miscarriages, bleeding, and premature membrane rupture are at increased risk for not having a live and healthy baby--but measures can be taken during pregnancy to reduce the risk.

Also needing more intensive obstetrical care are women who have congenital reproductive tract malformations or medical problems such as diabetes, hypothyroidism, heart disease or kidney disease.

Laboratory tests are important because they can confirm problems suggested by an expectant mother's family or individual history.

Women who tend to be more susceptible to toxemia of pregnancy are those with high blood pressure, diabetes or kidney disease.

Toxemia, which, when present, usually occurs during the second half of pregnancy, is characterized by rapid weight gain, swelling of legs and eyelids, headaches, elevated blood pressure, and loss of protein in the urine. If it persists, it can threaten the pregnant woman's life through complications such as convulsions and stroke--and lead to fetal death.

When detected, toxemia can be controlled by rest, sedatives, antihypertensive and anticonvulsant drugs, and correction of chemical imbalances. In most cases, it subsides after pregnancy but in some it has residual effects.

For women 35 and over, those with a history of multiple miscarriages, and others with certain genetic indications, amniocentesis should be offered. In this fetal diagnostic procedure, which is used at about the 16th week of pregnancy, a needle is inserted through the wall of the woman's abdomen into the womb to withdraw a sample of amniotic fluid containing cells shed by the developing fetus. Cells and fluid can be analyzed for chromosomal and biochemical defects.

Currently, about 100 conditions can be reliably detected by amniocentesis, including Down syndrome and neural tube defects. Neural tube defects also can be detected during pregnancy by a blood test and, in some cases, by ultrasound examination. Women with family histories of such genetic problems, or of multiple birth defects or inherited metabolic disorders, are at higher risk of having a fetus with a defect detectable through amniocentesis.

Also very important in prenatal care is the counseling of expectant mothers on potential problems for the fetus that may be caused by smoking, alcohol use, and poor nutrition, including referral, when necessary, to suitable social support services.

It would be difficult to overemphasize the need for seeing to it that nutritional requirements are met during pregnancy. There are increased requirements--especially for calories, iron, calcium, phosphorus and protein--and all the more so for pregnant teenagers whose requirements may be further increased by habitual poor dietary habits coupled with the accelerated needs associated with adolescent growth.

Maternal nutritional deficits have been shown to materially increase chances for low birth weight or stillbirth.

As early as 30 years ago, diet corrections--even in the last weeks of pregnancy--for women who had experienced famine conditions in the first trimester were found to help offset the potential effect of severe caloric deficiencies on the birth weight of their babies.

Although famine conditions do not exist in the United States, nutritional and socioeconomic status are linked, and many pregnant women, even some with incomes above poverty level, are not receiving adequate diets for normal fetal development. Providing an important adjunct to good health care are programs such as the Department of Agriculture's Special Supplemental Food Program for Women, Infants and Children (WIC) which gives dietary supplements and nutrition education at no cost for certain pregnant women, infants, and children up to five years of age.

Even before they become pregnant, women need to know about factors that may affect the health of their future babies. While providing information about risks of using cigarettes, alcohol and drugs, is an important part of prenatal care, many women are pregnant several weeks before knowing they are--and it is at the very early stages that the fetus is most vulnerable.

Early on, too, the fetus can be affected by toxic chemicals and infectious agents. Moreover, exposure to ionizing radiation above a certain level in the first week or two of pregnancy increases risk of spontaneous abortion--and subsequent exposure, especially during weeks two through six, increases risk of malformations and some childhood cancers, including leukemia.

Here, again, we need intensified educational efforts by schools, health providers, and the media.

The Birth Process

Although most women experience uncomplicated childbirth, about 20 percent have some problem

during labor, according to the 1972 National Natality Survey.

There may, for example, be hemorrhaging, sudden worsening of toxemia, or impairment of oxygen supply to the fetus because of its position in the uterus.

Because these problems require prompt intervention, preventive care during pregnancy should also focus on the birth process itself and include education about childbirth and preparation of both parents, with underscoring of the importance of selecting a place for delivery in or near facilities that can be used to respond to emergency situations.

Recent technological advances promise improved capability for responding to birth process problems. Electronic fetal monitoring, for example, has improved ability to detect fetal distress and therefore to save the lives of many high risk infants. While the technique, if not used properly, may lead to needless surgical deliveries as well as maternal infections, it can offer significant benefits when appropriately used to monitor high risk pregnancies.

Postnatal Care

Once a baby is born, prospects for good health can be enhanced by a number of preventive services (Figure 8-B).

A simple blood test can be used to screen newborns for PKU (phenylketonuria) and congenital hypothyroidism. With dietary manipulation for an infant with PKU, and thyroid hormone medication for one with hypothyroidism, mental retardation and other problems that otherwise would develop can be avoided.

Routine neonatal care also includes intramuscular administration of vitamin K to prevent the bleeding which occasionally occurs in newborns, and instillation of silver nitrate solution in the eyes to prevent eye infection which might occur if the mother has active gonorrhoea.

Figure 8-B
Preventive Services for the Normal Infant

	SERVICES	BIRTH VISIT	SECOND VISIT ¹	SUBSEQUENT VISITS ²
HISTORY AND PHYSICAL EXAMINATION	Length and Weight	•	•	•
	Head Circumference	•		
	Urine Stream	•		
	Check for Congenital Abnormalities	•		•
	Developmental Assessment			•
PROCEDURES	PKU Screening Test		•	
	Thyroxin T4		•	
	Vitamin K		•	
	Silver Nitrate Prophylaxis	•		
IMMUNIZATIONS	Diphtheria			•
	Pertussis			•
	Tetanus			•
	Measles ³			•
	Mumps ³			•
	Rubella ³			•
	Poliomyelitis			•
PARENTAL COUNSELING, WITH REFERRALS AS NECESSARY AND DESIRED	Infant Nutrition and Feeding Practices (especially breast-feeding)		•	•
	Parenting		•	•
	Infant Hygiene		•	•
	Accidental Injury Prevention (including use of automobile restraints)		•	•
	Family Planning and Referral for Services		•	•
	Child Care Arrangements		•	•
	Medical Care Arrangements		•	•
	Parental Smoking, Use of Alcohol and Drugs		•	•
	Parental Nutrition, Physical Activity and Exercise		•	•
	In Response to Parental Concerns		•	•

¹Second visit should occur within 10 days or before leaving the hospital

²Four health visits the rest of first year or enough to provide immunizations

³Should be administered at 18 months of age

Prevention of Rh (rhesus) sensitization is a major advance. The sensitization can occur when a mother has Rh negative blood and the fetus' type is Rh positive. It can be prevented by administering a blood protein--Rh immune globulin--to the mother after the birth of an Rh positive baby or after an abortion or miscarriage. If the immune globulin is not administered, the mother may develop antibodies to the baby's red blood cells and the antibodies, during a subsequent pregnancy with an Rh positive fetus, may destroy the infant's red blood cells, producing anemia, brain damage, spontaneous abortion, or death.

Since introduction of Rh immune globulin in 1968, the estimated incidence of erythroblastosis fetalis (the disease caused by Rh incompatibility) has dropped from about 4.1 cases per 1,000 births in 1970 to about 1.6 per 1,000 in 1977.

Despite its relative lack of public attention, the disease is still a significant preventable problem which affected 233 infants in 1976, 10 times the number born with congenital rubella syndrome that year. Yet, appropriate postnatal intervention could do away almost entirely with the disease.

Breast feeding. Emotional and physical nurturing are vital to an infant's health and breast feeding provides a way of enhancing both.

Until this century, breast feeding was the principal source of nutrition for infants during the first six months of life, the period of most rapid growth. In the 1940s about two-thirds of infants were being breast-fed but by the late 1960s and early 1970s, the proportion was down to about 15 percent. Recently, the trend has reversed; a 1976 survey found more than half of all mothers breast feeding.

Human breast milk provides nutritionally complete, convenient, prewarmed food for infants. Breast feeding also increases mother-infant contact,

confers some protection from infectious diseases by transferring antibodies from mother to child, and helps women who have gained excessive weight during pregnancy to lose it.

Moreover, breast fed infants rarely are obese and virtually never develop iron deficiency anemia, the most common nutritional problem of American infants. If the nursing mother is healthy and well fed, fluoride and possibly vitamin D may be the only supplements needed by the baby. After about four months, a source of iron may also have to be added to the diet.

Commercial formulas are available and when prepared according to directions provide adequate nutrition but, in contrast to breast feeding, they are not regarded as the optimal food source.

Solid foods. Solid foods should be introduced with care--generally not until the baby is at least three months old. No adverse effects occur when solid food--and cow's milk--introduction is delayed until much later in infancy.

On the other hand, when fed too early, solid food may predispose an infant to food allergies, overeating, and choking.

In choosing solid foods, mothers should use nutritional value rather than taste as the primary guideline. An infant does not need sweetened or salted food and commercial baby foods should not be supplemented with extra sugar or salt.

New foods should be introduced one at a time, with each continued for a week before another is introduced. This helps identify and avoid food intolerances or allergies. Commonly, rice cereals are used first, followed by fruits and vegetables, and finally by meat. To determine the proper diet for an infant, parents would do well to consult a pediatrician, dietitian, or other health professional.

Immunizations

Because of vaccines, diseases that once ranked among the leading causes of death, particularly for children, now are regarded with less concern. Figure 8-C shows the change in incidence due to immunization.

But while substantially reduced as threats in most cases--and eliminated in the case of smallpox--these diseases still can be quite dangerous. Recent epidemics of measles and pertussis, and occasional outbreaks of diphtheria and polio, indicate that, short of complete eradication, reduction in a disease's incidence is temporary and immunization must be continually emphasized.

Childhood Immunization

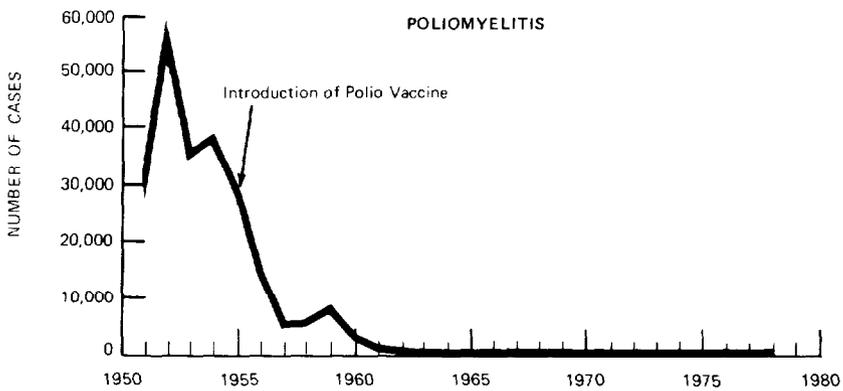
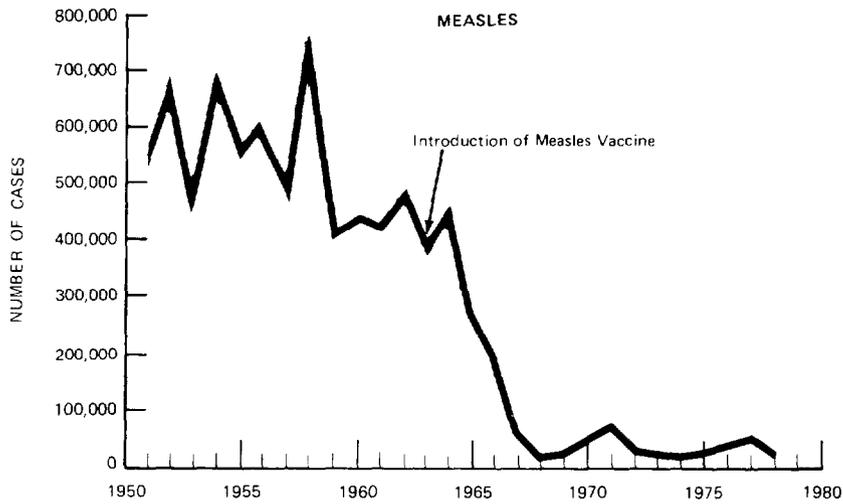
Each of the seven major childhood infectious diseases which can be prevented by immunization--measles, mumps, rubella, polio, diphtheria, pertussis, and tetanus--can cause permanent disability and, in some cases, death.

The provision of protection against these problems has become a national priority. When polio vaccination became possible in the 1950s the Federal government moved to provide funds to State and local health departments for large-scale immunization campaigns. Similar campaigns were begun when measles and rubella vaccines were introduced. The combined Federal, State and local efforts were notably successful (Figure 8-C).

Yet vigilance in maintaining immunization levels has waned and large numbers of children are not adequately immunized. In 1976, more than a third of all children under age 15 were not properly protected--and the following year rubella cases increased by 63 percent, measles cases by 39 percent, and whooping cough cases by 115 percent.

In response to the low immunization levels and disease increases, the President in 1977 began a

FIGURE 8-C
REPORTED CASES OF MEASLES AND POLIOMYELITIS:
UNITED STATES, 1951-1978



NOTE: Polio incidence dropped below 1,000 cases annually in 1962. 1978 data for measles and poliomyelitis are preliminary.

SOURCE: Based on data from the Center for Disease Control.

major Childhood Immunization Initiative. That Initiative reflects recognition of the need for a coordinated, broadly-based national effort to attain and sustain adequate immunization protection.

With the combination of safe, effective vaccines, public and private programs, and a reliable disease surveillance and outbreak containment system, infectious diseases can be controlled. In fact, complete elimination of measles is within reach and has been set as a national goal.

Although universal childhood immunization could eliminate a vast amount of suffering and permanent damage, barriers exist. Public interest must be maintained and parents must ensure that children are protected. The effort must be broad, involving not only public and private health sectors but also education, social services, and other fields. A recommended schedule is shown in Figure 8-D.

To help parents, health departments and schools should maintain outreach programs and educational efforts as well as programs making health services available on a continuing basis.

The poor are of particular concern since survey data indicate they consistently have lower immunization levels and higher disease incidence. Medicaid experience has shown that even where payment for preventive services is provided, there is no assurance that the services will be used.

On the other hand, neighborhood health centers, children and youth centers, and Health Maintenance Organizations have demonstrated that where services are provided in an organized setting, responsive to the needs of the population served, and coupled with outreach and follow-up efforts, preventive services may be used appropriately by all income groups.

Other Vaccines

Influenza virus strains change periodically, necessitating production and testing of new

FIGURE 8-D

SCHEDULE FOR CHILDHOOD IMMUNIZATION

Age ¹	Diphtheria Pertussis Tetanus	Polio	Measles	Rubella	Mumps
2 months	•	•			
4 months	•	•			
6 months	•	• (optional)			
15 months ²			•	•	•
18 months	•	•			
4-6 years	•	•			
14-16 years ³	•				

¹Immunizations beginning in early infancy are the recommended practice. They can be provided in later years, however, according to a schedule recommended by a family physician.

²Measles, rubella, and mumps vaccines can be given in a combined form, at about 15 months of age, with a single injection.

³Children should receive a sixth tetanus-diphtheria injection (booster) at age 14-16 years, and every 10 years thereafter.

Source: *Parents' Guide to Childhood Immunization*, USDHEW Center for Disease Control

vaccines, often on short notice, yet vaccines for many strains have been successfully developed. An individual using the appropriate vaccine prior to the influenza season is 70 to 90 percent less likely to contract the disease. Annual vaccination is recommended for individuals determined to be at risk because of being over age 65 or with a chronic disease, especially chronic obstructive lung disease.

Vaccines against certain types of meningococcal meningitis are licensed and usable in case of epidemics. Research is under way to develop vaccines against other causes of bacterial meningitis, hepatitis, and several viral respiratory diseases of infants and young children but it will be several more years before these become generally available.

A vaccine with potential for reducing pneumococcal pneumonia by 60 to 65 percent is now available--and important because some types of pneumococci are becoming resistant to antibiotics. Use at present is limited to people facing greatest danger from pneumonia: many of the elderly, people with chronic debilitating diseases or sickle cell anemia, and those with inadequate spleen function. It has not been licensed for use in children under age two. Because the risk of dying from pneumococcal disease, acquired as a complication of influenza or otherwise, increases with age, vaccination value also increases with age.

Sexually Transmissible Diseases Services

In 1977, some 10 million cases of sexually transmissible diseases occurred in the United States, 86 percent of them in 15 to 29 year olds. The diseases present significant health problems.

No vaccine is currently available to combat these infections but intensive efforts are under way to develop a vaccine against gonorrhea, the most common of the more serious diseases.

"Venereal disease" no longer is an adequate term since it has been traditionally limited to syphilis,

gonorrhea, lymphogranuloma venereum, chancroid, and granuloma inguinale. Now, however, with other diseases known to be transmitted during sexual contact, such as two types of hepatitis, a more appropriate term is "sexually transmissible diseases."

The most common of those identified to date include:

- trichomoniasis--3 million cases annually;
- gonorrhea--2.5 million cases;
- non-gonococcal urethritis (NGU)--caused by organisms such as chlamydia and mycoplasma--2.5 million cases;
- genital herpes--300,000 cases; and
- syphilis--25,000 new cases a year.

While most of the diseases may cause burning, itching, and discharge, often they occur without symptoms and persons who have frequent sexual contact with different partners should be examined periodically.

Several of the diseases can lead to serious complications.

In young women, for instance, pelvic inflammatory disease from extensive gonorrheal infection or abscess in the pelvic cavity and reproductive organs is the leading cause of infertility and sterility. Gonorrhea also is a cause of acute arthritis in young adults.

Genital herpes--which is manifested by very painful lesions similar to cold sores or fever blisters--can cause severe neurological damage in an infant infected while passing through the birth canal. Such infection occurs in about 50 percent of infants delivered vaginally by infected mothers--and active lesions in a pregnant woman are an indication for a Cesarean section.

Although unchecked syphilis can have serious consequences, the availability of penicillin and an organized control effort have almost eliminated it in the general population. Certain groups, however--including homosexuals, migrant workers, and the poor--remain at high risk. The life of an infant with congenital syphilis is threatened when appropriate treatment is not provided.

For trichomoniasis, long-term consequences are not yet known, but no severe complications have been detected thus far. The consequences of infection by chlamydia, one agent of non-gonococcal urethritis, have recently been discovered to be eye infection and pneumonia in infants, and pelvic inflammatory disease in women.

Substantial difficulties hinder control of sexually transmissible diseases. Feelings of guilt or shame can make it difficult for some patients to seek proper care. Professional and paraprofessional training related to the diseases has never been a priority in curriculum development. Some health professionals find it difficult to provide care in a straightforward, nonjudgmental manner. In addition, these diseases may receive less attention because they are most prevalent in groups without significant political influence--the young minority groups, inner city dwellers, and homosexuals.

Nevertheless, there have been successes.

After World War II, again in the mid-1960s, and once more in the mid-70s, renewed efforts successfully reduced the incidence of syphilis. Gonorrhea, which had quadrupled in incidence between 1960 and 1975, began to plateau in 1975 after a national gonorrhea control program was initiated with Federal funding in 1972.

One striking example of progress is found in a pilot program started in 1969 in Memphis, Tennessee, to control gonorrhea and resulting pelvic inflammatory disease. It focused on increasing public awareness and education about gonorrhea, expanding

and extending the hours of clinic facilities, and increasing gonorrhea screening, casefinding and counseling.

By 1976, results were apparent: hospitalization rates for pelvic inflammatory disease were down by 50 percent from 1971--with the reductions most dramatic in hospitals serving predominantly young, poor women, the population mainly served by the national gonorrhea control program.

As the Memphis program indicates, the essential elements for controlling sexually transmissible diseases include education of the public, particularly adolescents, to understand early signs of disease and the kind of sexual behavior which increases risk; encouraging males with multiple partners to use condoms; screening high risk groups; treatment with appropriate antibiotics of all found infected; and identification and treatment of sexual contacts.

There is clear evidence that most important in attracting those who need the services are both the quality of the services and the attitudes with which they are delivered.

While existing programs are interrupting the transmission of syphilis and slowing the transmission of gonorrhea, many vulnerable groups are not yet being served. To approach them effectively will require not only the efforts of sexually transmissible disease clinics and investigators but also those of family planning clinics, private physicians, schools and employers.

High Blood Pressure Control

Controlling elevated blood pressure, which affects one in six Americans, is an essential if we are to reduce the 500,000 strokes and 1,250,000 heart attacks which occur annually.

Hypertension often begins early in life and becomes progressively more severe with age. It is

one of the most important risk factors for coronary heart disease--and, for stroke, the most important.

Blood pressure elevation is more frequent, up to age 55, in men than women, but the reverse is true after 55. Blacks are twice as likely as whites to have it and it is more frequent in people with lower incomes and lower education levels.

In only about 10 percent of people with hypertension is there a known cause such as kidney disease or toxemia of pregnancy which sometimes may be followed by permanent blood pressure elevation. Excessive salt in the diet and stress are factors not yet completely understood; they may contribute to the development in some cases of what is called "essential" hypertension in the 90 percent of patients in whom the disease is present without any known organic cause. Recent evidence indicates that the hypothalamic region of the brain plays a role in the development of essential hypertension but more research is needed to clarify the role.

Although hypertension cannot be cured--except in the relatively few cases where a surgically or otherwise curable cause may be involved--effective treatments to control it are available. In most cases, medication is needed for a lifetime.

One problem is that because high blood pressure does not usually produce symptoms, many people do not take required medications, even when they are supposedly under medical care, because of failure to understand the significance of hypertension and its control. Some stop taking medication because they experience adverse reactions, as can occur with many medications. Yet very often an adjustment of dosage or use of an alternative drug more suitable for the individual can minimize or eliminate undesirable effects.

It is unfortunately true, too, that some physicians are not attentive enough to close control of high blood pressure for their patients.

Exactly how high an individual's pressure should be before treatment begins is not yet settled. But it is clearly beneficial when diastolic pressure--the second pressure reading, taken between beats of the heart--exceeds 105. Although research continues, it is generally believed that there are also benefits from treatment when diastolic pressure is above 95--especially when other risk factors for cardiovascular disease, such as a family history of the disease, excessive smoking, and elevated cholesterol levels are also present.

The risk of long-term use of antihypertensive medication in young people is unknown but thought to be low and certainly less than the risk of untreated hypertension. In some elderly people with only mildly elevated pressure, possible side effects may outweigh benefits of treatment.

Measures other than drugs that may be useful in preventing or treating hypertension are being investigated. Weight loss and dietary salt restriction lessen need for medication in some people and permit use of smaller doses for others. Exercise and relaxation therapy (biofeedback) can be helpful in some circumstances and are under study.

Because hypertension is a "silent" disease, a National High Blood Pressure Education Program was initiated in 1972 by the Department of Health, Education and Welfare. Targeted especially to high risk groups, it seeks to alert people to the high frequency and significance of blood pressure elevation and the importance of periodic blood pressure examinations.

And since 1972, as a result of education and screening efforts by government, voluntary health agencies, community leaders, medical societies, and health care providers, the proportion of people with hypertension who know they have it has increased from 50 percent to more than 70 percent.

Moreover, between 1972 and 1974, nationwide surveys indicate that the proportion of those with

hypertension who received effective treatment doubled from 15 percent to 30 percent, and more recent State and community studies indicate that the trend is continuing.

For example, studies in New York (Westchester County, 1975), Illinois (Chicago, 1977), and Maryland (1978) have found, respectively, 43 percent, 59 percent, and 71 percent of the hypertensive population under proper care.

A longitudinal survey of a predominantly black area in Baltimore found that hypertensive patients whose pressure was controlled increased from 17 percent to 60 percent between 1971 and 1978.

The effects?

From 1972 to 1976, the age-adjusted death rate for all cardiovascular diseases declined by about 15 percent and stroke mortality fell by 25 percent. These improvements are almost surely due in part to better high blood pressure control.

A program in Milwaukee is one example of many successful community hypertension control efforts which have produced these gains. Initiated in 1974, the Milwaukee effort involved many community resources, including the health department, a medical school, voluntary organizations, an insurance company, the local media, industrial firms, and others. An important element in the program was development of a well-designed patient tracking system for thorough follow-up after community screening of nearly 200,000 persons.

And in Milwaukee, heart attack deaths in 1977 were 17 percent less than the average annual rate for 1971 to 1973. Stroke deaths dropped 38 percent in the four years of program operation.

Use of the worksite for hypertension control programs is especially rewarding. The occupational setting affords unique access to working people who may be not only at higher risk for cardiovascular

disease but who are also less likely to follow through with appropriate treatment for hypertension.

As one example, a collaborative union/employer program providing hypertensive services at worksites for store workers in New York City has been successful in increasing, from 14 percent in 1973 to about 80 percent currently, the proportion of hypertensives whose blood pressure is under effective control.

The strategy for hypertension control entails using resources and services from a variety of sectors. And it also entails dealing with the kinds of individual motivation, lifestyle changes, and long-term intervention which are needed to address today's major health problems. But the results can be dramatic.

This chapter has urged greater use of family planning services, improved care for pregnant women and newborn children, immunization for vaccine-preventable diseases, control of sexually transmissible diseases, and better high blood pressure control.

Each of these measures can improve the quality of life for many people and each is achievable with our current state of knowledge.