

Child Health in America: Toward a Rational Public Policy

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Analysis of currently available data on mortality and morbidity indicates that the major organic illnesses of childhood, and their developmental consequences, are susceptible in part to the technical interventions of American medical science. Environmental forces, however, exert a powerful impact on the health of children in the United States, manifested both in the disproportionate toll of most organic diseases on poor and nonwhite populations and in such increasingly important symptoms of familial, social, and behavioral distress as child abuse, accidents, and childhood suicide. Review of the nature, quality, and distribution of child health services demonstrates a systemic inability to reach and treat the children most in need of them. A rational basis for child health policy includes: appropriate concepts of health, disease, and preventive and therapeutic intervention; a capacity to acknowledge, to measure, and to act on the familial and environmental, as well as the medical, sources of illness; an orientation to the developmental and social implications of good and poor child health; and a commitment to enable all children to receive health services.

The data and this policy framework lead to these program recommendations: the channeling of resources into a more rational system which guarantees equity and access; a planning and program implementation mechanism which addresses the health needs of diverse local populations and which makes real the advocacy concept; a screening, evaluation, and surveillance methodology; a delivery system which both applies preventive and curative health technology and addresses basic life needs of children; and a coherent program for the training, assignment, and supervision of the several kinds of manpower which such a system would require.

Introduction: Assumptions and Objectives

As we enter the United States' third century and contemplate the state of the health of its children, we might identify four cardinal assumptions underlying the present health care system.

The first assumption is that *the development of technology is tantamount to the control of illness*. This century has seen extraordinary progress in our ability to control major organic illness phenomena, yet the fruits of this progress do not reach all of our children. There are large groups of children who either are unserved or poorly served by health services in America.

A second assumption is that *health care for children is equivalent to providing them with immunizations and with acute illness intervention*. How to promote children's health is not, in fact, a primary consideration in the overall scheme of health services in the United States, particularly for children in low-income families. The relationship between a child's social and physical context, including his family's health and economic status, and his later functioning as an adult is generally ignored in present practice.

A third assumption is that *health services are properly and best dispensed by a physician*. An appropriate concept of child health obliges re-examination of this assumption. The issue is not only concerned with the conservation of precious and highly trained manpower, and who is competent to perform which technical tasks, but also with defining what are the commitments and responsibilities to children's health and who assumes them.

The fourth assumption is that more of the same will do a better job, or that *the provision of adequate services insures their use*. If we do not yet understand what is necessary to promote good health, awareness of the various needs of diverse populations which are not and cannot be met by our current health structures necessitates a reexamination of health delivery mechanisms as well as the content of health services.

The task of this paper is to address and challenge these assumptions by examining (1) *the status of child health*: the major health problems of children in the United States, their distribution, and how and in what ways our current health system responds and fails to respond to these problems; (2) *the context of child health*: the conditions, services, and circumstances which most importantly affect children's present and future health and life functioning; the importance to life functioning of the environment in which a child grows as well as the "services" which he and his family receive; (3) *the concept of child health*: the conceptual basis for current practice, and alternative concepts for the re-examination and restructuring of health care for children; and (4) *program recommendations* for a better health structure.

The Status of Child Health in The United States

Principal Causes of Death and Illness among American Children

Mortality In the decade 1964-1974 the infant mortality rate (deaths in the first year of life per 1,000 children born alive) declined from 24.8 to 16.5. The major portion of this toll still occurs during the first month of life.

There remain, however, great disparities among the rates for children of differing racial backgrounds and geographic settings (Wegman, 1975). In the District of Columbia, 1974 witnessed an increase in the infant mortality rate to 26.0 from 24.2 in 1973; this was the highest rate recorded in a state-by-state breakdown of the data. The uniquely unfavorable experience of the nation's capital, with its large impoverished black community, reflects the vulnerability of nonwhite, poor babies elsewhere in the United States (Institute of Medicine, 1973). Infant mortality rates for nonwhites are over 150 percent those of whites (National Center for Health Statistics, 1974a; National Council of Organizations for Children and Youth, 1976).

Causes of infant mortality and corresponding infant mortality rates for 1974 are congenital anomalies (2.9), influenza and pneumonia (0.9), birth injuries (0.6), asphyxia of the newborn, unspecified (1.5), immaturity, unqualified (1.5), other diseases of early infancy (5.3), certain gastrointestinal diseases (0.3) and all other causes (3.7). If one considers that in 1973, the United States placed sixteenth in the world in infant mortality, behind East Germany and Hong Kong (Wegman, 1975), and recognizes the impact on infant mortality of the investments in maternal and child health services in the United Kingdom and Sweden (Wallace, 1975), it is clear that much of this toll might have been prevented. This is also the clear implication of Kessner's important study of the relationship between services and infant death in New York City (Institute of Medicine, 1973).

In the population of children age one to four years, the principal causes of death and their frequency per 100,000 estimated population in 1973 (death rate) are accidents (19.6), motor vehicle accidents (12.3), congenital anomalies (9.6), malignant neoplasms (6.4), influenza and pneumonia (5.9), homicide (2.5), diseases of the heart (2.1), meningitis (1.6), enteritis and other diarrheal diseases (1.0), cerebrovascular diseases (1.0), and anemias (0.6) (National Center for Health Statistics, 1976a: 359). For children five to fourteen years of age, the principal causes of death and the death rates in 1973 are motor vehicle accidents (10.6), all other accidents (10.2), malignant neoplasms (5.4), congenital anomalies (2.2), influenza and pneumonia (1.4), homicide (1.1), diseases of the heart (1.0), cerebrovascular diseases (0.6), suicide (0.4), benign neoplasms and neoplasms of unspecified nature (0.4), and anemias (0.3) (National Center for Health Statistics, 1976a: 361).

Although mortality rates in early childhood demonstrate a greater decline since 1900 than the rates for any other group, the death rate for minority preschool children remains about 50 percent higher than the rate for their white counterparts (National Center for Health Statistics, 1976a: 340-341). Wegman (1975) points out

that it is well to recognize that by far the greater part of the decline in childhood mortality occurred before 1940, prior to the major introduction of antibiotics and chemotherapy. This may be ascribed to environmental improvement and to better living standards.

The extraordinary mortality due to accidents is distributed unequally in regard to ethnic and socioeconomic status. An analysis of accident death rates performed by the National Institute of Child Health and Human Development (1971) indicates a 250 percent greater infant mortality rate resulting from accidents for nonwhite children, and death rates for older children exceeding 150 percent of the rates for whites. Inordinately high death rates from infectious diseases, influenza, and pneumonia, for minority and poor children (National Center for Health Statistics, 1976a; Richmond and Weinberger, 1970) likewise suggest a disproportionate impact of environmental forces on this population.

Morbidity Although data on acute and chronic illness of children in the United States are available from a number of surveys, we lack such a data base on childhood morbidity as is systematically developed for mortality. This is partly but not exclusively due to the nature of illness in children and to the varying utilization of health services: most symptoms of pediatric illness are limited in duration if not in intensity, and not all come to the attention of health providers.

Useful recent data comes from the household interviews performed in 1973 and 1974 as part of the National Health Survey (National Center for Health Statistics, 1975). The most frequent acute conditions reported by parents of children under six years of age (excluding all conditions involving neither restricted activity nor medical attention) with extrapolated incidence estimates in thousands, are: respiratory conditions (32,486), infective and parasitic diseases (9,864), other acute conditions (9,515), injuries (7,211), and digestive system conditions (2,099). For children six to 16 years of age, the illnesses and incidence estimates are: respiratory conditions (55,558), injuries (16,422), infective and parasitic conditions (13,384), other acute conditions (10,614), and digestive system conditions (4,593).

Acute illness prompts most childhood medical visits, but poor children are less likely to see a doctor than more affluent children, even though they suffer transient disability more frequently and are more susceptible to handicaps which exert a lasting effect on their productivity (Lowe and Alexander, 1974: 149). Brain damage and mental retardation correlate closely with low birth weight and prematurity (Niswander and Gordon, 1972), which in turn are associated frequently with low social class, minority group status, and lack of access to adequate prenatal care (Institute of Medicine, 1973).

Malnutrition has been found to be a problem of major importance among our country's poor (Carter, 1974; Owen et al., 1974). Over 10 percent of poor children and over 30 percent of poor infants in some surveys are found to suffer from iron deficiency anemia (Katzman et al., 1972; Filer, 1969; Owen et al., 1971). When we realize that roughly one quarter of our nation's children live in families whose income falls below the minimum level considered necessary for adequate nutrition, the magnitude of the problem of undernutrition becomes apparent (National Council on Hunger and Malnutrition. . ., 1972). Despite the law that federal food programs are to be available to all poor families, in 1972 only one-third of poverty-stricken children attending public school were in school lunch programs, and in 1974 only 35.6 percent of poor families participated in food-stamp programs. Indeed, our poorest families cannot afford to purchase food stamps (Pollack, 1975). Childhood malnutrition can be understood-and intervention directed-both in terms of available nutrients and in reference to the child's familial, social, and economic setting which may restrict the availability and utilization of food (Newberger et al., 1976).

The effects of malnutrition on the growing child may be grave. Both human and animal studies show that a combination of prenatal and postnatal undernutrition may jeopardize brain development. It has been estimated that nearly 60 percent of all pregnant women with incomes below the poverty level and 44 percent of pregnant women at two to three times the poverty level consume fewer calories than are necessary for the normal intrauterine development of their children (Bergner and Susser, 1970; Livingston et al., 1975). Malnutrition during the first months of extrauterine life may result in a decrease of up to 20 percent of the normal number of animal brain cells (Winick, 1971). Prolonged malnutrition, particularly if

it occurs before five years of age, may lastingly affect learning ability, body growth, and rate of maturation, as well as ultimate size and productivity (Monckeberg et al., 1972; Food and Nutrition Board, National Academy of Sciences, 1974).

Dental caries rank high among the health problems of children (National Center for Health Statistics, 1974b; Creighton, 1969; Whitenhurst et al., 1968). Yet in 1971, there was a lower dentist-to-population ratio than in 1951 (National Center for Health Statistics, 1973). Examination of children enrolling in Headstart programs during the summer of 1966 revealed that between 40 and 70 percent had dental caries (North, 1967). And, when poor children receive dental treatment, their carious teeth seem more likely to be extracted than filled (National Center for Health Statistics, 1974b).

Twenty-one million of the 83.8 million youth aged 0 to 21 in the United States required eye care, of whom 180,000 were partially sighted, and of whom 13,000 were totally blind (Rand Corporation, 1974b). In this same year, approximately 8 million had mild hearing impairment, 440,000 were hard of hearing, and about 50,000 were profoundly deaf (Rand Corporation, 1974b). Many of the conditions which predispose to sensory handicap, such as prematurity, infectious disease, and accidents, are found disproportionately among the poor and nonwhite populations. Further, the immunizations against measles, mumps, rubella, and Rh sensitivity, which are among the primary tools for handicap prevention, are neither equally nor adequately distributed (Center for Disease Control, 1975).

The major organic illnesses of childhood are increasingly being overcome by medical science. Great progress has been made toward the control of infectious diseases, surgical diseases, immune disorders, and cancer. Amniocentesis has made the antenatal diagnosis of genetic disorders possible, and counseling, birth control, and the increasing acceptance of abortion have made possible the prospect of their elimination (Nadler, 1976). The availability of abortion also appears to be associated with a decrease in the frequency of prematurity (Pakter and Nelson, 1974) and in maternal and infant mortality (Pakter et al., 1973).

Behavioral and Psychophysiologic Illness

Behavior and psychophysiologic illnesses, on the other hand, appear to be increasingly prevalent. Haggerty, Roghmann, and Pless (1975) have drawn attention to the significance of this "new morbidity" for child health practice. But the "mental health" of children is largely neglected (Joint Commission on the Mental Health of Children, 1970), notwithstanding the increasing frequency of such markers of child mental illness as suicide and rates of psychiatric hospitalization (National Center for Health Statistics, 1976a; National Institute of Mental Health, 1974a; 1974b). "Special education" classes, where they exist, are often dumping grounds for "problem" children (Task Force on Children Out of School, 1970).

Schools for the emotionally disturbed and the retarded are too often prisons for children with no alternative; they are documented in the lay press in the disclosures of conditions at the Willowbrook School in New York State and the Belchertown State School in Massachusetts. Gil's review (1974:83) of data on American children in institutions and the goals and methods of institutional programs concludes: "residential child care can operate to achieve constructive and liberative objectives as well as destructive and oppressive ones. The use to which private boarding schools are put demonstrates this. Our child welfare institutions could be transformed into channels for equality, freedom and creativity if, and when, we redefine their social purpose in these terms. To achieve this requires a broad commitment to the intrinsic and equal worth of every child."

The uncritical use of amphetamines among "hyperactive" elementary school children illustrates the willingness with which some professionals may adopt means of suppressing rather than treating the familial, environmental, and endogenous causes of deviant child behavior. "Now that there appear to be at least 300,000 children in elementary schools in the United States on psychotropic medication for school difficulties, and that in one county, the school nurses administer medication to 61 percent of these children, it behooves both physicians and schools to establish a close liaison in their management efforts" (Krager and Safer, 1974:1120).

Accidents, by far the greatest cause of mortality and morbidity among children, can be considered as part of a complex of illnesses which are socially and environmentally, as opposed to primarily organically, derived. Accidents, child abuse and neglect, plumbism, ingestions of poisonous substances, and failure to thrive, all reflect situations in which a young child cannot sufficiently be protected in a hazardous environment, either from the exigencies of the physical setting itself, or from his parents' problems in nurturing him.

Plumbism, or lead poisoning, is found almost exclusively in the urban slums (Blanksma et al., 1969). Lead poisoning is generally an insidious disease. A child can carry dangerously high levels of lead without showing external symptoms. Lead poisoning by a recent estimate affects 400,000 American children annually; it causes 200 deaths. The report observed that 16,000 of the 400,000 children affected required treatment, 3,200 incurred moderate to severe brain damage, and 800 children incurred brain damage severe enough to require care for the rest of their lives. Lead poisoning is a preventable disease, yet it may cripple more children than did polio before the anti poliomyelitis vaccines were developed (Needleman, 1975).

Treatment involves screening, deleading afflicted children with chelating agents, and renovating some seven million units of housing painted with lead-based paint. Atmospheric lead in the vicinity of a secondary lead smelter in Memphis, Tennessee, was associated both with symptoms of lead toxicity and high blood lead levels in smelter workers and their children (Center for Disease Control, 1976a: 85-86):

Such reports emphasize the importance of improved work practices and engineering controls not only in safeguarding worker health, but also in shielding families of workers from contact with toxic industrial materials.

Although the government is increasingly aware of the problem, money to treat and eliminate lead poisoning has been committed in pitifully small amounts. The few city programs which exist have clearly inadequate resources to control the disease because of limited local funds. Acknowledgment of the problem and the signing of the Lead-Based Paint Poisoning Prevention Act is unfortunately meaningless if the budget does not include adequate funds for implementing effective programs.

Accurate incidence statistics for child abuse are not yet available, and can only be estimated. Although the actual numbers of reported cases indicate a nationwide annual incidence of up to 200,000 cases a year, indirectly acquired data from a survey in which a nationwide sample of respondents in a population representative of a standard metropolitan statistical area were asked whether they knew personally of serious injuries inflicted on children during the previous year indicated between 2.5 and 4.8 million cases (American Humane Association, 1976; Gil, 1970). This extrapolation to the national population has been subject to careful analysis and is felt in general to represent an upper margin of estimate (Light, 1973). When taken together with estimates of the prevalence of cases on the books of child welfare agencies and the woefully inadequate state of American child welfare services, this indicates a problem of enormous magnitude (Newberger and Hyde, 1975; Jenkins, 1974; Newberger and Daniel, 1976).

The impact on child health of the social acceptance of violence and its promotion on television has recently been underlined by Somers (1976). Notwithstanding a substantial literature on the effects of television violence on children's behavior, the industry, government, and health professionals all appear reluctant to acknowledge and to act on this potent source of harm. Violence sells. Somers quotes S. Strickland's 1975 address to the Women's National Democratic Club (Somers, 1976: 812): ". . . between the ages of five and fifteen, the average American child will view the killing of more than 13,000 persons on television."

A rich understanding of child health and its meaning for later functioning are offered in two recent studies. Haggerty et al. (1975:316) note in the conclusion of a broadly conceived investigation into child health in the setting of Monroe County, New York: "the current major health problems of children, as seen by the community, are those that would have barely been mentioned a generation ago. Learning difficulties, visual problems and the problems of adolescents in coping and adjusting are today the most common concerns about children." The final volume of the 1,000-family survey of Newcastle Upon Tyne, England (Miller

et al., 1974:298) gives longitudinal follow up of a cohort of children born in 1947 and a vivid impression of the significance of health and ill health for human development which helps inform our more limited understanding of the consequences of childhood morbidity in the United States:

The health of the children in our city was never better than in the years of our study. Yet at fifteen not less than one in five had either handicap, recurrent illness, intellectual limitation, poor education performance or severe difficulties of emotional or social adaptation. This residual disability is the true measure of our failure to deal effectively with the physical and educational disorders of children, and we do not yet know how much of the effects of physical illness or emotional disturbance will only become apparent later in life.

The Gap Between Technology and Delivery

The Distribution of Preventive Health Care

Measles, diphtheria, and polio are largely preventable diseases, thanks to the development of effective vaccines. In 1962, Congress passed the Vaccination Assistance Act, whose funds enabled the vaccination of millions of children against a variety of diseases, including the above three. The 1974 United States Immunization Survey (Center for Disease Control, 1975) suggests a prevalence of completed polio immunizations in children aged one to four of 63.1 percent; for diphtheriatetanus-pertussis immunization of 69.5 percent; and for measles 64.5 percent. In general, poor children and rural children received these preventive services less frequently; in this respect immunizations serve as an accurate marker of the distribution of child health services (National Center for Health Statistics, 1976a). (In fact, immunizations are among the simplest services to deliver, and the prevalence estimates from the Immunization Survey provide if anything an inflated qualitative impression of children's contact with health services.) The unequal distribution of immunizations has a predictable impact.

In Des Moines County, Iowa, from July 1971 to January 1972, a measles epidemic took place. It was found that the effectiveness of the measles vaccine was over 90 percent and that "the overwhelming majority of cases continues to occur in unvaccinated children. The effectiveness of the vaccine was also demonstrated by the sharp decline in the number of cases two weeks after the vaccination campaign" (Center for Disease Control, 1972a: 13).

Diphtheria was observed in epidemic form on or near the Navajo Indian Reservation in Arizona and New Mexico. Although there were no deaths, five patients had myocarditis and/or varying degrees of neurologic involvement, and two of these had respiratory arrests and required artificial ventilation; of the 44 cases six had been fully vaccinated (Center for Disease Control, 1973; Munford et al., 1974).

Most of the 31 cases in the pertussis outbreak in Knoxville, Tennessee, between May and December 1975, occurred in children from low-income neighborhoods and housing projects. Although three cases (10%) were fully immunized for their ages, 15 (48%) were partially immunized, and 13 (42%) had received no pertussis vaccine at all. Immunization surveys demonstrated much higher immunization levels in more affluent children (Center for Disease Control, 1976b).

The possibility of polio outbreaks is also of concern. In a serologic survey of 289 Syracuse children two to six years old, 55 percent had no demonstrable antibodies to polio virus Type I, and 62 percent were negative for Type 3 (Lamb and Feldman, 1971). The population at risk is mainly poor and preschool. Most of the small outbreaks of paralytic poliomyelitis during recent years have concentrated in inner-city areas. The problem with implementing urgently needed vaccination programs is only partly one of money and of delivery, although these are the major necessary-and lacking-elements in this aspect of preventive child health. A coherent strategy for anticipating and preventing these illnesses would address the social as well as economic costs and benefits of action and inaction. A mathematical benefit-cost model with important policy implications has been developed by Schoenbaum et al (1976) and has been applied to rubella immunizations. (The authors conclude that current United States practice of vaccinating children once at an early age prevents fewer cases of congenital rubella syndrome than were the vaccine to be offered to

females at the age of 12; "benefits" and "costs" are also defined both in dollars and cents and in quantifiable human terms, both for the congenital rubella syndrome and for acute rubella infection.)

Delivery of Health Services

Even though the prevalence of handicapping conditions and their antecedents in childhood illness is disproportionately greater among the poor, only 15.7 percent of children under 17 from families whose annual income is under \$2,000 visit a physician during a one-year period, as compared to 53.9 percent and 57.6 percent, respectively, of children whose family income is \$10,000 and above and \$15,000 and above (National Center for Health Statistics, 1974a).

Differences in utilization of services cannot be ascribed solely to lack of money to pay for them, or to lack of availability. Bergner and Yerby (1968:543-544) eloquently describe some of the barriers which make the poor less likely to take preventive measures or to seek early health care for acute illnesses:

The location of services, the availability of transportation and the hours at which the services are offered all affect the true availability of the services. Too often these arrangements reflect that which is convenient for the provider of service and quite inconvenient for the patient. . . in many places it may be several weeks before (the patient) can be fit into the schedule. In many clinics he faces the prospects of long waits in dingy surroundings. He may be addressed in a manner that clearly indicates that the system regards him as just another burden with no personal dignity. He is all too likely to receive a cursory inspection or a single injection and non-communicative word or two and be sent on his way. Examinations may be performed without a modicum of privacy, and his problems discussed within easy hearing of other patients. If a course of treatment is prescribed, too little consideration may be given to whether he can possibly carry it out -- physically, emotionally, or financially... The patient's needs, expectations and priorities are not allowed to interfere with the functioning of the system.

Such services as these militate against adequate health care for those people who have no better alternatives. The country has two systems of health care: private and frequently inadequate care for those who can pay; and "public" care, or no care, for those who cannot. "Public" care, much of which is provided in hospital outpatient clinics, 'is generally fragmented, difficult to get to, overcrowded, and resorted to only in times of crisis, when the affliction is too grave not to seek help, however distasteful it may be (National Center for Health Statistics, 1974a).

For people whose family income is over \$15,000, combined traveling and waiting time to see a physician is 43 minutes; it is 81 minutes for those on welfare and 66 minutes for other poor (National Council of Organizations for Children and Youth, 1976). Miller (1976) notes that although children have benefited from the Title XIX (Medicaid) program relatively less than their elders, the utilization of medical services by poor, nonwhite, and rural children has increased by this entitlement. But the financial floor has not provided a sturdy base for a child health program, as pointed out by Foltz and Brown (1975). Within five years of the 1965 enactment of Title XIX, it became the major public child health program, serving nearly 10 percent of all children and commanding over twice the resources of the Title V health programs administered by the U.S. Children's Bureau and state health departments. The 1967 amendment to the Social Security Act linked the two programs (one a welfare-based payment structure, the other a health service) by mandating early and periodic screening, diagnosis, and treatment ("EPSDT") for Medicaid-eligible children and, for those served through Title V, "early identification of children in need of health care and services, and for health care and treatment." In addition to the four-year lapse before regulations for EPSDT were promulgated by the Department of Health, Education, and Welfare, the program fell heir to systemic problems of both the federal and state welfare and health bureaucracies. The lapse demonstrated the Administration's priorities, as pointed out by the Comptroller General of the United States (1975) in quoting HEW Secretary Caspar Weinberger, who said the "embarrassingly long period of delay and debate [was] occasioned mainly by a concern over the impact on Federal and State budgets and on States' medical resources."

In a study of EPSDT and Medicaid in Connecticut, a relatively wealthy state with many medical resources, Foltz and Brown (1975) detail why EPSDT had little impact on child health services: no new services were developed; a fragmented child health system was perpetuated; a state health department was limited to serving as technical adviser and facilitator; and a conflict between federal and state policy on eligibility for service led to a de facto lowering of the priority of poor children's health services. (A state decision to reduce welfare costs limited EPSDT funding, and the federal government did not enforce compliance.)

For families who can pay, the private health system, though expensive, unevenly distributed, and in some ways inefficient, can deliver excellent child health care. The differences between the two systems, and their relative costs, have been reviewed by Lowe and Alexander (1974). They conclude that poor children receive less health service in all ways.

The facts of the current American health care system (variety, heterogeneity, specialization, fragmentation of programs, individualism, fee-for-service, and "freedom of choice") work against an adequate, rational basis for assuring the health of children. Even if every United States resident had the money to pay for a private practitioner, there would not be enough health services to go around, and children's health might not be advanced. Both rural and urban poverty areas suffer from a severe shortage of health services. Those private physicians available to the poor are frequently overburdened and unable to provide an adequate range of services for health maintenance. Between 1949 and 1969 the ratio of physicians to 1,000 children fell 34 percent from .67 to .44 (American Academy of Pediatrics, 1970:98). Beyond the problem of physician availability, Haggerty (1976) and Miller (1976:17) strongly urge attention not only to the nature and distribution of child health services, but to the assurance of access; in the words of the latter: "The great need for children's health is not a program that opens the door and awaits the arrival of needy children. The great and crying need in child health is for programs that reach out and involve children who cannot themselves enter the system and on whose behalf no present initiative -is exercised to bring them in."

The above discussion brings into focus several important issues concerning the status of child health.

Where the means exist to ameliorate or eradicate health problems, such means do not equitably reach and serve the poor and the nonwhite. Thus, while infectious diseases become decreasingly important as causes of illness and death among the white population, they remain a leading killer of nonwhite children.

When services are provided for the poor, they frequently neglect minimal needs for privacy, dignity, and convenience, thus discouraging their use among those people who most need them.

Conditions which are primarily associated with poverty do not receive the concern and support that other conditions, which may affect fewer children, but affect middle class as well as poor children, receive. As noted, lead poisoning affects more children than did polio before the Salk vaccine, and unlike polio before the Salk vaccine, is a curable disease; yet the government has been unable to commit the necessary funds to eliminate this majorcripler of children.

While great strides have been made to decrease the incidence of organic disease phenomena, both mental illness and risks to children deriving from their physical and social environment have been largely ignored and seem to be increasing.

The evidence is unequivocal that poverty and/or membership in a racial minority not only increase the likelihood of a serious or fatal physical or mental health problem, but appear also to compound the negative effects of virtually all conditions which predispose a child to further risk. The problem of low birth weight and its frequently resultant handicap is a case in point. Not only is a poor or nonwhite child more likely to be born premature, but he is more likely than his white, middle-class counterpart of comparable birth weight and gestational age to suffer one or more of the handicaps to which premature birth predisposes him. The next section of this paper presents a detailed examination of this aspect of risk in order to illustrate the pervasiveness and complexity of the relationships among risk, handicap, poverty, and race.

The Context of Child Health

Infant Mortality and Morbidity: A Study of One Aspect of the Relationship Between Race, Poverty, and Handicap

Infant Mortality: The Social Class and Ethnic Distribution of Mortality Rates. This century has witnessed a striking decrease in overall infant mortality rates, from 140 deaths per 1,000 live births during the first two decades, to 16.5 deaths per 1,000 live births today. Between 1946 and 1966 the rate reached a plateau (Richmond and Weinberger, 1970). From 1966 to the present, however, there has been a continuing decline in infant mortality. Yet close examination of our infant mortality rates reveals that infant deaths between one month and one year of age are three times as great for our nonwhite as for our white populations, and the gap has actually increased during the past decade (Wegman, 1975). At higher income levels, however, the black infant death rate shows a marked decline and less discrepancy with the white rate. For the black income group between \$3,000 and \$4,999, the data show a greater rate of infant deaths than for families with incomes under \$3,000 (National Center for Health Statistics, 1976a). This might be explained by greater availability of medical care for the "most poor." People with the lowest incomes are eligible for federally funded medical services that the less poor are not eligible for, yet are unable to afford on marginal budgets.

These data suggest that while we are able to provide medical care comparable in quality to other countries, it is our more affluent and generally our white citizens who seem to be benefiting from our increasing knowledge and skill. Infant mortality rates are a revealing indicator of how many of our poor, and particularly our nonwhite, citizens may be excluded from the services our health technology can provide.

Low Birth Weight and Infant Mortality The best indicator of whether or not a baby will survive is birth weight, even when mortality rates are corrected for other important variables such as social class, maternal age, parity, and race (Fort, 1971). Infants weighing 2,500 grams or less (under 5 1/2 pounds) have a neonatal death rate about 22 times the rate for heavier babies, and account for two-thirds of all neonatal deaths (Shapiro et al., 1968).

Morbidity: Social Class and Ethnic Distributions of Birth Weights Since 1950, the distribution of births by weight for white babies has changed little, yet among nonwhite babies the proportion of small-for-date babies has increased markedly. In terms of numbers, low birth weight affects roughly twice as many black as white children (Armstrong, 1972; Niswander and Gordon, 1972). This disparity in birth weight between black and white babies may be more a reflection of the greater proportion of blacks who are poor than of race. Several studies demonstrate that an increase in per capita income is associated with increased birth weights among black infants (Scott et al., 1950; Naeye et al., 1971).

A study of the correlates of low birth weight and infant mortality in New York City demonstrates important relationships between overcrowding and poverty and perinatal risk (Struening et al., 1973).

It appears from the evidence available, that the conditions of poverty, rather than race, may be primarily implicated in depressed birth weights.

Morbidity: Maternal Nutrition, Low Birth Weight, and Subsequent Handicap

Perhaps the most important and direct influence of the fetal environment is maternal nutrition. Studies of the effects of wartime nutritional deprivation on birth weights indicate that mean birth weights vary consistently with the nutritional level of the population. The data also suggest that restoration of an adequate maternal diet, even during the last weeks of pregnancy, may be sufficient to overcome the effect on birth weight of severe deficiency earlier in pregnancy (Smith, 1947).

Additionally, nutritional supplements during pregnancy elevate the birth weights of the offspring of economically deprived mothers (Bergner and Susser, 1970). Despite methodological flaws in several of the studies cited by these authors (such as a lack of careful baseline data on previous dietary adequacy,

imprecise monitoring of dietary supplementation, and the lack of control populations in many of the studies), the data consistently suggest that improving maternal nutrition, regardless of race, improves the outcome of pregnancy and increases the birth weight of the infant.

Although the evidence supports a relationship between maternal malnutrition and low birth weight, the relation of maternal malnutrition to subsequent functioning of the child is not entirely clear.

Stein et al. (1975), in their followup study of the effects of intrauterine exposure to wartime famine, found that maternal malnutrition per se does not appear directly to contribute to their index of adult mental performance of the children of the famine or to adult health problems. There was, however, a greater than expected frequency of congenital anomalies of the central nervous system.

Although low birth weight is well established as accounting for excess mortality in infants, its relationship to child development, both physical and intellectual, as the previous study demonstrates, is not as clear.

Fitzhardinge and Stevens (1972) followed prospectively 96 full-term small-for-date infants to determine the frequency and type of neurological as well as intellectual sequelae. Although major defects were uncommon in this sample, a high prevalence of less severe dysfunction was found relative to a control group of siblings. Roughly twice as many of these children displayed EEG abnormalities than would be expected among apparently normal children. Twenty-five percent showed some sort of speech aberration, as contrasted with 1.5 percent in the United States elementary school population. Average I.Q. was slightly lower for the small-for-date children than for their control siblings, but more important, 50 percent of the boys and 36 percent of the girls had poor school performance. One-third of the children with I.Q. results over 100 were failing consistently in school. The effects of low birth weight were not necessarily dramatic, nor always directly measurable. Rather they were frequently reflected in the "softer" realm of school performance and may be expressed later in their adult roles as providers and parents.

The majority of studies correlating low birth weight (particularly "small-for-date" weight) with later psychological and intellectual development do find low-birth-weight children to be significantly more subject to handicap (Weiner, 1970; Knobloch and Pasamanick, 1966; Harmeling and Jones, 1968).

The strong relationship between low birth weight and poor school performance, independent of I.Q., demonstrates the inadequacy of I.Q. as a unitary measure of intellectual functioning and indicates that the effects of low birth weight on children's functioning may be more subtle and pervasive or of a different quality than intelligence testing can reveal.

The Social Class Distribution of Handicap

In addition to the disproportionate incidence of low birth weight among the poor and nonwhite members of our population, one finds that the sequelae of low birth weight are not equivalent among various social classes (Naeye et al., 1971; Niswander and Gordon, 1972; MacMahon et al., 1972).

Not only is the child born into poverty more likely to incur perinatal risk, but the handicapping effects of that risk appear greater than for middle- and upper-class children born with apparently equivalent risk (Illsley, 1967). Biochemical data suggest that major portions of human brain development are left to postnatal life, and that alterations in human brain biochemistry following intrauterine deprivation appear to be recovered with good postnatal care (Chase, 1973). The Kauai longitudinal pregnancy study demonstrates that even severe perinatal stress appears to be compensable in good postnatal environments (Werner et al., 1971). For children from the poorest homes, however, even a moderately low birth weight, between 4 1/2 and 5 1/2 pounds, is likely to be handicapping (Drillien, 1961).

Additionally, the prevalence of perinatal complications appears to be greater among upper-class Negroes than among lower-class whites (MacMahon et al., 1972). This may be due either to differences in the quality of medical care given to blacks of any social class, and/or to the residual effects of a family history of poverty in a newly middle-class family.

In summary, the data suggest: (1) that being poor and/or nonwhite in our society carries with it greater risk of fetal and infant mortality and poor birth outcome; (2) that birth outcome is in large part related to controllable causes; and (3) that the effects of poor birth outcome are intensified by growing up poor.

Children's health and productive functioning are embedded in a social and economic context which can support or inhibit the development and the expression of their innate potential. Fundamental to children's health and functioning is a health system which is sensitive and responsive to the circumstances surrounding the establishment and maintenance of human life.

The Relationship Between Environmental Risk and Functional Potential

The Heredity-Environment Controversy

Among practitioners and scientists in the United States today there is a widespread belief that a child's intelligence as defined by I.Q. tests reliably measures his potential for mature functioning in our economic system. Furthermore, several psychologists and geneticists, most notably Arthur Jensen (1967) and Richard Herrnstein (1971) have posited that, because the genetic determinants of I.Q. are so powerful, environmental manipulation and improvement of health will have little effect in raising the I.Q. of the many children who function below normal levels by this measure of performance.

This controversy has important implications for health planners, as well as for educators and architects of social policy. The following discussion disputes the argument that environment does not importantly affect intelligence and develops a rational philosophic framework for understanding the importance to children's functioning of the environment in which they grow; of the importance of changing those aspects of the environment which impede growth; of what is necessary to support those aspects which nurture growth. In order to make plans for children's health, one must proceed from a fundamental assumption that better care will result in the realization of certain performance objectives, that giving children help makes a difference.

This is not to say that alleviating human suffering is in itself an unworthy reason for providing health service. One may responsibly argue that in a society as affluent as ours, nurturant human services should not have to be justified exclusively on the basis of objective criteria of outcome. There prevails today, however, a philosophy that in a competitive economy, investments in health, or for that matter, in child care, should be returned in increased productivity on the part of children and their families. This objective view must be taken seriously by health providers and planners whose personal ethical and ideologic orientations are essentially compassionate and humane. For as one looks at the data on the suffering of America's children and its developmental consequences, one sees that the present child health structure, which has as its philosophic underpinning the compassionate response to a child with symptoms, is not sufficient to deal with conditions which handicap millions. The authors' discussion is offered to enhance the evolution of a rational public policy on children's health, which might ultimately be more humane than our present one.

Many of the arguments of genetic determinism are persuasive. Studies of monozygotic twins reared apart show that their later I.Q.s correlate more closely with each other than do the I.Q.s of fraternal twins or siblings raised together, and adopted children demonstrate I.Q.s and educational levels which are similar to those of their biological mothers (Jensen, 1967). The correlation between the adopted children's I.Q.s and the educational attainment of their foster mothers, however, is negligible. By contrast, a similar study demonstrates a 20-point gain in the I.Q.s of adopted children over that of their biological mothers (Skodak and Skeels, 1945), and Bronfenbrenner (1976) points out that foster- and adoptive-home placement is not random; that adoptive children are likely to be placed with families whose background is in many ways similar to that of the natural mother.

Whether I.Q. tests are accurate predictors of adult functional potential is open to serious question. Unfortunately, they have been used widely as the major indicator of the effects of programs for disadvantaged children, such as Project Headstart. The heritability argument and unsullied belief in the

predictive value of I.Q. measures can be and have been used unscientifically to discredit many efforts towards remediation of the effects of poverty. They support the contention that poverty is inevitable.

If the genetic consequences of years of selective breeding among people of low social class or nonwhite ethnic origin, or "low capacity residue," is considered an inevitable outcome, and if that "residue" largely accounts for membership in present-day lower socioeconomic class, a preponderance of which is nonwhite, certain political and racial implications follow. Efforts to enable poor people to develop the competence with which to achieve access to the goods and services of society, the argument follows, are doomed to fail.

The heredity-environment controversy is a hot issue today. The assumptions underlying it, that intelligence is a quantity, that it is unequally distributed (by nonrandom, genetic determinants), that it can accurately be measured, and that it predicts economic functioning are accepted by many, if not most, teachers, psychologists, physicians, and policy makers. Health planners must address the issue directly. To what extent will efforts to improve the health and quality of the life of our nation's children succeed in making their lives more productive and happy?

Differential Environmental Importance for Intellectual Functioning among the Poor and the Non Poor

A major assumption of the genetic determinists is that intelligence is fixed, because of its high hereditary component, and that the hereditary component of intellectual functioning has roughly the same weight for various populations of people. That there is a genetic component to intellectual functioning is not at issue; that it is unrelated and unresponsive to environmental circumstances and environmental change is.

A study of twins from Philadelphia suggests that the relative power of heredity or environment to influence performance might be different among different population groups (Scarr-Salapatek, 1971). On a standard achievement test, scores of black twins were not found to be as similar to each other as the scores of white twins. And among lower income children, the scores of same-sex twins (which would include monozygotic twins who share the same genetic structure) were no more alike than the scores of the opposite-sex twins. Among upper income children of both races, however, the scores of the same-sex twins were more similar to each other than the scores of the opposite-sex twins.

If heredity were the primary determining factor in the test scores, one would expect the identical twin pairs to score more closely together than the non-identical twins, irrespective of environmental factors. It appears from these findings that among middle- and upper-class children, genetic capabilities are more directly expressed in test scores. Therefore children who share the same genetic structure do indeed perform more similarly, when they are not economically disadvantaged; the environment exerts more influence in defining the functional potential of poor than of nonpoor children. Bronfenbrenner (1976:141), in a penetrating discussion of the heredity-environment controversy, suggests that performance reflects not simply a given amount of genetic potential, but also the capacity of a given environment to "evoke and nurture the expression of genetic potential." A critical function of his surroundings, then, is to facilitate the development of a child's innate endowment.

The above discussion develops an argument on several levels to demonstrate the importance of environmental factors to the development of children. Poor and nonwhite children are far more likely to be born at significant risk than nonpoor and white children. A financially impoverished environment exaggerates the potential for handicap following that risk. But, a nurturant and supportive environment can permit the natural unfolding of a child's best qualities and capabilities.

The implication of these arguments is that poverty is not an inevitable outcome of genetic selection, as has been claimed (Herrnstein, 1971), and that social policy directed toward the remediation of selected problems associated with poverty is not doomed to fail because of the genetic makeup of that population. This is not to say that poverty is an aggregate of "selected problems," and that giving economically deprived pregnant mothers dietary supplements, for example, will solve the complex processes in our society by which poverty, and its human damage, is perpetuated. Thoughtful health planning as well as other kinds of social planning depends not only on the provision of services in order to ameliorate problems

which cause suffering and which can be alleviated, but also with larger public measures which affect the environment, people's prejudices (Comely, 1976), and the distribution of economic resources.

The Concept of Child Health

The importance to children's health and functioning of the environment underlines the need to understand children's health in a broad context. Health is clearly not simply a matter of Band Aids and patchwork. Health requires prevention; it requires environmental amelioration; it requires ensuring a context which is capable of nurturing and sustaining a child in health as well as in sickness. The concept of child health must include a child's context as well as the child. The concept of intervention should embrace treatment of causes as well as treatment of symptoms.

In this section, the conceptualization of child health will be reexamined, and alternative concepts and their practical expressions offered.

Health and the Ecology of Childhood

An alarming number of children suffer disease and death from environmentally derived causes. The relationship between the environment and morbidity and mortality seems clear when one considers accidents, lead poisoning, child abuse and neglect, failure to thrive, and increased perinatal risk. Additionally a relationship exists between the environment and the occurrence of organic illness, not only in the child but in his family, above and beyond the inadequacy of our health service structure to deliver technical services to the many in need.

Environmental factors which are detrimental to child health can be considered in two conceptual "layers." The first "layer" is that which is most proximal, or most immediately "causal" to a particular disease. Lead paint is the direct cause of lead poisoning; an inflicted injury is the direct cause of child abuse; accessible hazards may be the direct cause of an accident; unfluoridated water causes a high caries rate.

The second layer concerns adult functioning. Our present health structure cannot adequately acknowledge the relation between adult dysfunction and childhood illness, between the needs of families and their relation to children's health. Childhood illness deriving from dilapidated housing (plumbism), overcrowding (infectious disease), inadequate nutrition (iron deficiency anemia, malnutrition, prematurity), or accessible hazards (accidents, poisonings) may be more fundamentally a reflection of parental needs: for employment in order to afford to house and feed a family adequately; for health care for themselves; for help to overcome alcoholism or drug addiction; for family planning; for day care to get some relief from the frustration of spending all day every day in a two-room apartment with four underclothed, underfed, crying preschool children; for adequate transportation in order to get to jobs, services, and day care.

Child Health and Poverty

A child has a right to health. This generally accepted principle presents a challenge to the American health care structure. If our health system attends to the ecology of childhood, the relation of a child's life circumstances to his health will lead to an understanding of the need to increase the jobs, goods, and services available to poor people.

Given what we know of the impact of poverty on children's health and life functioning, it is timely to make a principled and strong statement about its relation to the planning of health programs. Poverty, in the United States and elsewhere, appears to cause -- directly or indirectly -- a great amount of morbidity and mortality in children. Its essentially destructive quality is paid for not only in human suffering, but also in subsequent hospital costs, reduced productivity, drug abuse, and crime.

In present practice, perhaps two-thirds of American children receive what is considered to be adequate health care. The free market economic structure in which health services are distributed leads them to

contact reasonably skilled practitioners whose understanding of the subtleties of childhood illness and behavior leads to prompt amelioration of early disease states. Their immunizations are complete, and their nutritional status is adequate.

For the other 25 million children in America who are unable to buy private health care, and who have in addition an increased risk of parental illness and distress, perinatal mishap, and personal illness, health care is provided by a patchwork quilt of categorical programs, entitling some but not all to certain specific services provided by clinics, hospitals, and practitioners. The nature of the commitment of public resources to these programs sustains a concept of the treatment of special classes of illness in special populations. It fails to acknowledge the importance for children's health of the satisfaction of basic needs of all families for the health of all their members, for adequate income, housing, food; of the harmful effects on children's health of environments which lack those basic needs; and of the increased incidence of alcoholism, drug abuse, and adult mental illness in homes where those needs are unable to be met. By entitling only a few members of a family to receive only a certain number of specific services, it militates against comprehensive health care or the prevention of those illnesses (and decreased functioning) of children which derive partly or entirely from illnesses and distress in their family. Childhood tuberculosis, gonorrhoea, and psychiatric illness are specific diseases in point.

There have nonetheless been important and encouraging results from such comprehensive programs as the Maternal and Infant Health programs of the Department of Health, Education, and Welfare. Prenatal clinic registrations for the estimated 700,000 mothers eligible rose from fewer than 60,000 in 1965 to around 141,000 in 1971. In Denver, a dramatic fall in infant mortality rate from 34.2/1000 live births in 1964 to 21.5/1000 in 1969 was observed for the 25 census tracts which made up the target area for an M. and I. program. In Birmingham, Alabama, the rate decreased from 25.4 in 1965 to 14.3 in 1969; in Omaha from 33.4 in 1964 to 13.4 in 1969. Similarly dramatic reductions in the percentages of mothers receiving no prenatal care have been achieved by M. and I. programs in Dade County, Florida; Baltimore, Maryland; Cincinnati, Ohio; Greenville, South Carolina; and Atlanta, Georgia (Maternal and Child Health Services, 1971; 1973). The current Administration's inability to sustain-much less to increase-these programs suggests a tragic misdirection of public priorities.

Child Health and the Concept of Diagnosis

Both organic and behavioral illness manifest themselves in childhood with less differentiated symptoms than analogous processes in adulthood. Clinical practice usually requires a more or less precise diagnostic formulation before treatment can proceed. Where the understanding of the phenomenon at hand is less than adequate, empiric intervention of an idiosyncratic nature begins. Such is the case with poorly understood organic diseases, such as the hemolyticuremic syndrome and Reye's disease syndrome where the individual case receives the best the individual physician can offer, and with behavioral illness, where the clinician treats on the basis of a personal, abstract formulation of the nature of the individual's problem.

"Diagnosis" in both organic and behavioral situations represents an intellectual effort to integrate signs of illness into a coherent whole. Clinical nomenclature describes groups of manifest symptoms; where little is known, it defines neither pathophysiologic mechanisms nor specific causes of disease.

Illness phenomena in children are frequently complex layerings of increasingly proximal cause. The diagnosis of a childhood illness ought additionally to take into consideration the continuing change of the developing organism. A weakness of the current diagnostic nomenclature is in its neglect of causal and developmental, in favor of manifestational, descriptors of illness phenomena. This is particularly true for the several pediatric symptom groups which seem primarily to derive from "social" or interpersonal causes. These "illnesses" include:

- failure to thrive
- accidents and ingestions
- child abuse and neglect
- pica and poisoning with lead-based paint

rumination

excessive bottle feeding (often with iron-deficiency anemia as a consequence)

"idiopathic" feeding disorders without demonstrable organic cause

"habit" disorders

learning disability

hyperactivity

bronchial asthma

The individual physician's capacity to perceive all of the pertinent information on a given child with poorly differentiated illness is necessarily limited. He is constrained by a mother's ability to observe and accurately report a child's illness data. (Since her own behavior may be a principal cause of her child's symptoms, the information she provides must be elicited skillfully and interpreted critically.) The nature and scope of clinical practice and professional training do not equip the physician to interpret the various psychological and environmental phenomena which operate to produce a particular symptom in an individual child who presents to him at a particular time.

A more causally and developmentally sensitive diagnostic nomenclature is necessary, both to guide the practitioner in sorting through the multiple variables attending illness, and as a conceptual basis for developing a preventively oriented child health care system.

Preventive Services: Early Identification and Amelioration of Risk

The critical quality of childhood is change. A growing human organism is especially vulnerable in his early years. His ability to resist infection and his capacity to fend alone are limited; his nervous system and his ability to operate in an organized way on his environment are constrained by a prolonged period of dependency. As his innate structure matures, he is susceptible to many exogenous influences. To the extent that he is protected from too great physical and psychological risks, the process of growth will lead to his development into a healthy and integrated person.

On the other hand, if risks to his development are not identified and ameliorated early, his growth may be affected adversely and profoundly. The consequences of physical and psychological illness early in life may not become apparent until later. The developing nervous system is especially vulnerable. For example, early infection exerts an important toll in later dysfunction. In regard to his personality, for example, serious parental psychologic disturbance may be associated with later stigmata of childhood behavioral deviancy; violence in the home in early childhood seems to be associated with aggressive behavior in adolescence and adulthood; and early separation or parental loss are associated with an increased risk of psychiatric disability.

A health structure designed to maintain the well-being of children will have to acknowledge the process of change in childhood. The importance of intervening early in illnesses which may present in subtle early forms means that the fundamental concept of the system should be the prevention of illness.

Specific services, able to identify early risks and act on them, do not, in general, exist at present in the American health structure. This is partly due to the nature of current medical practice, which is usually limited to episodic contacts during specific illnesses once a child's immunizations are complete. To be sure, as was pointed out earlier, not all American children even receive immunizations. To maintain children's health adequately, a commitment to provide necessary services will have to be made. Their right to health could be assured, with their access to all phases of the health care system a matter of fundamental entitlement. Their potential health problems should be identified early, as detailed below, and an orientation of the system toward assuring their adequate growth and development by preventing illness and its consequences would lead to a different organizational and financial structure for child health services.

Toward Rational Problem-Solving: Screening for Risk and Delivery of Service as a Matter of Right

A more nearly universal care system, with equal access to health services for all the nation's children, would go far to ameliorate the problems and consequences of childhood disease among both rich and poor. Fundamental conceptual changes in the nature of the delivery of health services to children would involve; in addition to entitlement, (1) an ability to understand -- and to act on -- the relation of a child's environment to his health (e.g., lead-based paint and household hazards); (2) an understanding of child development as a dynamic process where the family-child dyad is the ideal unit of practice; and (3) a capacity to perceive the special process of sampling which leads to an acknowledgment of illness in certain populations but not in others (e.g., psychiatric illness in children of upper income families is currently more likely to be ascertained and treated than in children of lower-income families, where it may be ignored or regarded as normative behavior; whereas child abuse case reports are virtually only of poor children) (Joint Commission on the Mental Health of Children, 1970; Newberger and Daniel, 1976).

The *screening* of children for risk at certain intervals has been discussed widely; it has never been systematically implemented in America. The Developmental Disabilities Act and the plans for the identification of handicaps in many states give hope for a more effective instrument for sensing needs in childhood and delivering service when it is needed.

The technical methodology of health screening for children is amply discussed in the current medical literature (Frankenburg and Camp, 1975). Although there is no universal agreement on the number of screening studies to be performed at particular levels, nor on the length of the intervals, there is consensus on the need for early recognition when prevention or treatment is most likely to be effective, as well as for the identification of the populations at greatest risk and therefore most likely to benefit from specific procedures. When Title XIX of the Social Security Act was amended in 1967 to make health screening for childhood Medicaid recipients mandatory, it was with a view to encouraging the use of health resources before illnesses became irreversible or chronic.

Whether health screening ought primarily to take place in medical as opposed to other service structures is less a subject of current discussion. For the most part, preschool children in America are not consistently in contact with any institution of society, and it seems logical that whichever component of the service system a preschool child contacts should see to it that his health needs are met.

The fundamental concepts are *entitlement* and *access*; the specific institutional setting in which the need for services is defined is less important. Were all children receiving continuing comprehensive health care (which would include all appropriate techniques for the identification of risks and developmental deviations), then screening per se would not be necessary.

The several options for the site of preventive child health services include the health care system itself, child care institutions, and the welfare structure. Irrespective of where the screening and preventive care for children take place, however, its universality is a primary goal. It is likely that the future health care system for children in America will be pluralistic, both in respect to the institutions offering service and the specific populations served. Equal access to high-quality services, and an adequate distribution of resources to all the nation's children cannot simply be assumed: aggressive "outreach" including health education and screening, to those not customarily entitled -- the poor, the children of migrants, children in institutions or in foster care, for example -- will be necessary.

Health Advocacy as a Technical Method for Realizing Child Health Objectives: The "Social" Illnesses of Childhood as a Model for Action

The Concept of Advocacy

Certain illnesses of very young children represent symptoms of severe distress in their families. The seemingly increasing prevalence of these diseases, which have important implications for the later physical

and emotional health of these children, has focused much attention about what may be necessary to identify and control them. The question in regard to these "social" illnesses of early childhood has more general implications for child health, and particularly for mental health. It has to do with what we are able to bring ourselves to do for families and children in serious trouble and our capacity to look critically at our professional activities and to acknowledge and act on their limitations.

In the interval between birth and four years of age, the impact of an inadequate nurturing environment is manifested powerfully, if not irreversibly, on a developing child. Certain clinical syndromes present urgent evidence of a major threat to the child's adequate growth, if not to his very survival. These illnesses are childhood accidents and ingestions, pica (or the relentless craving for non-food substances, leading occasionally to poisoning by lead-based paint), failure to thrive, and child abuse and neglect. They are not confined to a particular social class, and they account for a considerable share of early childhood morbidity and mortality in the United States. These illnesses appear to derive from situations of family distress, including poverty, poor housing, illness in one or both parents, marital difficulty, drug dependency, and joblessness. Such distress in a family's life setting seems to affect the parents' realistic perceptions and expectations of their child and their capacity to provide for his needs and to protect him from harm.

Medical and psychiatric treatment for this group of illnesses in childhood often seem to bear no consistent relation to the outcome. There are many reasons for this unfortunate fact, which have to do partly, but not exclusively, with the limitations of professional knowledge and competence. They include public policies toward poor people, among whom these illnesses seem particularly prevalent, an inadequate commitment to provide the services needed to help these unfortunate families, and a curious and regrettable tendency to "blame the victim" if his illness derives from his life circumstances (Ryan, 1971). It seems as though the traditional doctor-patient or therapist-patient relationship is simply not sufficient to affect the causes of these disorders, which may be based less in the parents' personal life-adaptations than in their environments. Families' housing, jobs, and financial and legal worries are not the traditional ground for medical intervention; doctors, psychiatrists, social workers, and nurses do relatively little to effect the kinds of changes which are necessary to prevent recurrence of these illnesses in many of the children at risk and to prevent the serious social sequelae of these early childhood illnesses.

For a professional person to acknowledge this fact means abandoning his strict technical role and applying different methods of intervention to affect the causes of distress in a family. A method for helping children and their families, "advocacy," through direct action seeks to intervene to ameliorate causes of family distress.

The concept of advocacy is based on several fundamental principles for personnel and institutions:

1. Non-professional community members are important resources for insight and skill about raising children.
2. Effective child rearing is not necessarily related to educational and economic status. Specifically, the ingenuity and talent required to be a successful parent in the ghetto are different from, and perhaps more important than, the kinds of competence which are represented by professional degrees.
3. Meaningful communication skill related to child rearing and sustaining children's health is related to the professional's ability to perceive and respect cultural diversity in child-rearing practices and values.
4. Health structures, including hospitals, perform their technical tasks more efficiently as the insights, skills, indigenous methods of problem-solving, and modes of communication of the subcultures whom they serve are acknowledged, appreciated, and incorporated into the repertory of preventive and therapeutic techniques.
5. Especially regarding the nurturing of children, but in many other professional encounters as well, the participation of the parent in formulating the plan for his child is a vital ingredient for the success of treatment.
6. In any observational setting, the data are always affected by the instruments of measurement. For the perception of childhood growth phenomena, of the determinants of disordered development,

- and of the success of intervention, the data are enhanced if observations are made within the cultural setting.
7. In considering technical methods of resolving health problems which derive from qualities of life in the community, it is important to acknowledge at the outset the importance of community participation in defining the methods and goals of intervention. Its humane and ethical significance understood, a meaningful element of input by members of the community strengthens the technical capacity of programs to deliver services and permits the accurate perception of pertinent phenomena of community life which affect the population being served.

Advocacy Methodology: Direct Action

1. Helping families to get what they need to survive and to care optimally for their children, and helping them to become in the future their own advocates.
2. Interceding on their behalf with community service structures, health resources, courts, landlords, and employers.
3. Teaching of age-specific child-development skills, including care (holding, washing, feeding, toileting); play skills (including how to use readily available household items and making simple toys); and social skills.
4. Offering compassionate advice, a sympathetic ear, someone who wants to be called when help is needed, and a mature and competent perspective on what it means to be a parent.

Implications of Advocacy for the Young

One would hope that as an effective methodology of intervention for environmentally derived childhood illness is developed, that the community will respond in adapting methods of perception and treatment as well as specialized and unspecialized personnel more appropriately to its needs.

If, as is likely, the important environmental determinants of adult dysfunction, including violent responses to stress and syndromes of mental illness, can be identified in childhood, then fundamental, causal prophylaxis should be possible. Individual approaches to treatment cannot, except indirectly, and for small numbers, identify the primary environmental components which predispose to illness. Epidemiologic methods are better suited for this purpose (Kramer, 1975).

For children, especially, whose personalities are significantly formed by the time they begin school, environmental and familial as distinct from individual-causes of dysfunction may most efficiently be defined and controlled early. Formal service and educational structures do not -- again, except indirectly, as siblings and parents are affected -- generally affect a child in the critical years between birth and school. The development of his personality is therefore profoundly affected by whatever quality of life is to be found in his home.

If a preschool child from a troubled family is enrolled early and regularly in a child care setting propitious to his development, he is singularly fortunate. Should there be a catastrophe in his life which leads his family to contact an agency which offers shelter in crisis, a deficit in his development may be perceived and compensated. Regrettably, and especially for infants and toddlers, this is rarely the case.

Home is the natural, logical resource for the successful nurturing of a child. Preventing illnesses, social, psychological and physical, will primarily be accomplished here. The family is likely to remain the archetypal model of child rearing in most human social systems. Identifying the causes of its weaknesses in epidemiologic perspective and developing ways of sustaining its strengths to nurture its individual offspring should contribute initially to our competence to deal with the health needs of children. Ultimately, it should improve our ability to prevent disturbed adult behavior as well.

At the present time, we do not know whether continuing contact with medical structures can make an important impact on a family's competence to parent its offspring. There is, however, evidence to suggest that a medical setting is a favorable entry point for disturbed families who for various reasons resist contact

with other service providing resources. Medical personnel are committed in theory to professional practice which is less "judgmental" than that which one might encounter, say, in court or at school. Medical institutions which offer services to children and families have diverse technical functions, among which are a social role that by tradition is low-key, directly helpful, and unthreatening. So too, should be their advocacy programs. It is said that many traditional institutions, including hospitals, schools, courts, and the military, tend to drive families apart. In a child-advocacy program, continuing contact is both the vehicle to bring parent and child together and the framework to see how certain kinds of helpful intervention make a difference for the child.

Program Recommendations for a Better Health Structure for Children

The ultimate objectives of a child health structure are to prevent lasting dysfunction and to maximize an individual's capacity to lead a productive and rewarding life. For these objectives to be reached, it is necessary to have a system which, for a large population of children, is able to define risks, to identify the means which will compensate these risks, to deliver these services to the individuals in need, and to carry on research and evaluation for the continuous improvement of the programs to sustain health and prevent and treat illness. The five elements of such a structure are the following:

- a. Financing measures
- b. Planning unit
- c. Sensor (screening, evaluation, and surveillance technology)
- d. Delivery system
- e. Manpower (training, assignment, and supervision)

Financing

Of the \$90 billion yearly national expense for health services, about half of the publicly expended dollar and about 35 percent of the privately expended dollar goes for extremely expensive hospital based services (National Center for Health Statistics, 1976a:42). Many of the latter would not be necessary had childhood services been available to prevent the chronic conditions which hospitals treat.

Measles is a case in point. The findings of the 1971 Immunization Survey have already been mentioned; their cost implications are worthy of mention. In the State of Massachusetts, a Measles Eradication Program began in 1965 (Center for Disease Control. . ., 1972a; 1972b), in which year there were 19,512 reported cases of measles. Estimating the rates of complication of measles and their costs led to a projected saving of \$2,076,529 for an investment in health services of \$1,312,525.

Similar calculations might be done for diphtheria, whooping cough, salicylate and lead-paint poisoning, and childhood accidents, where current prevalence and control data available (see Schoenbaum et al., 1976). The cost of deviant adult behavior which stems from early childhood neurologic and psychologic risks is impossible to quantify. It is probably enormous, both in terms of medical institutional expense and of the price which society pays for criminal adult behavior. Numerous retrospective studies of adult offenders point to an almost universal background of childhood illness, family crisis, foster care, and early behavioral dysfunction, with few efforts at remediation.

Abstract cost-benefit projections, aside, however, it is likely that there is already enough money within the present child health system to begin a universal comprehensive care structure. The cost is simple to calculate. Assuming 3 million births each year and a \$167 expense for each of 16 years of services (Miller, 1976), one arrives at a figure of about \$8 billion per year which would begin such a service program for all the children in the United States at this time.

It appears as if the resources necessary for a comprehensive child health program are already being spent (Wallace, 1975). Through a combination of national health insurance, whereby individuals would be

enfranchised to receive health services, and the development of a method for allocating sufficient resources for preventive services, the investment could become much more productive. To accomplish these goals, both a national health policy which assures the payment for American citizens' health services and the appropriate distribution of these services will be necessary.

If for political and economic reasons it is not possible to enact national health insurance for the entire population, it would seem sound policy to take an intermediate step with the enactment of a universal health program for mothers and children. This would be analogous to the provision of medical care for the elderly, for which we already have a precedent.

In the light of experience with financing programs like Medicaid, it is essential that national health insurance legislation make provision for an equitable distribution of resources in addition to financing them adequately. Adequate quality of service would be assured, and appropriate incentives provided for the maintenance of health.

Planning

Several options exist for the sites of childhood preventive health services. How they might be built into other services for children (e.g., day care and educational programs) or into health services for adults and families will have to be determined by units close to the population bases served. Not one but several models for child health services will probably evolve in response in local needs.

Just as there is no reason to argue for child health services to be based in one service structure as opposed to another, so too, is it unnecessary to posit a uniform program for the services, so long as they meet certain standards of care.

Where a child health structure independent of the mechanism for providing health services to adults might be preferable in a sparsely populated rural community, for instance, in order more efficiently to find the babies, examine them, and deliver their immunizations, in a particular urban area where drug abuse and venereal disease were major problems, it might be more desirable to integrate child health activities into adult services, the better to acknowledge a family's complex health problems which might impinge on its children.

Available data, previously cited, indicate an increased prevalence of virtually every handicapping condition among poor children. The implication of this fact for preventive health services is obvious: as long as poverty persists, services will have to be more plentiful and intense for the children of the needy.

Because infantile mortality rates are significantly higher in these populations, and with the knowledge, previously cited, that such programs as Maternal and Infant Health Services are indeed effective in lowering infantile mortality, it follows that expansion of these programs, or their equivalent, is logical, as fewer than a fifth of those in need are currently being served. (National Council of Organizations for Children and Youth, 1976:45).

If the mechanism for determining the nature of child health programs is to be situated in local units -- in order more accurately to tailor the program to the needs of the child population -- a basic element in the structure will have to be a way of getting services to the children who might otherwise be deprived of them.

The concept of health advocacy for children has been developed in the previous discussion. By assuring the continuing delivery of service, health conditions which might reduce a child's potential to compete in our economic system would be ameliorated. The right to services would be assured, even if, as seems regrettably likely at the time of the American Bicentennial, the child's right to the goods and resources of society would be a function of his family's wealth or of his ability to fight for them.

Screening, Evaluation, and Surveillance Methodology

An accurate system for the collection, storage, and retrieval of child health information would allow local, state, and national health planners to define needs, develop methods, assign resources, and evaluate their effectiveness in a rational way. Where current information on children's health derives from occasional surveys (e.g., health surveys, hospital case reports, immunization surveys) and from the experience of specific programs which serve portions of the childhood population (e.g., neighborhood health centers, Maternal and Infant and Children and Youth Health programs, etc.), a sensor able accurately to define individual children's health needs and to provide the information to assure that they are met would be an invaluable tool in bringing about an acceptable level of child health in America.

Information stored would be minimal, such as data on immunizations and major illnesses, and the confidentiality of the data would have to be protected assiduously (Hobbs, 1975:161-168). Accurate program planning and evaluation, too, would be enhanced by an information system which allowed a continuing reading of the prevalence of certain conditions in relation to the delivery capacity of the service structure (Institute of Medicine, 1974). The understanding of the distribution of childhood disease which would be possible from such an information system would generate insight into the causes of illness outbreaks and would point the way to their more effective resolution and subsequent prevention.

Delivery System

1. Universal access to health technology

- a. Acknowledgment of the relation between environmental risk and functional potential.
- b. Continuity of screening of all children to ascertain need.

2. Commitment to the use of preventive technology

- a. Advocacy to assure delivery of service
- b. Each service structure to assure that the health needs of children are acknowledged.

3. Child health boards, perhaps as part of such Child Development Councils as recommended by the Joint Commission on the Mental Health of Children (1970), which would serve as a powerful lobby for the health and welfare of children.

- a. These may be the local counterparts of state 4-C (Community Coordinated Child Care) committees.
- b. Focus on the needs of children in specific areas.
- c. Systematic attention to children's health needs, and assuring their provision, including:

1. Medical needs:

- pregnancy care for mothers
- perinatal care
- primary and backup care
- transportation to sites of care
- school counseling
- psychiatric services

2. Basic life needs:

- housing
- food
- water
- heat
- parental employment and health

- freedom from environmental hazards
- 3. Milieu services:
 - institutional responsiveness
 - media regulation
 - sex education
 - civil rights
 - recreation
- 4. Linkage of child health care planning to the rest of the health care planning mechanism and to other child care services, such as day care, early childhood education, and formal school programs.
 - Ultimate integration of human services is desirable in strengthening the integrity of a child's nurturing context.
 - A developmental view of child health will lead to a more organized and coherent service system, in that the consequences of childhood illness-and, conversely, the antecedents of adult dysfunction-will be observed and understood; appropriate planning and action will more nearly be possible.
 - As experience is being gained with programs for preventing developmental attrition, so commonly seen in young disadvantaged populations, it is becoming more feasible to match appropriate intervention programs to the child and family in need.

The hallmarks of an adequate child health care delivery system are listed in outline form as follows:

- Linkage of child health care planning to the rest of the health care planning mechanism and to other child care services, such as day care, early childhood education, and formal school programs.
 - a. Ultimate integration of human services is desirable in strengthening the integrity of a child's nurturing context.
 - b. A developmental view of child health will lead to a more organized and coherent service system, in that the consequences of childhood illness-and, conversely, the antecedents of adult dysfunction-will be observed and understood; appropriate planning and action will more nearly be possible.
 - c. As experience is being gained with programs for preventing developmental attrition, so commonly seen in young disadvantaged populations, it is becoming more feasible to match appropriate intervention programs to the child and family in need.

Manpower (Training, Assignment, and Supervision)

The development of adequate child health manpower will ideally follow a similarly rational evolution, as will the other elements of the child health structure. Based on a knowledge of the health needs of the children in the American population, and understanding the distribution of illnesses and the variety of methods which are necessary to assure access to preventive and therapeutic services, the needs for various categories of specialized personnel will become apparent.

Some revision of current roles will, to be sure, become necessary. Pediatricians, for example, are already involved in health program planning and administration in significant numbers. The large amount of time which they now spend performing routine technical tasks would be diverted to the treatment of more complex illness problems, the supervision of other technicians, and higher-order conceptual problems of health program planning and management. Their professional training, which now consists almost exclusively of hospital-based clinical practice directed to the diagnosis and treatment of the rare child health problems, will have to be modified to develop their skills as leaders of the child health system.

Nurses, whose talents are largely restricted to the care of the sick child, could with appropriate training become the technical mainstays of the system, as child health nurses and midwives have become in most other parts of the Western world. Under the supervision of physicians, they would assess the development of infants and older children, deliver immunizations and simple treatments, and link more complex cases to more highly specialized personnel and institutions. Silver and McAtee (1975:959) note the importance of developing an appropriate concept of primary health care for nurses in order to "adapt and expand the educational experience its students and graduates receive. . . and better prepare them to meet a greater portion of the total health care needs of the public." With this concept and technical preparation a meaningful sense of role will have to evolve for nurses, who have struggled historically and in current medical organizations to create a profession between the orders of the physician and the needs of the patient (Freidson, 1973:57-69).

Other categories of health manpower which would evolve in a preventive child health program are social workers, advocates, whose backgrounds and roles have been described earlier, and the several categories of personnel whose roles are not easily grouped under one generic classification but who for the most part have high school degrees and varying amounts of specialized technical training. The latter personnel include child health technicians, pediatric associates, and Medexes who perform physician or nurse-assistant functions at several levels of skill and independence, laboratory technicians, child care workers, who frequently have competence in behavioral and development assessment, and lay personnel with administrative and managerial skills.

The training and support of the many elements of child health manpower is a complex matter which will have to be addressed while the implementation of a national child health program is planned and developed. It will require a comprehensive and collaborative effort of training institutions, health care providers, and professional managers. Perhaps more than any other technical task outlined in this document, it will require consummate technical skill, diplomacy, and astute management. Many years of tradition, and a large investment of human energy and real resources, have made our medical and nursing schools and their graduates zealously independent of one another. Getting professional people to work effectively together toward the better health of children in America is a noble and formidable challenge. Doing the job will require the right amounts of money, time, patience, and humor, and a serious commitment to making their work personally and intellectually exciting.

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