Practitioners understand the wholeness and unity of their patients. Instead of being considered isolated organ systems or enzyme cycles, patients are understood as coherent entities composed of coordinated and interrelated processes and systems. This fundamental understanding guides investigative and clinical care approaches in psychosomatic medicine.

Areas of investigation

Psychosomatic medicine investigation targets phenomena that traditionally have been studied in isolation. To illustrate this approach, the Figure (page 6) shows the central interaction of various aspects of the patient while recognizing that there is a broad range of interactive possibilities. Each interactive domain contains illustrative examples, without intending to be exhaustive. With an extensive set of potential research possibilities, the following areas of study are among the most promising, both now and in the foreseeable future, and exemplify the vitality of the field.

Neuroscience

The expansive growth of neuroscience investigation has had an impact on many fields, including that of psychosomatic medicine. Areas of research activity include social neuroscience, emotion and autonomic regulation, and the neurobiology of depression. Emotions--their arousal, regulation, and physiologic effects--are an area of study with great potential importance for psychosomatic medicine research and with promising value and applicability for clinical psychiatry. Emotions and their neural substrate may prove to be a key mediator of psychophysiogetic processes. Various techniques, such as functional brain imaging in conjunction with physiologic measures, are being used to investigate the links between emotion, internal bodily responses, and behavior. Both positive and negative emotional states and processes are being investigated for their influence on health behaviors and outcomes. An improved understanding of emotional states and their impact may provide a basis for more effective interventions for a range of
Psychoneuroimmunology

Psychoneuroimmunology has been another area of growing investigation. Progress in this area accelerated dramatically in the 1990s and 2000s. Psychiatric symptoms and syndromes, personality features, and stressors have been studied in their association with immune function. Some of the strongest evidence to date indicates that stress and negative emotions appear capable of increasing the risk of initiation and prolongation of infectious disease and of retarding wound healing. With inflammation implicated as an important pathogenic process across numerous systemic disorders, the door to future studies of various diseases has been opened wide by studies that demonstrate the impact of depression and distress on proinflammatory cytokines. Future intervention studies will attempt to modify immune functions with methods that include longer clinical trials with older and sicker participants.

Depression and heart disease

Compelling findings from the study of the relationship between depression and heart disease continue to emerge. The psychiatrist evaluating and treating the depressed middle-aged or elderly patient must account for the substantial epidemiologic evidence that warns of an increased risk of adverse cardiac events. A dose-response relationship has been shown to exist between the severity of depressive symptoms and the risk of adverse cardiac events. Even relatively mild symptoms and other negative psychological states have been associated with cardiovascular disturbance. Growing evidence indicates that not only depression but also social variables such as low socioeconomic status, poor social support, and chronic stress are strongly linked to coronary artery disease. This evidence is a powerful impetus to provide timely and effective treatment for depressive symptoms, given the presumed added benefit of reduced cardiac risk. With the increasing confirmation of the relationship between depression and cardiovascular disease, intervention studies have begun to investigate the treatment of depression in cardiac patients. In theory, treatment of depression should alter its negative effects on the incidence of cardiac events and the course of heart disease.

The Sertraline AntiDepressant Heart Attack Trial found that sertraline (Zoloft) could be used by cardiac patients without substantial safety concerns. Drug efficacy on measures of the severity of depression was somewhat disappointing in the entire sample, although more encouraging in patients with severe or recurrent depression. The difference in the incidence of major cardiac events between the treated and placebo groups did not reach statistical significance but favored the intervention group. The Myocardial INfarction and Depression-Intervention Trial, now in progress, is a 3-armed trial comparing 2 antidepressants with placebo in the treatment of depressed patients following myocardial infarction. In addition to drug treatment studies, the federal government funded the first large trial of a cognitive-behavioral treatment for depressed cardiac patients--Enhancing Recovery in Coronary Heart Disease. Although depression was confirmed as an independent risk factor for postmyocardial infarction mortality, effective treatment of depression failed to reduce the cardiac risk. Future studies will continue to grapple with the challenge of understanding and intervening to reduce depression and its impact on heart disease.

While biopsychosocial research continues to proliferate, the educational challenge remains daunting. Medical education in the United States remains predominantly biomedical in its perspective. A recent survey of US medical school curricula found that most schools fail to teach adequately many topics that would convey the knowledge and skills necessary to carry out comprehensive patient assessment and treatment. Examples of such skills include behavioral treatments for the psychosocial elements that complicate illnesses such as diabetes mellitus and pulmonary and renal disease, and alternative treatments such as biofeedback and relaxation exercises. Maladaptive health behaviors continue to be a significant barrier to health promotion. Nevertheless, medical school curricula remain grossly deficient in teaching the next generation of physicians counseling skills that could help patients modify risk factors or maladaptive health behaviors.

With strong encouragement from the leadership of the American Psychosomatic Society and other organizations, the Office of Behavioral and Social Sciences Research (OBSSR) at the NIH asked the Institute of Medicine to undertake a study of behavioral and social science teaching in the undergraduate medical curriculum. Results of this study, Improving Medical Education: Enhancing the Behavioral and Social Science Content of Medical School Curricula, were reported in March.
Noting that demographic and other factors are increasing the importance of behavioral and social elements of health and health care, the study found that there is inadequate information to characterize satisfactorily the content of behavioral/social science curricula, teaching techniques, and evaluation methods in US medical schools. The study offered a number of recommendations:

- Establish a national behavioral/social science database.
- Develop an integrated behavioral and social science curriculum that continues through the 4 years of medical school, with an emphasis on the inclusion of 26 behavioral/social science topics in 6 domains (Table).
- Offer career and curriculum development awards supported by the NIH or foundations.
- Develop sufficient coverage of behavioral/social science content on the US Medical Licensing Examination administered by the National Board of Medical Examiners.

The Institute of Medicine report has thrown down the gauntlet for educational change. As a result, the OBSSR has followed with a request for applications for career development awards. The intent of the request is 3-fold:

- To promote development of courses and curricula to increase medical students' knowledge of and skills in the behavioral and social sciences related to health, with possible educational application for postgraduate physicians, faculty, and practicing physicians.
- To disseminate curricular and other educational materials to other medical and health care professional schools.
- To promote research and careers in behavioral/social science in medical schools.

As of October 2005, nine medical schools were funded via this initiative for a project period of up to 5 years.

Concluding thoughts

Currently we are in the midst of unprecedented attempts to place behavioral and social sciences at the core of physician education. New and revised behavioral and psychosomatic medicine texts and other educational materials are being developed to reflect the imperatives set out by the Institute of Medicine report. There are growing opportunities for the psychiatrist to design, implement, and evaluate education initiatives. Psychiatrists, as traditional leaders in holistic care, bring the commitment and experience needed to make a significant lasting contribution to the future direction of medical education. Dr Ochitill is director of the psychiatric consultation service at San Francisco General Hospital and clinical professor of psychiatry at the University of California, San Francisco, School of Medicine. He is co-chair of the professional education committee of the American Psychosomatic Society. Dr Ochitill has no conflicts to disclose regarding the subject matter of this article. Dr Novack is director of clinical skills teaching and assessment, professor of medicine, and associate dean of medical education at Drexel University, College of Medicine, Philadelphia. He is past president of the American Psychosomatic Society. Dr Novack has no conflicts to disclose regarding the subject matter of this article.

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