

have a condition which may result in a low weight birth, or do women with these conditions have low birth weight infants because of X-rays? Furthermore, it is important to know how many of these radiation procedures were done specifically to determine whether a fetus was viable or not. With the introduction and availability of techniques that can take the place of X-ray, such as diagnostic ultrasound, it is understandable that the use of X-rays during pregnancy has declined over the 1963 to 1980 period. It is particularly critical to differentiate between ionizing and non-ionizing radiation and to avoid lumping them in the same basket. For many years, it has been our position that we should always use the least exposure to ionizing radiation in making a diagnosis during pregnancy. When using X-rays for other diseases during pregnancy, the doses should still be kept to a minimum.

A very important finding has been made by Hutchins, Kessel, and Placek in their paper on trends associated with low birth weight; they point out that the relationship between elective induction and repeat cesarean section is not associated with low birth weight. The major implication of this finding is that modern obstetric technology can be used without iatrogenic side effects.

The fact that seven different Public Health Service agencies were involved in collecting and analyzing the information from these two surveys, which was gathered from 52 States and independent registration areas, is worth noting. That achievement in itself is a major triumph. The Department of Health and Human Services should be proud of the activities of these different agencies in collaborating on the design, funding, and analysis of these surveys. It is also laudable that these studies have been assembled by *Public Health Reports* and made accessible to the public and professional community. The cross-pollination from one aspect of the data analysis to the other is facilitated by so many papers published in one document. For instance, the data in the studies on EFM, cesarean delivery, radiation, and employment during pregnancy can be referred easily to relationships with low birth weight.

The American College of Obstetricians and Gynecologists is pleased to have been able to contribute to these studies, and we are particularly pleased that the public use data tapes are now available for further study. As Hutchins, Kessel, and Placek say in their paper "The NNS provides a unique opportunity to examine on a national scale numerous factors not otherwise available from national vital statistics to add to our knowledge . . . and help us design, implement, and evaluate intervention strategies for the prevention of low birth weight."

Now that the National Center for Health Statistics has made these data available to all researchers, we hope that it will continue to be used well. We also hope that this type of information continues to be gathered in the future so that it can be used as the basis for informed decisions in providing the health care for the nation's mothers and infants.

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AIDS, Drug Abuse, and Mental Health

Acquired immune deficiency syndrome (AIDS)—a disorder characterized by a breakdown in the immune system and the subsequent development of opportunistic infections and neoplasms—has been recognized by Secretary of Health and Human Services Margaret M. Heckler as the Department's highest priority emergency health problem. Few published reports of AIDS take note of the behavioral and psychosocial issues associated with this syndrome (1). The clinical perspective offered by Morin and Batchelor in the January-February 1984 issue of *Public Health Reports*, and the reports by Ginzburg and by Perry and Tross in this issue, make resoundingly evident the significance of drug abuse and mental health issues in relation to AIDS.

Clearly, the fact that intravenous drug users represent a major risk group for AIDS mandates, as Ginzburg notes, a major effort both to examine the nature of the relationship between the biomedical and psychosocial aspects of drug-taking behavior and AIDS and to disseminate important information to members of the drug abuse community, many of whom may be outside medicine's typical communications channels. Perry and Tross

provide some preliminary data regarding the extent and nature of psychiatric disturbances in patients with AIDS. As they and Morin and Batchelor note, the mental health implications of AIDS arise both from the pathophysiology of the disease and its sequelae and from the special psychological implications of the syndrome and its sociocultural context. Moreover, these implications range far beyond AIDS patients themselves, affecting those at high risk for the disorder as well as family members, lovers, friends, and health care givers.

The interrelationship of biological and behavioral variables is increasingly recognized as one of the major frontiers for health research. A recent report of the Institute of Medicine, National Academy of Sciences, on "Health and Behavior: Frontiers of Research in the Bio-behavioral Sciences" demonstrates the relevance of these issues for health promotion and disease prevention and describes many promising research opportunities at the interface of health and behavior (2). Research on the substance abuse and mental health aspects of AIDS can serve as an important paradigm for these kinds of bio-behavioral investigations. Such studies on the co-occurrence of psychiatric and mental disorders are important to advancement of the science base of consultation-liaison psychiatry as well as of primary care and specialty medicine. Furthermore, as new clinical approaches are developed in response to the mental health aspects of AIDS, they can serve as important models for planful clinical interventions for other catastrophic health emergencies affecting large populations.

The Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) has been involved in the Public Health Service effort on AIDS from the outset. Both the National Institute on Drug Abuse (NIDA) and the National Institute of Mental Health (NIMH) have held several workshops on issues related to AIDS. Bringing together Institute staff, intramural scientists, and clinicians and investigators from centers around the country, these workshops have served to identify important research questions and strategies with regard to mental health, drug abuse, and AIDS as well as to consider the clinical needs of people affected by AIDS in terms of mental health and drug abuse issues. There is also a need to better link the mental health and drug abuse treatment communities with the general health care system in order to facilitate identification and treatment of patients with the disorder. ADAMHA has placed a high priority on developing and disseminating information on these issues; an example of this is the agency's solicitation of the already mentioned articles for *Public Health Reports*.

The development and support of research in these areas has been, obviously, of major interest to NIDA and

NIMH, and efforts have been made on a number of levels: initiating intramural research at the NIH Clinical Center, encouraging individual investigators to develop research grant applications, and coordinating efforts with the various NIH Institutes. Substantively, areas of needed research cut across the full range of NIDA and NIMH programs in epidemiology, the basic neurosciences and behavioral sciences, and clinical research as well as treatment and prevention research.

Research is needed to clarify (a) the behavioral factors that might affect the etiopathogenesis and course of the disorder; (b) the behavioral consequences of the disorder; and (c) the utility of interventions to modify, treat, or prevent these behavioral processes and consequences. Studies within the first category are aimed at identifying psychological and behavioral factors, including drug-abuse-related factors, that increase vulnerability in at-risk populations. For example, case-control epidemiologic studies of intravenous drug abusers could gather basic information about their immune status as well as such lifestyle factors as nutrition, specific drug-taking behaviors, sanitary conditions, and other behavioral factors, in order to develop techniques for predicting the development of AIDS and its specific character in this group. Similar studies of behavioral factors of other high-risk groups are needed, as well as studies of the possible synergy between, for example, homosexual lifestyle and intravenous drug use in predisposing to AIDS. Psychoimmunological and neuroendocrinological studies are needed for further investigation of the effects of drug abuse, stress, and other biobehavioral factors on immune response.

The behavioral consequences of AIDS are far reaching, affecting not only people afflicted with the disease but also members of high-risk groups; family members, friends, and lovers of people with AIDS; and health care providers. AIDS patients develop both primary and secondary mental symptoms. The relatively high prevalence of organic mental syndromes, generally of infectious etiology, found in AIDS patients needs to be studied in terms of defining the etiology and course of these syndromes' development, identifying factors placing people at risk for their development, and better characterizing discrete syndromes to assist in differential diagnosis. Secondary mental health consequences of AIDS (that is, reactions to the disease process) are virtually always significant but may range up to severe anxiety or depressive syndromes and even suicidal behavior. Retrospective and prospective studies are needed that focus on psychosocial, behavioral, and neurobiological factors associated with the development of specific psychiatric disturbances in AIDS patients as well as members of

LETTERS TO THE EDITOR

Cigarette Smoking: Example of Behavioral Regulation of Physiological Homeostasis?

In a recent study on life expectancy of nonsmoking men and women over age 30, Miller and Gerstein (1) reported that “. . . differential rates of cigarette smoking are apparently the overwhelming cause of the male-female longevity difference.” They also concluded that “. . . virtually all the increase in the difference . . . since 1930 is attributable to the effects of cigarette smoking.” Since the data presented were statistical rather than biological, such causality claims are questionable. Differences among smokers would not be differences due to smoking if smokers differ constitutionally from nonsmokers. It is well known that an hypothesis can be rejected but not validated by statistical methods (2,3). Moreover, as Berkson advised: “Cancer is a biologic, not a statistical problem” (4).

Holden (5) cited investigations that have shown that human females live longer, on average, than males. For example, among Seventh Day Adventists (nonsmoking vegetarians), women survive about 3 years longer than men (5). In an insurance study, life-expectancy for 32-year-old male nonsmokers was about 76 years, compared with about 80 years for nonsmoking females (5). Comfort stated: “Women—and all female mammals—tend to live longer than males” (6). A physiological component of this difference seems clear (7).

Behavioral regulation of physiological homeostasis, or ethological homeostasis (8–10), has been investigated by, among others, Richter (11,12), Mitchell (13), Wurtman et al. (14), and Lytle (15). Richter (11) observed that “. . . the results of our experiments indicate that in [humans] and animals the effort to maintain a constant internal environment or homeostasis constitutes one of the most universal and powerful of all behavioral urges or drives.” In fact, survival depends on such maintenance.

The assertion—“Nicotine has no therapeutic application” (16)—is incompatible with contrary evidence (17–25). For some, ulcerative colitis is a “nicotine-deficiency” affliction, which smoking or nicotine alleviates. Since nicotine releases cellularly-stored biogenic monoamine neurotransmitter hormones such as epinephrine and norepinephrine (26), the therapeutic effect of smoking on ulcerative colitis may result from normalizing their levels (25). The finding of Gyde et al. (27) that ulcerative colitis patients showed lower systolic and diastolic blood pressures than controls ($P < 0.01$) is consistent with anomalies in control of one or more neurotransmitter hormones such as epinephrine in these individuals (25). Moreover, blood pressure response to challenge is atypical in persons with phenylketonuria; sufferers react unusually strongly to epinephrine (28).

From the viewpoint of biobehavioral processes and psychoneuroendocrinology, Hamburg (29) observed (30) that “. . . we may find useful guidance in the principal that *individuals seek and find gratifying those situations that have been highly advantageous in the survival of the species*. That is, tasks that must be done (for species survival) tend to be quite pleasurable; they are easy to learn and hard to extinguish. Their blockage or

high-risk groups (including both the “worried well” and those with the prodromal symptoms). Included in this area are risk-assessment studies to refine procedures for differentiating which individuals with AIDS or in high-risk populations are likely to experience emotional disturbance or psychological dysfunction as well as studies examining the relationship among social, behavioral, and psychological factors and the course and prognosis of the illness.

Interventions aimed at reducing behaviors that may be linked to transmission or development of AIDS and treating or preventing the mental health sequelae of the disease need to be assessed in a rigorous manner, both to ensure effective care for those affected by AIDS and to assist in developing effective strategies for other, similar situations. Specific educational strategies for modifying risk-related behaviors of persons at risk should be evaluated. The relative roles of generic treatment approaches, such as stress reduction and counseling, and specific techniques for treating mental health syndromes manifested in AIDS patients (for example, particular somatic treatments, specific forms of psychotherapy, and support group systems such as the Shanti project) should be assessed in terms of both reducing psychiatric symptoms and altering the course and progression of the illness itself. There is also a need for research assessing the effect of *preventive* interventions in reducing stress and the incidence of emotional disturbance and psychological dysfunction in AIDS patients, members of high-risk populations, bereaved partners and family members of AIDS patients, and health care workers treating AIDS patients.

Finally, cutting across all of these research areas are important methodological issues that need to be addressed. That is, given the unique subcultural contexts of this syndrome, researchers will need to examine these issues within the perspective of the gay culture, the drug abuse culture, and so on, in order to maximize validity. Methodological studies and the development of instruments sensitive to such issues as response bias and response validity, with regard to subcultural and related issues, are critical.

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