

Designer's Corner

The Missing Link

Kathleen Dracup

Nursing is unique among the health-care professions in its view of the patient as a biopsychosocial being. Other health-care disciplines bring a perspective that focuses on one aspect of this triad. For example, medicine as a discipline is based on a biological model of man, psychology is based on theories of cognition and emotion, and medical sociology focuses on the social roles and relationships created by disease and illness. Nursing theoretical models blend a variety of perspectives to reflect the biological, psychological, and social dimensions of the individual. One of nurses' unique contributions to the care of patients and families is the ability to blend these multiple perspectives, both in clinical care and in research.

In clinical care, this blending of different dimensions is seen every day. For example, nurses caring for critically ill patients carefully titrate vasoactive medications delivered intravenously to minimize systemic vascular resistance and maximize cardiovascular function, while they simultaneously titrate the information and social support they give to patients and families to minimize anxiety and maximize problem-focused coping skills. Cardiac function increases while anxiety decreases. Both are critical to a patient's survival.

In research, nurse investigators focus on the links among the biological manifestation of disease, the psychological response, and the social effects of an illness. Paging through any one of the discipline's research journals, one can see convincing evidence of the multiple perspectives used by nurses. For example, a nurse scientist studying asthma might focus on a combination of environmental hazards, physical characteristics, and emotional states as precursors to worsening asthma. Focusing on psychological or physical precursors alone would

Kathleen Dracup, RN, FNP, DNSc, is Dean and Professor, School of Nursing, University of California, San Francisco, USA.

not provide insight into the complex interaction that occurs with airway inflammation and worsening asthma (Janson, 2000).

The study of the link between emotional and physical responses to illness is critical to the development of nursing science. Biophysiological and psychosocial variables coexist and interact. They are precursors to disease and they characterize the human response to disease. The study of these interactions and linkages is greatly enhanced by the use of biological markers.

Biomarkers

Biological markers are measurable properties that can be used to evaluate biological processes, pathological processes, and patient response to interventions. Several decades ago, nurse researchers used blood pressure, heart rate, and urinary or salivary cortisol to evaluate the stress response. More recently, biological markers and the term *biomarkers* have become equated with cellular and molecular markers. Today, a nurse researcher studying the effect of a nursing intervention on the stress response might use salivary secretory immunoglobulin A (sIgA), which is an important biological marker for the effects of stress on immune function.

The availability of biomarkers such as nitrous oxide, cytokines, and cardiac-specific biochemical markers (e.g., troponins I and T) has changed the way we think about disease and has caused major paradigm shifts in diagnosis and treatment. These markers provide critical measures that must be reflected in emerging nursing science. An important illustration is provided in the care and study of patients with heart failure.

B-Type Natriuretic Peptide: The New "White Count" for Heart Failure

Although heart failure is characterized by complicated cardiorenal, hemodynamic, and neurohormonal alterations, nurses caring for heart failure patients and nurse researchers evaluating interventions in this clinical population have been hampered by the lack of a reliable and valid marker of heart failure severity. The measure of the effectiveness of nursing interventions has often relied on the crude outcomes of rehospitalization rates or the subjective measure of symptom severity. Now there is a simple blood test that is relatively inexpensive and correlates with left ventricular pressure, amount of dyspnea, and the state of neurohormonal modulation in heart failure patients (De Lemos et al.,

2001). B-type natriuretic peptide (BNP) is synthesized in the cardiac ventricles and is proving to be a sensitive and specific indicator of ventricular disorders. The release of BNP into the bloodstream is directly proportional to ventricular volume expansion and pressure overload, and may obviate the need for invasive and expensive hemodynamic monitoring (Maisel, 2000). Researchers studying nursing interventions designed to improve functional status and quality of life in patients with heart failure now have a powerful tool to assess the effect of such interventions on disease severity. Future studies of heart failure would be incomplete without such a measure.

Summary

The uniqueness of nursing research is derived from the philosophical view of the individual as a biopsychosocial being. Nurse scientists are prepared to illuminate the linkages among the biophysiological, psychological, and social domains, and this study is much enhanced by the increasing availability of valid and reliable biomarkers. Researchers need to develop expertise in the use of biomarkers and secure appropriate funding for their use. Missing links may be missing no longer.

References

- De Lemos, J. A., Morrow, D. A., Bentley, J. H., Omland, T., Sabatine, M. S., McCabe, C. H., Hall, C., Cannon, C. P., & Braunwald, E. (2001). The prognostic value of B-type natriuretic peptide in patients with acute coronary syndromes. *New England Journal of Medicine*, 345, 1014–1021.
- Janson, S. (2000). Biological markers of airway inflammation in asthma. *AACN Clinical Issues*, 11(2), 232–240.
- Maisel, A. (2000). B-type natriuretic peptide levels: A potential novel "white count" for congestive heart failure. *Journal of Cardiac Failure*, 7(2), 183–193.

Author's Note

Comments or inquiries about this article should be directed to Kathleen Dracup, RN, FNP, DNSc, School of Nursing, University of California, 2 Koret Avenue, Room N319, San Francisco, California 94143-0604 USA. Telephone: 415-476-1805. E-mail: Kathy.Dracup@nursing.ucsf.edu