

Sex Bias in the Treatment of Coronary Artery Disease: Equity and Quality of Care?

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In the back of the eye where the optic nerve inserts into the retina, there is an area with no rods or cones for detecting light. This area is a functional "blind spot." One does not notice this deficit under most circumstances, since images that are projected to that area are picked up in the visual field of the other eye. If vision from the other eye is blocked, objects whose images would reflect in that blind spot would not be seen, and in such a case, the viewer would insist that the object was simply not there. This phenomenon is an apt metaphor for sex bias in the care of patients with coronary artery disease. Until sex bias was unexpectedly found during a study of patients treated for cardiovascular disease, it was in our collective "blind spot." It was there; we just had not seen it.

The first suggestion that the health care system might harbor a bias toward the treatment of men and women with coronary artery disease came in the unanticipated finding that women with positive cardiac radio-nuclide test results were less likely to be sent for more extensive testing and treatment than men in the same study cohort.¹ Many other studies have since looked at this potential difference at virtually every available stage of intervention in the disease, including testing and treatment in the ambulatory care setting,^{2,3} emergency department,^{4,5} hospital bed,^{6,7} and surgical suite for both bypass surgery^{8,9} and cardiac transplant.¹⁰

Most of these studies have found similar differences, with women being evaluated and treated less aggressively than men. Some have proposed that these differences represent more appropriate care for women.^{6,11} In addition, a few studies have found no difference in the care deliv-

ered to men and women with potential or known coronary artery disease.¹¹⁻¹³

The article by Green and Ruffin¹⁴ published in this issue of *The Journal of Family Practice* addresses sex bias from a fresh perspective by evaluating the process of care in patients with chest pain presenting to the emergency departments of two separate but comparable hospitals. The authors used a validated algorithm for predicting probability of myocardial infarction as the gold standard and assessed whether men and women were treated with the same fervor. The analysis of data aggregated from both hospitals showed no significant difference between the sexes. At one of the hospitals, however, men with a low likelihood of myocardial infarction were significantly more likely to be admitted to the hospital than women. The authors concluded that sex differences in the treatment of coronary artery disease may represent a practice variation phenomenon rather than a uniform pattern of bias, and that this practice variation bias may represent inappropriately aggressive care for men and appropriate care for women. The authors further demonstrated the weakness of studies that used abstracted summary data as compared with those that used detailed process of care information from the entire medical record.

This investigation joins the others in demonstrating that men and women with cardiovascular disease do not receive comparable care in all circumstances. It is noteworthy, however, that studies so far show either no bias or bias in favor of more aggressive care for men. There are no studies concluding that women are more aggressively managed than men. This trend in itself suggests a true underlying bias, since it is unlikely that chance alone would have produced such a pattern of results. To the contrary, chance would dictate that results would fall in both directions (more aggressive care at times for women and more aggressive care at other times for men) as well as in the middle.

The finding that less aggressive care provided for women really represents more appropriate care does not

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obviate bias. It may be true that technology is overused in the care of patients with coronary artery disease. This does not, however, mean that the system cares better or more attentively for women than for men. It is more likely that both health care providers and their patients believe that the money spent on more aggressive care is in the quest of higher quality care, and thus the issue of bias remains. It is important that more appropriate care can be both less aggressive and less expensive. This finding should be considered in our clinical decision-making, but it does not make the problem of sex bias disappear.

There have been several who have ventured hypotheses concerning the possible existence of sex bias in the management of coronary artery disease. Some suggest that our underlying beliefs about the significance of coronary artery disease in women are responsible for this phenomenon. Wenger¹⁵ credits our reliance on the early Framingham data,¹⁶ which reported a more favorable prognosis for women with angina as compared with men (a conclusion later found to be flawed¹⁷), as well as reports of lower diagnostic accuracy of treadmill testing in women,¹⁸ as being largely responsible for our different approach to care in women. Healy¹⁹ points to an underlying misconception that coronary artery disease is a uniquely male affliction, an idea that is founded on decades of sex-exclusive research that established men as the normative standard.

Herman²⁰ proposed that variables based more on societal factors that have been shown to predict adverse outcome in coronary artery disease may be in part responsible for this difference. Women have been shown to have lower levels of economic and social support²¹ and to be more likely to live alone,²² factors that correlate with poor prognosis for coronary artery disease.

Individual preferences toward aggressive technological intervention may vary along gender lines as well. Randall¹⁰ reports that at least in one program women refused cardiac transplantation at a much higher rate than men. The only other factor to correlate with refusal of cardiac transplantation was Medicaid insurance status. One wonders how much influence the physician's preferences had on those of the patients.

These sex-related differences in care should and do trouble the health care community. Those with healthy underlying biases of their own regarding the presence of sexism in medicine no doubt have either embraced or condemned these findings to strengthen their preexisting beliefs. The rest of us, however, must take this information as an opportunity to see what has previously been in our collective blind spot, and delve further into the phenomenon to understand its source.

Bias is defined as "an inclination of temperament or outlook,"²³ but does not necessitate the existence of ne-

farious intent or gross disrespect. Bias can be simply a tendency to look at events in a particular way. Once the existence of bias is realized, however, it necessitates inquiry into the source of the bias and action to rectify whatever inequities exist. It is unnecessary and probably misleading to substitute the term *sex difference* for *sex bias*, since the former implies a situation that requires no corrective action. However, if women receive less expensive, less aggressive, more appropriate care, then steps should be taken to limit the use of these technologies with patients of either sex to save unnecessary suffering and expense. If women are unconsciously being denied appropriately aggressive care for any reason, this too should be rectified. To turn our backs on the discovery of this bias would be wrong.

It is time we acknowledged that the weight of the evidence favors the existence of bias in the treatment of men and women with suspected or proven coronary artery disease. It is time for our behavior to reflect this reality. Recognition of bias does not require that we heap blame on ourselves or others, nor does it require drastic changes in the health care system or society. It simply requires that we shift our thinking about patients with cardiovascular disease.

For medical practitioners, that shift would involve a conscious effort to remember that sex bias is real yet difficult to recognize. It would require us to revise our concept of the risks of this disease in middle-aged and older women. We would need to remember that cardiovascular disease is the leading cause of death among women in the United States.¹⁹ We would need to incorporate into our decision-making the reality that more women than men die annually of cardiovascular disease.²⁴ This does not mean that we should begin the indiscriminate use of high technology investigations and treatment of women. It does mean that we should choose treatments rationally and stop overevaluating and overtreating men. This would involve a renewed effort on our part to limit unnecessary investigations, treatments, and hospitalizations for both male and female patients with less severe cardiovascular disease in whom aggressive care offers little benefit over medical management.²⁵

In my mind, based on recommendations for coronary artery bypass surgery,²⁵ patients of both sexes would benefit from cardiac catheterization when their angina is not easily managed medically or when an exercise treadmill test result is markedly positive. Until we have evidence to suggest it is prudent to practice otherwise, we should send women for coronary artery bypass surgery for the same indications that we send men. Bypass surgery has been shown to be of greater relative benefit in patients with more severe stenosis, a higher number of proximal stenoses, and left ventricular dysfunction. Until there is

clear evidence of a failure of benefit past a certain age, the elderly (a group that is predominately female) should also be managed comparably. This approach would probably result in earlier, more aggressive care for many women with coronary artery disease, and less invasive, less expensive care for men and women with early or low likelihood of disease.

Researchers likewise need to shift their focus away from studies that try to refute or reproduce these findings toward investigations that are designed to explain the phenomenon and offer hypotheses for remedy. Clinical trials of treatments for cardiovascular disease need to include more elderly and female patients if we are to deliver unbiased care in the future.²⁶

The reasons for societal, professional, and personal blind spots are based more on the constructs of culture and psychology than anatomy, but they are just as real, although certainly more difficult to demonstrate. Fortunately, all the potential explanations proposed so far for sex bias in the care of patients with coronary artery disease are amenable to study, and no doubt new, equally accessible theories will arise. They await only an energetic investigator with the necessary resources to clarify what contribution each makes to this phenomenon. If medical scholars do not pursue this question out of a sense of justice or intellectual curiosity, then forces in the managed care systems will do it for us, but with an eye to cost containment rather than equity and quality of care.

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