Philip M. Farrell, MD, PhD

Dean's Corner

New research, perspectives required to understand impact of gender on health

By Philip M. Farrell, MD, PhD

Everyone has known for quite some time that some diseases occur disproportionately in women, while others occur more frequently in men. Until very recently, we assumed that hormones and reproductive systems alone were responsible for these differences. Ever so slowly, however, the medical and research communities are beginning to recognize that underlying biological factors play a critical role in such discrepancies.

In this year in which we celebrate the 50th anniversary of the discovery of the double helix, I think it is extremely appropriate that we increase the attention we give to genetic, cellular and molecular elements that may be implicated in the differences we see in the sexes.

Indeed, my point of view is that we must completely change our way of thinking and our strategic priorities. Currently we are entrenched in a "downstream perspective," but we should be looking upstream to be most effective in preventing serious diseases rather than treating them. With mammography, for example, we try to identify cancer after the malignant process has begun. That's not good enough. Instead we should be concentrating on developing excellent molecular and genetic tests to identify a woman's susceptibility to breast cancer—before it ever strikes.

In 2001, the Institute of Medicine issued a comprehensive, landmark report addressing the biology of sex-based differences. The report highlighted the need for more research on the cellular and molecular origins of sex differences impacting health. Such research, the Institute reasoned correctly, could help answer important questions such as: Why do women live longer than men? Why are women at greater risk of auto-immune diseases? Why are female babies generally healthier than male babies?

A group of University of Wisconsin Medical School faculty members and their collaborators in other UW-Madison schools and colleges is contributing to the growing awareness of the key factors that may help answer these and related questions that baffle us. Under the leadership of professor of medicine Molly Carnes, MD, MS, the researchers and educators work at the UW National Center of Excellence in Women's Health, and the UW Center for Women's Health and Women's Health Research.

Doctor Carnes and her colleagues are exploring and advancing several fundamental concepts: that many diseases affect women differently than they affect men, that women often have been excluded from clinical trials, and that biologic reasons can account for gender differences seen in many diseases. They are striving to increase understanding of these concepts from several approaches.

One approach is by training physicians and other health care professionals to conduct unique research in women's health. The UW Center for Women's Health and Women's Health Research, which directs the largest women's health research training program in the country, accomplishes this goal through a post-doctoral fellowship and two additional advanced training programs. Up to nine people are selected to participate in the programs each year.

Center scientists also conduct their own research. One new, particularly relevant study seeks to understand how antibiotics used to treat the bacterial agents of bioterrorism function in pregnant and lactating women. The study will examine the pharmacodynamics and pharmacokinetics of six common anti-infective agents that have been prescribed to the women for other problems. Co-director of the UW

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Center, Gloria Sarto, MD, PhD, is the principal investigator on the multi-center study, which is funded by the US Food and Drug Administration.

Doctor Carnes and Linda Schuler, VMD, PhD, of the School of Veterinary Medicine, also have been instrumental in UW-Madison's cluster hiring program in women's health research. The program uses newly created and funded positions to recruit faculty in emerging academic disciplines that cross traditional departmental and college lines. The outcome has been the hiring of Jyoti Watters, PhD, a scientist in Veterinary Medicine who studies the mechanisms by which estrogen protects women from some neuro-degenerative diseases; Judith Houck, PhD, a medical historian who studies the differences in the way society views women's health issues; and Christina Hull, PhD, a mycologist who studies fungi such as Candida, a common cause of infection in women, examining properties of the microorganisms that may lead to disease, and therefore may be potential therapeutic targets.

We are eager to see the progress that results from the efforts of all these individuals and the impressive programs they have developed recently. I'm certain that ultimately the impact will be felt in many ways. Research on the biologic underpinnings of health and illness differences between men and women will increase understanding of the mechanisms of disease processes themselves. This knowledge will translate to better preemptive, preventive, diagnostic, and therapeutic practices.

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