

Literature Review on Effective Sex- and Gender-Based Systems/Models of Care

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Authors:

Christine Brittle, Ph.D.
Founder, Uncommon Insights, LLC
Chloe E. Bird, Ph.D.
Senior Sociologist, RAND Corporation

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Executive Summary

The U.S. Department of Health and Human Services, Office on Women's Health (OWH), commissioned this literature review to provide an up-to-date review of effective sex- and gender-based systems/models of healthcare. The review investigated seven main research questions:

1. What key sex and gender differences exist in the current healthcare system structure, including reimbursement mechanisms, content of and access to appropriate care, quality of care, and patient safety?
2. What models or approaches have been successful in engaging and retaining people in systems of healthcare, especially the underserved, the "difficult to reach," or low literacy populations? Are there sex/gender differences in the effectiveness of these approaches?
3. What are the trends in demographics, service delivery, costs, insurance, or other sectors that could be addressed via a systems approach? To what extent are patients reimbursed for care for specific services (i.e., prevention, mental health, etc.)? Are there gender or sex differences in out-of-pocket patient costs?
4. How does a service delivery site successfully integrate a model program into its current infrastructure of delivering care?
5. How effective are sex- and gender-based healthcare practices? What measures have been used to determine the effectiveness of these practices? What barriers exist to translating/adapting these approaches into clinical practice?
6. How effective is a focus on clinical care at improving women's healthcare? How effective are systemic improvements (i.e. more women in professorships/research positions or emphasis on women's health in medical school curriculum) at improving women's healthcare? Are there other factors (e.g. continuity of care) that may be more important to women than to men or to women's outcomes vs. men's outcomes?
7. How can programs targeting boys and men be created to recruit and retain them in the healthcare system? Are programs such as patient advocate or patient navigator more needed or more effective for men at getting them into the system and to needed care?

The literature search was conducted in October and November of 2006. Relevant materials were identified via electronic searches of 12 wide-ranging academic databases that catalog thousands of academic journals, individual journal searches, a library catalog search for relevant books, personal contacts with experts in this field, and an Internet search.

In this executive summary, we provide some brief background materials and then briefly highlight our findings in response to each of these seven main research questions. Because of gender's potential implications for many aspects of healthcare, and the broad scope of OWH's initial research questions, our review covers a diverse set of topics such as quality improvement, systems level changes, the role of provider behavior, insurance patterns, and many others. In these discussions, we highlight gender-specific findings and research where available. Where gender is not discussed, we did not find any gender-specific analysis.

Background

Two of the primary sources of medical differences between men and women are biology and physiology. The most obvious sex differences in these categories relate to size, hormones, and the reproductive system, but there are many other such differences that can impact overall health. The result is that men and women may experience the same diseases at different rates or with different symptoms, or they may experience different kinds of illness altogether.

In addition to these biologically and physiologically driven differences, the fact of being male or female leads to different socialization, expectations, and lifestyles. Thus, gender roles and related exposures to stress and adversity as well as health-promoting social ties and resources additionally affect and interact with health. These interactions may be even more complex than biological and physiological factors, as the direction of their effect is not always consistent. For example, some factors make women more likely to seek treatment, while others make them less likely to seek treatment.

Research Question 1: Key Sex and Gender Differences

What key sex and gender differences exist in the current healthcare system structure, including reimbursement mechanisms, content of and access to appropriate care, quality of care, and patient safety?

Because women have fewer resources in terms of time, money, and insurance coverage in their own names, they face unique access barriers to the healthcare system compared with men. However, women are more likely to seek preventive care than men, perhaps because they have been socialized to seek care before a health crisis occurs. Additionally, a higher proportion of women than men become more accustomed to seeking routine medical care because of women's use of reproductive medical services. Gynecologists remain a key access point to the healthcare system for women, especially among women of reproductive age.

Women appear to receive worse quality care than men do. This appears to be especially true for acute conditions. However, women, as more frequent users of preventive care, may actually receive better preventive care than men. The fact that women's higher rates of healthcare utilization and preventive care do not carry over into better treatment in general is particularly striking and points to the need for new approaches to improve men's and women's healthcare.

Despite significant gains in recent decades, women remain relatively understudied as medical research subjects. As a result, medical treatments may not be as appropriate for women as they are for men, and women are more subject to adverse drug reactions than are men.

Research Question 2: Reaching the Underserved

What models or approaches have been successful in engaging and retaining people in systems of healthcare, especially the underserved, the "difficult to reach," or low literacy populations? Are there sex/gender differences in the effectiveness of these approaches?

There are a variety of approaches being implemented to engage and retain the underserved in systems of healthcare. These approaches include community health workers, an emphasis on

cultural competency, reaching people where they are, and providing information in the appropriate language or at the appropriate literacy level to facilitate understanding. Efforts to recruit populations into care focus on using community health workers and removing barriers to access (e.g., providing transportation or taking care to the people). Efforts to retain populations focus on ensuring that healthcare providers are aware of and responsive to cultural needs, including different traditions, expectations, values, and languages. Implementing such programs requires strong organizational leadership, adequate funding, and ongoing attention to overcome institutional barriers and resistance to change.

Limited efficacy data are available on the effectiveness of such programs, but available data suggest that such programs can be very effective in getting underserved populations into the system to receive care. In particular, efforts to work with community-based partners seem promising. Both men and women have been reached by efforts undertaken in partnership with community groups (e.g., religious organizations) which help promote knowledge of risk, screening, and positive health behaviors as well as the utilization of preventive and chronic care to improve health outcomes. Data are lacking, however, on the cost-effectiveness of such programs, and on whether there are gender-differences in the effectiveness of these programs.

Research Question 3: Systems Approach and Insurance/Cost Trends

What are the trends in demographics, service delivery, costs, insurance, or other sectors that could be addressed via a systems approach? To what extent are patients reimbursed for care for specific services (i.e., prevention, mental health, etc.)? Are there gender or sex differences in out-of-pocket patient costs?

The U.S. healthcare system is a patchwork overlay of a number of distinct systems of care and a variety of programs intended to serve as safety nets. Consequently the resulting system is imbalanced in many ways that complicate access to care and fail to maximize overall quality of care. Thus, despite spending more money per capita on healthcare than other industrialized nations, the quality of care in the United States remains poor by comparison. U.S. patients have been estimated to receive a little over half of the care they should receive. Other nations perform better, as do systems such as the Department of Veterans Affairs that are more structured and take advantage of technological advances to coordinate and improve quality of care for their beneficiaries. Thus, systems-level changes to the U.S. healthcare system likely would result in substantial improvements to quality of care, as well as a reduction in disparities and potentially a reduction in overall costs. Other large efforts within the healthcare system (e.g., the effort to create patient-centered care), may be good models or natural allies for efforts to promote gender-based care.

Nearly a fifth of the U.S. population lacks health insurance coverage. Slightly more women than men have health insurance coverage; one contributing factor is that women are more likely to get public assistance through Medicaid because of pregnancy. Men are more likely to hold health insurance policies in their own names, while women are more likely to be covered as dependents, making them vulnerable to disruptions in care due to death and divorce (or because a husband is older and retires before his wife is eligible for Medicare). Income is highly associated with private health insurance status, with higher-income people having more coverage. Lack of

health insurance is associated with worse health outcomes across the board, including increased mortality rates and the receipt of fewer preventive services.

Women are financially disadvantaged compared with men and also have greater family responsibilities. This makes healthcare costs, including out-of-pocket costs, a greater burden for women than for men. Women pay a larger percentage of their income out of pocket for prescription drug coverage and also are more likely than men to skip needed doses of medications because of cost limitations. Because of their lower incomes, women also may be more sensitive to differences in co-payment amounts, thus contributing to poorer quality of care and reduced care outcomes.

Research Question 4: Integrating a Model Program

How does a service delivery site successfully integrate a model program into its current infrastructure of delivering care?

There are very few currently existing gender-based approaches to medicine. There are a substantial number of programs that are designed to serve women, and a smaller (yet growing) number of programs designed to serve men. The literature on existing programs tends not to contain much more than anecdotal details pertaining to how to successfully implement model programs, instead focusing on a description of such programs and results to date. The OWH-sponsored Centers of Excellence (CoEs) have been pioneers in this field, and some of the best data about how to implement new model programs come from the CoEs. Data on OWH's Community Centers of Excellence (CCOEs) is still emerging.

The themes that emerged from our analysis included the following:

- Funding is critical: Any new model program must begin with an initial funding source, but also must work to develop ongoing funding.
- Leadership matters: To create change, strong advocates for change must exist within organizations.
- Partnerships are essential: Community partners help to build support and spread the word, and also can be invaluable sources of funding.
- Market research sets the foundation: Model programs must be embraced by the people they are designed to serve, as well as the people who are being asked to implement them. Formative research with affected patients and staff is essential to identifying and overcoming barriers.
- Flexibility helps: Each healthcare setting is unique, and model programs may need to be tailored to individual healthcare settings.

Research Question 5: Sex- and Gender-Based Healthcare Practices

How effective are sex- and gender-based healthcare practices? What measures have been used to determine the effectiveness of these practices? What barriers exist to translating/adapting these approaches into clinical practice?

Gender-based healthcare practices—i.e., medical care that effectively addresses differences in men's and women's healthcare needs—is still in its infancy. As such, almost no data exist on the

overall effectiveness of such approaches. We suspect that when gender-based medical practices are fully implemented, they will be highly effective. However, this assumption is speculative because this promising area of evidence-based medicine is itself in its infancy.

The women's health movement, however, is beginning to produce efficacy results, and these are quite promising. For now, women's care has primarily meant the treatment of women in a women-only setting. Accordingly, women's health clinics have arisen in the United States as well as in other countries. Universally, the women who attend such clinics rate their overall satisfaction as quite high. In addition, however, studies are showing that these women are receiving better quality care, especially better preventive care on traditional women's issues (e.g., screening mammography). CoEs clearly are leaders in this kind of woman-specific care, and the CoE model, as a women's healthcare model, has been successful.

The primary barriers to implementing this kind of women's care model are inertia (that is, a lack of extrinsic motivators to change the way care has always been delivered), as well as insufficient funding and space. Having a national recognition program like that provided by the CoEs and CCOEs is very helpful in this regard.

Data to demonstrate the effectiveness of sex- and gender-based approaches to care are extremely sparse. Women are still at a deficit in terms of their inclusion in medical research trials. Likewise, existing reporting systems both fail to report on gender and do not collect adequate sample sizes to allow for gender-based analysis. These issues are slowly being addressed.

Research Question 6: Approaches to Improving Care

How effective is a focus on clinical care at improving women's healthcare? How effective are systemic improvements (i.e. more women in professorships/research positions or emphasis on women's health in medical school curriculum) at improving women's healthcare? Are there other factors (e.g. continuity of care) that may be more important to women than to men or to women's outcomes vs. men's outcomes?

Clinical care interventions to create women's health centers appear to be effective in improving women's preventive care. Likewise, there is anecdotal evidence that increasing the number of women leaders in healthcare improves care for women, and substantial evidence that male and female doctors communicate and interact with patients in different ways. While limited efforts are being made to increase the amount of gender-specific information in various curriculums, we found no data to demonstrate the effectiveness of this approach in improving overall care. We also found evidence that women have different care preferences than men, but again no data to suggest whether attention to these areas will substantially improve care for women.

Much of the burden of achieving the goal of gender-specific medicine will fall to physicians. To accomplish this mission will undoubtedly require changes in clinical care; increasing parity in terms of women and minority medical leadership; better training for the entire medical community on sex- and gender-based differences; and attention to other aspects of care, such as communication and expectations that may differ in important ways between male and female patients. Patient education also will be critical to the success of this effort.

Research Question 7: Targeting Boys and Men

How can programs targeting boys and men be created to recruit and retain them in the healthcare system? Are programs such as patient advocate or patient navigator more needed or more effective for men at getting them into the system and to needed care?

It appears that men face additional barriers to care, perhaps the most important of which is a generalized male reluctance to seek preventive or routine care. This reluctance puts men at risk because it means that they are more likely to delay care until their need for it is critical, by which time multiple opportunities for prevention and early intervention may already have been missed. This assessment is based on mostly anecdotal evidence; we did not uncover any studies that systematically identified access patterns for men and women.

We found several examples of programs to encourage men to receive more preventive care, and many of these use approaches we identified as having potential to reach men. These include creating settings that are more appropriate for male patients and utilizing women as an avenue to reach men (although we note several drawbacks of relying on women as a means to reach men).

Conclusions and Recommendations

We conclude with the recommendation that OWH build on the success of its current CoE model to move toward a gender-based model of healthcare. Such a model will consider the needs of men as well as women, and will help the United States to create a healthcare system that provides better care for all Americans. As part of this effort, we recommend additional research into sex and gender differences, improved data collection, an integration of men's care into existing CoEs and CCOEs, cooperation with other nations, and efforts to educate both the public and the medical community about the importance of gender-based care.

Our conclusions include the following:

- CoEs have been successful.
- Neither men nor women are receiving optimal care from the U.S. healthcare system, with both genders experiencing significant and well-documented disadvantages in healthcare.
- Both men and women would benefit from a move toward a gender-based system of care in the United States.
- Despite the promise of a gender-based approach, significant research gaps remain.
- All health trends need to be considered from a gender perspective.
- Progress toward this goal will require new and continued efforts on multiple fronts.

We discuss the following possible leadership areas as recommendations for OWH:

- OWH should consider working with existing CoEs and CCOEs to create a new model of care at these sites that is gender-based for both men and women.
- In concert with other Federal agencies working on these issues, OWH should help to establish reporting guidelines and systems that aid in the collection of data.

- To advance gender-based models of care, OWH could partner with other Federal agencies to fund and develop instruments and efficacy studies that would document whether new guidelines improve care as anticipated.
- OWH could use its influence to highlight and publicize all aspects of healthcare where gender might be an important variable to be considered.
- OWH could work with other Federal agencies to encourage the study of sex and gender differences in the application of patient-navigator programs or other efforts to reach the underserved.
- OWH should learn from the efforts of other nations to promote gender-based care.
- Likewise, it might be desirable for OWH to bring together various stakeholders promoting gender-based care to learn from these efforts.
- Finally, we recommend continued efforts to educate health professionals and the public about critical sex- and gender-based differences in care.

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Introduction

Historically, medical research has failed to adequately assess important differences between men and women, or at times to even distinguish between men and women. Women were excluded from clinical research trials, and the default patient in medical textbooks was an adult (white) male. Women, it was assumed, were essentially “small men” (Legato, 2002). Partly in response to this oversight (but also because of women’s desire to have greater control over their own bodies), a women’s health movement emerged in the latter part of the 20th century.

Early efforts in women’s health ultimately led to shifts in both medical research and in healthcare delivery. While some early women’s health centers were mostly a cosmetic exercise (e.g., pink examining rooms for gynecological care), women’s health in the 21st century is an established discipline that is uncovering critical differences between the sexes.

This new research focus has led to the discovery of vast differences between the sexes on numerous biological and physiological processes. Differences have been found in virtually every body system, from the heart to the brain (Legato, 2002). As the Institute of Medicine (2001) noted in its paradigm-shifting report on sex differences in health and illness:

Sex matters. Sex, that is, being male or female, is an important basic human variable that should be considered when designing and analyzing studies in all areas and at all levels of biomedical and health-related research. Differences in health and illness are influenced by individual genetic and physiological constitutions, as well as by an individual’s interaction with environmental and experiential factors. ... Although in many cases these sex differences can be traced to the direct or indirect effects of hormones associated with reproduction, differences cannot be solely attributed to hormones.

Not only does sex matter, but sex differences must now shift to the forefront of medical research:

There is now sufficient knowledge of the biological basis of sex differences to validate the scientific study of sex differences and to allow the generation of hypotheses. The next step is to move from the descriptive to the experimental and to establish the conditions that must be in place to facilitate and encourage the scientific study of the mechanisms and origins of sex differences. ... Barriers to the advancement of knowledge about sex differences in health and illness exist and must be eliminated (Institute of Medicine, 2001).

Important differences between men and women regarding healthcare relate not only to sex-differences, but to gender-differences as well. The fact of being male or female leads to different socialization, expectations, and lifestyles, and these gender roles affect and interact with health in complex ways. For example, some factors make women more likely to seek treatment, while others make them less likely to seek treatment. Thus, gender is also an important component of healthcare.

In the wake of this ever-expanding knowledge, many women’s health researchers increasingly are realizing that women are not the only ones who need to be studied. The previous one-sex research focus (first on men, then on women) meant that scientists missed an entire pattern of

differences. Now, “the new knowledge about women is forcing a correction and expansion of male models of normal human function and the workings of illness and how to repair and destroy it” (Legato, 2002).

The result is that medical research is moving toward becoming gender-based (that is, considering gender as a potentially important variable in all aspects of research and care). For diseases affecting both genders, single-sex studies cannot indicate whether a specific type of care or intervention is better suited to one gender. Just as we cannot generalize from all male studies to women, we cannot assume that the findings from all male studies do not apply to women. The reverse is also true; for instance, if researchers found that a particular form of doctor-patient interaction works well for women in a single sex study, this would not provide the basis for knowing whether the benefits of the intervention are unique to women.

This new research focus will be helpful to clinicians in their efforts to effectively respond to patient needs. To date, this medical literature has not been comprehensive as it relates to sex- and gender-differences, but ongoing research will continue to address these issues:

Unfortunately, the published scientific and medical literature too often fails to aid clinicians who seek to understand potential sex differences in disease presentation. In the absence of research that includes sufficient numbers of women to support a separate analysis ... clinicians are often left to apply findings from studies on men to the care of women. Increasingly, we are shown that this is not the ideal way to deliver quality care. Indeed, new sex-specific clinical evidence often invalidates previously accepted conventional wisdom regarding the best choices for patient care and replaces it with more accurate, effective, or safer alternatives (Washington & Bird, 2002).

In many ways, the success of the women’s health movement has rapidly pushed the frontiers of medicine to first include women and then to have a new and better understanding of men. This poses a new challenge for the field of women’s health, however: How can the discipline of women’s health continue to study the unique ways women differ from men (a necessary process because of the accumulated knowledge deficit from past oversights), while simultaneously embracing a new movement that includes gender-specific treatment for both sexes?

One organization currently facing this challenge is the Department of Health and Human Service’s Office on Women’s Health (OWH). OWH has developed several programs to model and promote excellent care for women. For example, in 1996 OWH established and promoted several Centers for Excellence in Women’s Health. Although not created to do research, these CoEs

have served as leaders and change agents in the area of women’s health. Their pioneering efforts have led to changes in the way that women’s health services are delivered, changes in women’s health curricula, acceptance of community health workers and allied health professionals as key members of the care delivery team, development of leadership and empowerment programs for women, and much more (US Department of Health and Human Services Office on Women’s Health, 2006).

OWH is currently in the process of revisiting this model. Building on the success of the CoEs (and other similar programs), OWH now is ready “to move to incorporate women’s health into

an evidenced-based, sex and gender-based approach to care that includes medical, dental, and mental health services” (US Department of Health and Human Services Office on Women's Health, 2006). To provide an up-to-date research frame in which to move toward this kind of model, OWH commissioned this literature review “on comprehensive, integrated models of care, especially sex and gender-based systems/models of care” (US Department of Health and Human Services Office on Women's Health, 2006). This literature review will thus serve as a foundation as OWH moves forward in its efforts to improve healthcare for both genders.

OWH contracted with Uncommon Insights, LLC, to conduct this review. We have investigated seven main research questions, which will be discussed in more detail in this report:

1. What key sex and gender differences exist in the current healthcare system structure, including reimbursement mechanisms, content of and access to appropriate care, quality of care, and patient safety?
2. What models or approaches have been successful in engaging and retaining people in systems of healthcare, especially the underserved, the “difficult to reach,” or low literacy populations? Are there sex/gender differences in the effectiveness of these approaches?
3. What are the trends in demographics, service delivery, costs, insurance, or other sectors that could be addressed via a systems approach? To what extent are patients reimbursed for care for specific services (i.e., prevention, mental health, etc.)? Are there gender or sex differences in out of pocket patient costs?
4. How does a service delivery site successfully integrate a model program into its current infrastructure of delivering care?
5. How effective are sex- and gender-based healthcare practices? (Comment on whether this research is far enough along to warrant a targeted boost via clinical practice models.) What measures have been used to determine the effectiveness of these practices? What barriers exist to translating/adapting these approaches into clinical practice?
6. How effective is a focus on clinical care at improving women’s healthcare? How effective are systemic improvements (i.e. more women in professorships/research positions or emphasis on women’s health in medical school curriculum) at improving women’s healthcare? Are there other factors (e.g. continuity of care) that may be more important to women than to men or to women’s outcomes vs. men’s outcomes?
7. How can programs targeting boys and men be created to recruit and retain them in the healthcare system? Are programs such as patient advocate or patient navigator more needed or more effective for men at getting them into the system and to needed care?

The remainder of this report will describe our findings as they pertain to these seven research questions. We also describe our methodology to conduct this literature review, provide a brief overview of some recent findings related to sex-specific medical differences to help set the context of this report, offer our conclusions and recommendations (including a brief discussion of limitations), and include a complete bibliography.

Because of gender’s potential implications for many aspects of healthcare, and the broad scope of OWH’s initial research questions, our review covers a diverse set of topics such as quality improvement, systems level changes, the role of provider behavior, insurance patterns, and many

others. In these discussions, we highlight gender-specific findings and research where available. Where gender is not discussed, we did not find any gender-specific analysis.

One of the primary reasons to include such broad-ranging information in our review is that, as will be discussed later on, while gender-based approaches to healthcare are not yet well-developed, there is a growing body of evidence and experience from related movements (e.g., toward culturally sensitive or patient-centered care) that can be drawn on. These movements not only provide important lessons-learned in thinking about how to implement gender-based care, but they also provide important opportunities for synergy.

Methods

The literature search was conducted in October and November of 2006. The primary source of materials for the search was 12 wide-ranging academic databases that catalog thousands of academic journals. These journals cover relevant subject matter areas such as women's and gender studies, healthcare, sociology, psychology, and general social and medical sciences. The databases searched were Academic Search Premier; Contemporary Women's Issues; GenderWatch; GLBT Online; HealthSTAR; JSTOR; Nursing & Allied Health Collection; Proquest Research Library; PsycInfo; PubMed; ScienceDirect; and Sociological Abstracts.

In addition to these journal databases, we also searched the following nine individual journal titles, which are not cataloged in any of the previously mentioned databases: *AWHONN* (Association of Women's Health Obstetrics and Neonatal Nurses) *lifelines*; *BJOG: An international journal of obstetrics and gynecology*; *Cancer nursing*; *Critical pathways in cardiology: A journal of evidence-based medicine*; *Evidence Based Medicine*; *Evidence Based Mental Health*; *Evidence Based Nursing*; *Psychiatric services*; and *Science*. To round out our journal search, we manually searched the following four key journals (in addition to our electronic database search) because of their particular relevance: *Women's Health Issues*; *Journal of Women's Health*; *Women and Health*; and *Journal of Men's Health and Gender*. In general, each source was searched for the preceding 10-year period (1996-2006), although search dates varied somewhat based on individual title availability.

All searches were conducted electronically using a series of keywords. The primary keywords were terms related to sex or gender (including "sex," "gender," "woman," "women," "girl," "female," "man," "men," "boy," and "male") and words related to health (including "health," "healthcare," "health care," "mental health," "public health," and "dental"). Each identified item included both kinds of keywords in its primary identifiers (including title, subject header, article keywords, and article abstract).

In addition to these primary keywords, relevant materials also included at least one secondary keyword. Secondary keywords included "access to care," "approach," "attract," "barriers," "care outcome," "chronic disease," "clinical care," "continuity of care," "difference," "disasters," "disparity/disparities," "doctor-patient communication," "effective," "efficacy," "engage," "evaluate," "evidence-based," "infrastructure," "lay health workers," "model," "patient advocate," "patient navigator," "patient reimbursement," "patient safety," "pharmaceutical coverage," "practices," "process change," "quality improvement," "quality of care," "rapid cycle change," "recruit," "self-management," "structural change," "structure," "systemic," "system," "systems approach," "systems of care," and "trends."

Once articles were electronically retrieved using the primary and secondary keywords, the lead author of this report reviewed thousands of titles and abstracts to identify relevant materials to be included in this search. Articles of interest were retrieved in full-text (where available) for subsequent analysis.

To supplement our journal-based approach, we also used the following techniques to locate relevant materials:

- Conducted a search for relevant books and book chapters using our identified keywords (using the Georgetown library book catalog).
- Thoroughly reviewed the reference section of identified materials to locate additional materials.
- Contacted other Federal agencies and programs to search for unpublished materials on this topic; agencies contacted included the Department of Veterans Affairs and other offices on women's health throughout the Federal Government.
- Contacted key authors to request additional materials.
- Searched the Web sites of relevant nonprofit organizations (e.g., The Commonwealth Fund and the Kaiser Family Foundation) to identify other potentially relevant materials.
- Conducted a Google search to identify other content for this review that might have been missed in our previous searches.

Our initial searching located approximately 400 items for possible inclusion in this review. Identified items were reviewed and summarized by a research assistant and entered into an EndNote library (EndNote is a reference program that stores bibliographic information, abstracts, research notes, and PDF versions of materials). This EndNote library was used to generate bibliographic information in this report, and a complete copy of the final library has been provided to OWH.

Background

This section of the report includes a brief discussion of some recent findings related to health-related differences between men and women. These include biologically and physiologically driven differences in disease symptoms and rates, as well as gender-based differences driven by norms, socialization, or lifestyle. This section of the report is not meant to be a comprehensive listing of such differences (see the two volume medical textbook "Principles of Gender-Specific Medicine," Legato, 2004, for such a discussion), but rather is intended to provide a contextual background against which to understand both the importance and complexity of gender-based medicine. We also provide a brief discussion on how issues of quality relate to gender-based care.

Sex-based differences

Two of the primary sources of medical differences between men and women are biology and physiology. The most obvious sex differences in these categories relate to size, hormones, and the reproductive system, but there are many other such differences that can impact overall health. The result is that men and women may experience the same diseases at different rates or with different symptoms, or they may experience different kinds of illness altogether. Here we provide a limited number of examples in which women and men differ in disease rate, expression, onset, or severity. Many of these examples are attributable to variations in hormonal cycles. Others are driven by other factors or have not yet been fully explained:

- Men and women are both at risk for cardiovascular disease, however “the onset and development of coronary heart disease (CHD) in women are closely related to ... ovarian hormones” (Penco, Fratine, Romano, & Novo, 2003).
- Men have higher blood pressure than women through middle age, “but after menopause, systolic blood pressure increases in women to levels even higher than those for men” (Kim, Alley, Seeman, Karlamangla, & Crimmins, 2006).
- Women are at a significantly higher risk for autoimmune disease. This may be because “periods of hormonal fluctuation in women may allow a greater plasticity of immune responsiveness, thus altering susceptibility to disease” (Shames, 2002).
- Women’s hormonal cycles also lead to differences in the expression of pain: “Pain sensitivity varies with the stage of the menstrual cycle; pain threshold and pain tolerance are higher in the follicular phase, when progesterone levels are low, than in the luteal phase. Chronic pain states are more common in females than in males from puberty to menopause and beyond” (Wiesenfeld-Hallin, 2005).
- While men and women bear about the same cancer burden overall, “taking all cancers combined worldwide, the distribution of burden according to gender is slightly unequal, with 53% of all incident cases, and a somewhat larger proportion (57%) of all cancer deaths experienced by men” (Bray & Atkin, 2004).
- Some cancers are more prevalent in women, however. For example, thyroid cancers are more common in women than men. While “the presumption is that estrogens play a role, no clear evidence has yet emerged” (Adlersberg & Burrow, 2002).

- The study of Alzheimer’s disease (AD) has found several differences between the sexes: “Women with AD were more likely to exhibit severe cognitive impairment than men. ... Men [are] more likely to exhibit behavioral problems (e.g., wandering, verbal and physical abuse, and other socially inappropriate behavior). In addition, studies have shown gender differences in the psychiatric manifestation of AD, with women more likely to have depression and multiple psychiatric problems” (Buchanan, Wang, Ju, & Graber, 2004).
- Some diseases tend to affect men and women at different ages. For example, “women have a later age of onset than men” for schizophrenia (Fleming, 2004).

As these examples indicate, biology and physiology contribute to significantly different rates in the expression of disease in men and women. As we will discuss in later sections of this report, if medical practitioners are not aware of and responsive to these differences, the quality of patient care may suffer.

Gender-based differences

In addition to these biologically and physiologically driven differences, the fact of being male or female leads to different socialization, expectations, and lifestyles. Thus, gender roles additionally affect and interact with health. These interactions may be even more complex than biological and physiological factors, as the direction of their effect is not always consistent. For example, some factors make women more likely to seek treatment, while others make them less likely to seek treatment. The following are some examples of the influence of gender on health:

- Women may not recognize their risk for certain diseases. For example, “women are less likely to attribute their symptoms to cardiac-related causes ... most women still do not internalize their risk from cardiovascular disease” (Azad & Nishtar, 2005). Thus, women may not seek appropriate cardiovascular care.
- At the same time, women are more likely to seek treatment for most diseases, especially potentially stigmatized diseases such as those related to mental health. These differences in willingness to seek help begin to appear early in life. One study found that “girls were more likely than boys to indicate a willingness to use mental health services” (Chandra & Minkovitz, 2006).
- On average, women report more symptoms than men, even when illness status is similar: “Women ... rated their symptoms as more severe than men did and experienced more days with a multitude of symptoms. Women had higher symptom frequencies for two-thirds of the symptoms on our scale” (van Wijk, Huisman, & Kolk, 1999; van Wijk & Kolk, 1997). It is unclear whether these differences are due to “symptom frequency, symptom intensity, or both” (van Wijk et al., 1999; van Wijk & Kolk, 1997).
- However, women may be more embarrassed than men to report certain symptoms. For example, “women are taught that bodily functions are something to be kept private and secret ... [e.g.,] bowel functioning becomes a source of shame and embarrassment [negatively impacting treatment for irritable bowel syndrome]” (Chang et al., 2006).
- Women are the primary health deciders, including taking charge of “the vast majority of routine health care decisions and responsibilities for their children” (Salganicoff, Ranji, & Wyn, 2005).

- With this responsibility comes extra burden, however. Women are more likely to be caretakers, either for young children, ill spouses, or elderly parents. Indeed, “it is estimated that the average woman can expect to spend 18 years caring for a parent, comparable to the number of years spent raising and taking care of her children” (Donelan, Falik, & DesRoches, 2001).
- Likewise, studies have shown that women experience more daily stressors than men (Matud, 2004), which could contribute to differences in disease. Women report more stress related to “social life, relationship, child, family health, and job” (McDonough & Walters, 2001). Women may experience this additional stress because they are “more reactive to negative stimuli” (Rhudy & Williams, 2005).
- Women and men engage in different types of risk activities, and their behaviors vary in important ways. For example, “men start smoking at a younger age, smoke more cigarettes per day, and report inhaling more deeply on their cigarettes than women” (Zeman, Hiraki, & Sellers, 2002).
- Women are more likely to engage in self-screening behaviors for health threats (e.g., “wives are considerably more likely to detect melanoma on their husbands than the reverse” (Evans, Brotherstone, Miles, & Wardle, 2005)), and in general place a higher value on a wide range of preventive behaviors such as “eating fruit and vegetables” and “wearing seatbelts” (Evans et al., 2005).
- Finally, women and men deal with different cultural expectations related to health, with women being subject to greater medicalization, including “the medical takeover of weight control, fitness, cosmetic surgery, and infertility, all areas where women are the primary clients” (Zimmerman & Hill, 2000).

Thus, gender, in addition to biological sex, is an important variable in understanding health and health behaviors. Gender impacts numerous aspects of how men and women perceive the need for care, report their symptoms, and experience illness and disease.

Quality in gender-based care

In thinking about gender-based medical care, one issue that immediately arises is the problem of how to define and measure quality care for men and women. If men and women have different health concerns and needs, then what constitutes quality care for women and men likely differs in important ways. Thus, it becomes a challenge to determine when quality objectives have been achieved, because equivalent care may not be sufficient to meet quality objectives.

The objective of quality improvement is to improve care for everyone. Sometimes this will mean treating men and women the same, but sometimes it will mean treating men and women differently according to evidence-based, gender-specific guidelines.

The next several sections of this report will examine how sex and gender impact overall quality of medical care in the United States, as well as what differences exist between men and women in experiencing medical care (including insurance coverage and costs), and how the U.S. healthcare system can more effectively incorporate sex- and gender-based differences into medical care.

Research Question 1: Key Sex and Gender Differences

1. *What key sex and gender differences exist in the current healthcare system structure, including reimbursement mechanisms, content of and access to appropriate care, quality of care, and patient safety?*

Our first research question focuses on the key sex and gender differences in the current U.S. healthcare system. For this section of the report, we focus on these differences as they pertain to access to care and quality of care (which includes content of care and patient safety).¹

While access differences are relatively easy to quantify, it is more difficult to accurately catalog sex- and gender-based differences in quality. There is a growing body of research discovering sex-based differences in treatment approaches, responses to treatment, speed and accuracy of diagnosis, etc., as well as possible improvements to the healthcare system to account for known sex- and gender-based differences. However, very few studies have extensively investigated how the practice of gender-specific medicine affects care outcomes.

In this section of the report, we begin with a discussion of sex- and gender-based differences in access to healthcare, and follow this with a discussion of sex- and gender-based differences in healthcare quality.

Access to healthcare

To begin our examination of research question 1, we look at the fundamental question of access. How do women and men access medical care in the United States? What barriers impede access to care? How do patients enter the medical system, and do these access points fragment² care?

We first describe research as it relates to sex- and gender-based differences in access to care, and then look briefly at how race, socioeconomic status, geographic location, and other factors may impact access. As will be described in more detail in this section and elsewhere, access to the U.S. healthcare system is exceedingly complex. The U.S. has no centralized system of care, and thus patients enter care through multiple entry points that change as patients age, switch jobs or insurance plans, or lose coverage. Women's access to medical care is affected by their use of gynecological services, which tends to additionally fragment care.

The decision to seek care:

Among U.S. adults, non-emergency care is typically initiated by patient decisions. While the factors motivating care-seeking vary by individual and situation, our review uncovered one model that offers a helpful description to conceptualize this process. Developed by Currie and Wiesenbergs (2003), the model was based on women in Third World countries but is generally applicable. It has three phases:

¹ A discussion of gender differences in reimbursement mechanisms is included in section 3 of this report.

² Here, we refer to fragmented care as opposed to coordinated care. See Cleary (2003) for a case study description of fragmented care.

- I. Do I have a health problem? This includes perception and knowledge of illness.
- II. Can I seek healthcare? This includes financial resources, time, empowerment to seek care, and personal mobility.
- III. Will I seek healthcare? This includes ease of accessing care, perceived quality of care, and attitudes about healthcare workers.

The model outlines basic issues related to access to care, and provides a starting point to look for gender differences in care-seeking.

Barriers to care-seeking:

As described in Currie and Wiesenbergs (2003) model, the recognition of illness is not sufficient to motivate care. Many barriers can impede access to care, and some of the most frequent of these barriers are described in this section of the report.

One of the primary barriers to access is lack of insurance coverage.³ Studies have shown that women with insurance coverage are more likely to use healthcare services. For example, “women who had insurance coverage for hospitalization and prescription medication were significantly more likely to use these services. ... Similarly, near-elderly women whose insurance covered some cost of their dental care were 2.4 times more likely to report a dental visit over the past 2 years” (Xu, Patel, Vahratian, & Ransom, 2006). Uninsured women are more likely to report that they have not visited a provider in the past year, that they have delayed care, that they were not able to see a specialist, and that they did not fill a prescription (Salganicoff, 2004). This lack of access also has been tied to worse medical outcomes:

Lack of health insurance coverage is associated with reduced access to health care and poorer medical outcomes. Several studies show that uninsured persons are less likely to have a regular source of care, less likely to receive preventive and primary care, less likely to receive required preventive services, and more likely to delay needed medical care than insured persons. Another study found that uninsured persons are more likely to be in poor health and to die earlier, even when analyses controlled for other sociodemographic factors (Freeman & Lethbridge-Cejku, 2006).

Ability to pay is yet another driver of access to care, and women tend to have lower incomes than men, making this a larger barrier for women (Xu & Borders, 2003). A recent study found that among low-income women one-third “delayed or went without needed care in the prior year because they didn’t have insurance. Half (52%) of poor women and 38% who are near poor (100% to 199% of poverty) report they delayed or did not get needed health care because of the cost. ... Two-thirds of uninsured women (67%) report delayed/forgone care due to costs” (Salganicoff et al., 2005).

Indeed, cost is a frequently cited barrier. A study of women’s mental health needs found that “cost is one of the most frequently reported barriers” to care-seeking, and this is true especially among the uninsured (Sherbourne, Dwight-Johnson, & Klap, 2001).

³ Overall insurance coverage differences between men and women are described in section 3 of this report and will not be discussed in detail here.

Other barriers to care include the following:

- *Illness or disability:* Those in poor health face additional challenges accessing care, “including costs, lack of insurance, and limited access to specialists,” and “these additional barriers may further worsen health” (Salganicoff et al., 2005). This problem is especially pronounced among those with disabilities. For example, one study found that “although women with disabilities place a high value on preventive health screenings, they often do not participate in them because of the difficulties associated with living with a disability” (Mele, Archer, & Pusch, 2005).
- *Caregiving responsibilities:* Women are more likely than men to be caregivers (9% of women vs. 4% of men) (Donelan et al., 2001), and caring for another makes it more difficult to access care for oneself. A comprehensive study found that women caregivers “are 50% more likely than other women to report they experienced difficulties in getting needed medical care services,” and twice as likely to not get care when they need it or to not fill a prescription because of costs (Donelan et al., 2001). Women with young children also mention the absence of childcare as a barrier (Khoury & Weisman, 2002).
- *Lack of time:* Time to access care is an important barrier for all people, but women may be especially pressed for time because of their multiple roles. For example, one study found that “younger women (ages 18 to 34) often reported extreme role overload (due to parenting as well as working or schooling) and therefore wanted health care providers who could see them promptly when they needed care, did not keep them waiting, provided services efficiently, and were willing to provide information or prescriptions by telephone” (Scholle et al., 2000).
- *Wait times and inconvenient locations:* Long wait times are a barrier to care, especially for men: “Waiting times of 30 minutes or longer in a physician’s office sharply reduced the likelihood of a man’s having visited a doctor” (Xu & Borders, 2003), and “waiting longer than one week for an appointment for regular or routine care is a strong negative predictor of men’s ratings of their health plan and of men’s getting needed care, but this does not hold for women” (Weisman, Henderson, Schifrin, Romans, & Clancy, 2001). Another study (this one based in Canada where coverage is universal) found that “waiting times were the most highly mentioned barrier followed by the geographic location of doctors’ offices relative to respondents’ residences” (Wellstood, Wilson, & Eyles, 2006).
- *Language or cultural barriers:* Poverty, birth outside the United States, and lack of citizenship all have been linked to lack of access to healthcare (Freeman & Lethbridge-Cejku, 2006). Additionally, factors such as “the availability of translator and other culturally sensitive services” help to facilitate care (Khoury & Weisman, 2002).

Entry to the healthcare system:

Men and women tend to access the healthcare system in markedly different ways. Three of the primary drivers of these differences are women’s use of obstetrical and gynecological services, women’s greater tendency to have a primary care provider and/or a usual source of care, and women’s greater willingness to seek preventive care.

Obstetricians and gynecologists are key sources of medical care for women, and “gynecologists are also the exclusive providers of primary care to substantial segments of women in the United States, especially women in their prime reproductive years” (Lentz, Ayala, & Eckert, 2006). One

study of low-income women found that nearly half “identified the ob/gyn clinic as PCP [primary care physician],” and this was true even while these women reported a “similar burden of physical and mental health problems” to other women in the study (Scholle & Kelleher, 2003). Additionally, “nearly one half of all obstetricians and gynecologists consider themselves to be primary care providers” (Lentz et al., 2006). Thus, gynecologists are a critical source, and sometimes the only source, of primary care for women. Moreover, there is some evidence that women relying on a gynecologist for primary care during pregnancy may not replace this source of care after the birth of a child (Feinberg et al., 2006), further highlighting the importance of these providers as a means to reach women.

It is worth noting that use of ob/gyns varies by age. Elderly women are more likely to use a regular care provider (and not to see a gynecologist), whereas women in their reproductive years are more likely to rely on a gynecologist and not to see a regular care provider (Salganicoff et al., 2005).

Unfortunately, women who utilize a gynecologist as their primary source of care do not receive the same care as women seeing both an internist and a gynecologist. For example, one study of women attending the same women’s health clinic found that gynecologists were “practicing as specialists and providing little primary care medicine” (Lentz et al., 2006). It appears that women receive the best prevention screening when they receive care from both a generalist and an ob/gyn: “Seeing two physicians for regular care (a generalist and an ob/gyn), compared with seeing a generalist alone, is consistently associated with nonelderly women’s receipt of more recommended clinical preventive services” (Henderson, Weisman, & Grason, 2002).

This use of two doctors is growing more frequent among women. A significant portion of American women (one-third to one-half) already receive such care (Bean-Mayberry, Chang, McNeil, & Hudson Scholle, 2006). One way to both promote and coordinate such dual care is to have women attend comprehensive clinics that “combine ob/gyn and general medical care services in a single site” (Scholle & Kelleher, 2003). Some research suggests “these centers achieve improved rates of preventive care and satisfaction” (Scholle & Kelleher, 2003). Another system that improves access to multiple care providers is managed care plans. Such plans have “facilitated access to ob/gyns and reinforced the pattern of seeing both a generalist and a reproductive health specialist for regular care” (Henderson et al., 2002). Women in such plans “report significantly greater use of two physicians” (Henderson et al., 2002).

In general, women are “more likely to have a usual primary care provider than men” (Agency for Healthcare Research and Quality, 2004), and are “more likely to enter treatment through primary care [as opposed to emergency services]” (Hauenstein et al., 2006). Having a regular source of care also is an important predictor of the use of other services. For example, “women with a connection to the health care system are more likely to have their mental health needs met” (Sherbourne et al., 2001).

Having a regular source of care is associated with other positive benefits as well: “Women who have a usual source of care (a place they usually go when they are sick) are more likely to receive preventive care, to have access to care (as indicated by use of a physician or emergency room, or not delaying seeking care when needed), to receive continuous care, and to have lower

rates of hospitalization and lower health care costs” (Health Resources and Services Administration, 2005b).

Thus, women appear more likely than men to enter the healthcare system, and are more likely to have a regular point of access through which to enter the system. One of women’s key points of access is gynecologists, although women receive better care if they visit both a gynecologist and a generalist.

Fragmentation of care:

Because of the use of multiple providers, women’s care tends to be fragmented. While this fragmentation can improve care, as described previously, it also complicates the coordination of care and increases redundancies. Women tend to use three main types of doctors who provide overlapping services: “family physicians, internists, and gynecologists” (Gonen, 1999).

Fragmentation of care can create problems with knowing where to receive care. For example, “there is no clear specialty ownership of problems of the breast. The breast has traditionally been a sort of orphan organ, and it seems that unless it is a seriously diseased breast, no specialty really wants to take responsibility for it. As a result, primary care clinicians’ lack of expertise in the management of common breast problems is out of proportion to what is known” (Carlson, 2001). Additionally, fragmentation creates measurement problems, as it is not always clear what services are being offered where, making tracking of services or treatment challenging (Carlson, 2001). Finally, when care is fragmented, it becomes more difficult for specialists to collaborate on care (Unutzer, Katon, Sullivan, & Miranda, 1999).

Use of services:

Men and women exhibit different patterns in the types of services they use. Overall, women use more services than men. For example, “in 2002, females of all ages made almost 530 million physician office visits, compared to only 361 million visits made by males” (Health Resources and Services Administration, 2005b, data from National Ambulatory Medical Care Survey, 2002). In general, “males (65 percent) were less likely than females (78 percent) to have an office or outpatient visit” (Ro, Casares, Treadwell, & Thomas, 2004).

As previously noted, women are more likely to obtain preventive services, with almost one in five women’s visits for prevention purposes; the most preventive visits are made by women between the ages of 25 and 44 (Health Resources and Services Administration, 2005b). Additionally, “ninety-four percent of women received preventive health care during the year” (Taylor, Larson, & Correa-de-Araujo, 2006). Consistent with this emphasis on prevention, women may be more likely to seek “medical care earlier in their disease stage” and to seek “healthcare on their own volition rather than relying on referral from a healthcare provider” (Box, Olsen, Oddone, & Keitz, 2003). Despite this increased desire to seek care, “women may have slightly more problems getting referrals, equipment, and assistance” (Cleary, Zaslavsky, & Cioffi, 2000).

Type of health insurance plan is a key component of use of services. Some data indicate that “enrollment in plans with richer coverage for office visits is significantly associated with greater use of Papanicolaou smears and mammograms, and that this association is more pronounced

among hourly workers for whom there is a greater difference in out-of-pocket expenses for office visits between PPO and the FFS plans” (Friedman et al., 2002). For women, coverage by a managed-care plan (as opposed to a fee-for-service plan) leads to more gender-specific preventive services: “Women in managed care are significantly more likely than women in other types of health plans to report receiving a physical breast examination and Pap smear in the past 12 months. Women aged 40 years and over in managed care plans are more likely than women in traditional fee-for-service plans to have received a mammogram” (Weisman & Henderson, 2001).

Access to healthcare, other factors

Just as sex and gender are key influencers on healthcare, access patterns also vary by factors such as race, ethnicity, socioeconomic status, geography, and sexual orientation. Each of these variables can interact with others, which further complicates analysis. In this section of the report, we briefly describe access trends as they relate to these five main variables. Our intention is to provide a broad outline of where these factors might interact in important ways with sex or gender.

Variations by race and ethnicity:

Across the board, U.S. minority populations face greater barriers to healthcare access. These barriers include the following:

- *More limited health insurance coverage:* “Almost one-third of married Hispanic or Latino women did not have health insurance coverage compared with 7.5% of married non-Hispanic white women and 11.6% of married non-Hispanic black women” (Freeman & Lethbridge-Cejku, 2006).
- *Insurance coverage is worse among those born outside the United States:* “Foreign-born Hispanic or Latino women were 2.3 times as likely as U.S.-born Hispanic or Latino women to lack health insurance coverage. For foreign-born Hispanic or Latino women, lack of health insurance coverage decreased with the number of years they resided in the United States” (Freeman & Lethbridge-Cejku, 2006).
- *Fewer usual places of care:* “Overall, the percentage of Hispanic or Latino women who had a usual place to go for health care was 80.2%, significantly lower than non-Hispanic white women (91.7%) and non-Hispanic black women (89.5%)” (Freeman & Lethbridge-Cejku, 2006).
- *Hispanics are less likely to have a regular doctor:* African American and white women with insurance are more likely to have a regular doctor than Hispanic women (Salganicoff et al., 2005), while non-Hispanic white or Asian men with higher socioeconomic status are also more likely to have a regular doctor (Ro et al., 2004).
- *Less preventive care:* “Compared with non-Hispanic white women, Hispanic or Latino women were more likely to receive routine or preventive care in a clinic or health center and less likely to receive such care in a doctor’s office. Overall, 56.4% of Hispanic or Latino women did not get routine preventive care anywhere compared with 41.4% of non-Hispanic white women and 40.9% of non-Hispanic black women” (Freeman & Lethbridge-Cejku, 2006).
- *Fewer physician visits:* “Overall, most women (87%) have visited a doctor in the past year; however, there are differences among subgroups of women. Nearly a quarter (24%)

of Latina women have not had a physician visit, compared to 14% of African American and 11% of white women” (Wyn, Ojeda, Ranji, & Salganicoff, 2004).

- *More barriers to care:* “Nearly one in five Latinas (18%) and one in 10 African American women delayed care because of transportation problems, compared with 5% of white women. Latinas (15%) are also more likely to report that problems in obtaining childcare resulted in delayed or unmet care” (Wyn et al., 2004).

Variations by socioeconomic status:

Educational level (which corresponds to income) also has an influence on the use of healthcare services. Taylor, Larson et al. (2006) report the following:

- “Women with more than 12 years of education had a higher probability of using any medical care (93%) and ambulatory care (84%), but a lower likelihood of an inpatient hospital stay (9%) or home health service use (2%) when compared to women with less than 12 years of education.”
- “Women with higher education (97%) were also more likely to report using preventive health services than women with 12 years of education (92%) and those with less than 12 years of education (90%). In addition these women reported fewer average numbers of prescriptions (14) compared to women with high school graduation (16) and women with less than 12 years of education (20).”

Variations by geography:

Geographic area is another key influence on access to care. Rural residents typically have lower incomes and more limited education, and are more likely to be uninsured (Larson & Correa-de-Araujo, 2006). In addition, rural areas have the following characteristics:

- *More limited access to overall healthcare services:* “There are fewer health care providers per capita in rural areas than in non-rural areas. Although 20% of Americans live in rural areas, only 9% of the Nation’s physicians practice in rural areas” (Agency for Healthcare Research and Quality, 2004).
- *More limited access to specialty health services:* “Both men and women living in the most rural areas receive less specialty mental health treatment than do those living in MSA [Metropolitan Statistical Area] counties” (Hauenstein et al., 2006).
- *More structural barriers:* “Rural residents also face structural barriers, including a finding that they are more likely to travel long distances to obtain health care than their urban counterparts” (Larson & Correa-de-Araujo, 2006).

These additional barriers mean that rural care may be worse overall. For example, “rural women appear to be less likely to report cholesterol checks and mammograms during the previous 1 and 2 years, breast exams during the past 1 year but not 2 years, and dental exams during the past 2 years when compared to women from large MSAs” (Larson & Correa-de-Araujo, 2006).

Variations by sexual orientation:

There is some research that suggests that lesbians and gay men may be less likely to seek preventive care: “Recent studies indicate that lesbians continue to have lower rates of preventive care including cancer-screening services such as mammography or Papanicolaou (Pap) tests than

do women in the general population. Other studies indicate that gay men are also less likely to seek preventive health care than their heterosexual counterparts” (Bonvicini & Perlin, 2003). Lesbians (but not gay men) may also be less likely to have health insurance, to see a doctor, and to have a usual source of care:

In analyses controlling for all background characteristics, women living with a woman had significantly reduced odds of having health insurance (odds ratio, 0.6), of reporting a health care visit in the previous year (0.7) and of saying that they had a usual source of care (0.5); their odds of having forgone medical care in the past year because of cost issues were nearly twice those of women living with a male partner (1.9). Men who lived with a male partner had significantly elevated odds of having seen a health care provider in the last year (1.6); they had marginally elevated odds of reporting a usual source of care, and did not differ from men living with a female partner with regard to health care coverage or unmet medical needs (Hollander, 2006).

Quality and content of healthcare

Having considered access issues, we now turn to the question of gender- or sex-based differences in the quality or content of healthcare. This is the most basic question in this literature review. Does one sex enjoy better treatment or outcomes? Are diagnosis or referral rates different between the sexes? Are observed differences between the sexes clinically significant?

To begin, we look at sex-based models of interactions with the healthcare system, as well as research issues related to examining these trends. We next present our findings pertaining to differences in healthcare quality between the sexes, looking in particular at differences in outcomes, diagnoses and referrals, and overall quality of care. Next, we identify current expert opinion on these differences. Finally, we highlight areas where race, ethnicity, socioeconomic status, and geographic or other factors may impact these overall trends.

Sex-based models of healthcare:

In our review, we uncovered three models that describe some of the key differences between men and women and their relationship to the healthcare system. We briefly describe each model. While each model is unique, all point to potential sources of differences regarding effective and efficient treatment for male and female patients.

The first model was developed by Kasle, Wilhelm, and Reed (2002). It was based on women’s views of what constitutes wellness. The main finding was that “women defined health and well-being largely in terms of relationships.” Thus, “the appropriateness of the use of a purely biomedical model for understanding women’s health can be questioned because it conceptualizes the individual as if in isolation from relational and social contexts. In contrast, our data suggest a model in which health is inseparable from interpersonal and social circumstances” (Kasle et al., 2002).

The second model was developed by Bekker (2003) and is called the “Multi-Facet Gender and Health Model.” It was developed because “the relationships between sex, gender, and health have many facets ... resulting in sex differences in health including prevalence of illnesses, illness behaviour, treatment outcome, and implications of illnesses.” The model shows how sex/body type interacts with gender, and how these two factors interact with sex differences in

daily life, coping experiences, and differential diagnostics and treatment to lead to overall differences in health and outcome. Her conclusion is that “the relationships between biological sex, gender (masculinities and femininities), and health are multiple and highly complex, and, thus, generally, not reducible to one (type of) factor” (Bekker, 2003).

The final model was developed by van Middendorp, Geenen, et al. (2005) in a study about rheumatoid arthritis. The authors were looking at differences in emotional regulation between men and women suffering from this condition, and used a structural equation modeling approach to understand potential differences. The authors’ conclusion is that “relationships between emotion regulation and perceived health were more frequent and stronger for women than men. This held especially for the affective dimension of health” (van Middendorp et al., 2005). The observation that “women are more emotionally oriented than men” in regards to their care needs offers support for gender-based health interventions (van Middendorp et al., 2005).

These three models suggest multiple ways in which care for women may differ from care for men. Two of the three models specifically describe how emotional components of health are more important to women than to men, and all three models describe how health differences between the sexes are more complex than matters of biology or physiology, and must take into account each sex’s definitions of what constitutes overall health.

Research issues in examining sex- and gender-based differences in healthcare:

One of the continuing problems in trying to examine sex- and gender-based differences in healthcare is a lack of available data to study possible differences (see question 5 for a more detailed discussion on this topic). As Correa-de-Araujo and Clancy (2006) noted, “in-depth analysis of gender differences in the quality of health services provided in the United States is still limited.” Partly, this is because men still outnumber women in many research trials (e.g., “in heart disease trials, the male population outnumbers the female at a ratio of 3.66–1” (Azad & Nishtar, 2005)), but the difficulties extend beyond an availability of data on women.

A historical deficit of information on women as medical research subjects means that the unique biology and physiology of women is not yet well-understood. For example, “although women have been included in clinical trials during the past 5–10 years, analyses of the data to address questions in women, men, and various racial/ethnic groups are lacking. Compounding factors are small numbers of women, women not included in early phase clinical trials, and weight or body mass index (BMI) not being considered” (Anthony, 2005). An additional factor to consider is women’s unique biological rhythms:

Biological processes and functions in women are well organized in time, as evidenced by the expression of ultradian (high frequency), circadian (~24-hour), circamensual (~monthly), and circannual (~yearly) rhythms and by the changes that occur with menarche, reproduction, and menopause. Attributes of women’s circamensual structure have been explored in depth, particularly with regard to fertility/infertility and birth control. However, the role of 24-hour and other rhythms in health, disease, and treatment has been little studied (Smolensky, Hermida, Haus, Portaluppi, & Reinberg, 2005).

Such differences need to be accounted for in well-designed research studies.

Another issue is that researchers are not yet accustomed to systematically collecting data to look for such differences. The establishment of routine reporting measurements for healthcare which include gender would

not only help identify and monitor differences in care but could also help plans and researchers disentangle factors underlying gender differences in care. For example, differences in care may reflect provider attitudes, gender differences in patient preferences, or unique barriers to certain aspects of care faced by each gender. By more closely comparing the characteristics and practices of enrollees, health care providers, and health plan policies with little or no differences to those with substantial differences, or those in which women appear to receive better care, a great deal could be learned about factors that reduce or promote gender differences across systems of care. Similarly, instances in which outcomes differ by gender but processes of care appear to be equivalent may reflect important gender differences in behavior or possibly physiology. Because causal factors and effective interventions may vary across settings, the availability of such data will also be crucial to allowing quality improvement teams to identify the specific factors underlying gender differences in health outcomes and plan performance and to initiate appropriate interventions within their respective organizations. Sharing knowledge between provider organizations about best practices for improving quality of care for women can help accelerate progress. (Bird, Fremont, Wickstrom, Bierman, & McGlynn, 2003)

Others also have called for detailed reporting to assist in identifying differences: “Few diseases have been studied with specific regard to presentation in or effect on gender. Limited information about treatments exists, since pharmacologic and clinical studies historically have focused on male subjects. Thus, an extensive amount of work is needed to identify gender variations” (Fanelli, 2004). Routinely collecting and reporting information on gender in all medical studies, as well as making such data available in treatment records, would enable more specific research on this topic.

Thus, the study of sex- and gender-based differences in healthcare continues to be limited by a historical deficit in data on women, an emerging understanding of unique issues about women’s health, and the absence of standardized reporting mechanisms to collect and analyze data to facilitate research on possible differences. These are all characteristics of an emerging field, and it is expected that progress will be made in addressing these issues in the years to come. For now, however, such issues make it more difficult to determine where and when sex- and gender-based differences in health emerge, as well as to determine the clinical significance of observed differences.

The remainder of this section of the report comments on what is known to date about healthcare quality differences between the sexes.

Differences in outcomes:

One of the ways to look for differences in quality of care is to look for differences in outcomes between men and women suffering from the same conditions or receiving the same treatments. While this is not a true measure of quality differences, it is a reasonable proxy. Our review documented several such instances, in almost all cases showing women with worse outcomes than men. Generally, the data are not available to explain the underlying cause(s) of these

outcomes. For example, are women more susceptible than men, or are women receiving different or worse treatment than men? Regardless of the cause, the observed pattern of differences suggests that women may be disadvantaged in terms of quality of care for certain diseases. Some of these diseases are discussed below.

Women appear to have worse outcomes after strokes: “Even after adjustment for age [of onset of stroke], women have poorer outcomes, such as greater pre- and poststroke disability, a higher likelihood for admission to nursing facilities, and greater mental impairments than men” (Bushnell et al., 2006). This finding suggests that women may require different treatment for stroke, and that their current stroke-care may be less than optimal. Bolstering this notion is the finding that “men and women may respond differently to stroke prevention strategies, as shown in 2 different gender-specific cohorts” (Bushnell et al., 2006). Additionally, women are more likely to report non-traditional stroke symptoms than men, potentially delaying their care (Labiche, Chan, Saldin, & Morgenstern, 2002). Indeed, “women with acute stroke wait longer in the ED [emergency department] for physician evaluation and have worse functional outcome and mortality” (Washington & Bird, 2002).

Diabetes is another disease in which women may be at higher risk. One study reported that “clinicians should be aware that ... men and women with Type II diabetes appear to suffer from a wide variety of symptoms and complications and that gender differences in these conditions exist. ... Females with Type II diabetes may suffer disproportionately from the disease compared to males” (Summerson, Spangler, Bell, Shelton, & Konen, 1999).

Women do worse both physically and mentally after major trauma events than men, “independent of injury severity and mechanism” (Holbrook & Hoyt, 2004). The reasons for this difference are not understood, but the outcome gap suggests that further research is necessary to improve trauma-care for women (Holbrook & Hoyt, 2004).

Heart disease is one of the most studied conditions in which sex- and gender-based differences in outcomes have been observed. Most of these differences favor men, and men appear to have a better long-term survival rate than women. Complicating the study of these outcomes is that women are usually older and more likely to have diabetes when they have their first coronary event; therefore, they don’t get invasive procedures as often and are more likely to die (Boccardi & Verde, 2003). Notwithstanding these differences, the data do suggest that women may receive worse care:

- “The time to presentation was longer and diagnostic mistakes more frequent in women than in men, whereas medical treatment and the rate of revascularization procedures were similar” (Boccardi & Verde, 2003).
- “After coronary bypass surgery, operative mortality is higher for women ... in part due to excessive rates of congestive heart failure. Similar findings are observed in angioplasty registry data. Additionally, of those with heart failure symptoms, women are more likely to have a lower quality of life with more frequent depression when compared with men” (Bean-Mayberry et al., 2006).
- “Although advances in technology have contributed to improvements in the diagnostic and therapeutic approaches to myocardial infarction, women do not seem to benefit from

such advances, as they continue to suffer inequalities in the utilization of such procedures and to have worse outcomes from AMI [acute myocardial infarction] than men do. It is possible, therefore, that the worse outcomes for AMI observed among women compared to men are caused by inequalities in the quality of care they receive. Such inequalities were observed in our study with disappointing frequency” (Correa-de-Araujo, Stevens et al., 2006).

- “The in-hospital mortality among women with acute myocardial infarction tends to be greater than in men” (Boccardi & Verde, 2003).
- “There is a significant difference in the number of observed/expected cases of PA [pulmonary artery] rupture, with females being greatly overrepresented and males underrepresented” (Kaczmarek, Liu, & Gross, 2003).
- “The results of this study support results found in the literature that women do not have as favorable outcomes after CABS [coronary artery bypass surgery] as men, particularly on the physical outcomes. ... Overall, women in this study seemed to perceive that they experienced poorer outcomes after CABS compared with men preoperatively and at both the 1-month and three-month postoperative periods. The women reported lower levels of activity, vigor, and overall health rating and higher levels of SOB [shortness of breath] and depression” (Keresztes, Merritt, Holm, Penckofer, & Patel, 2003).

The final category of outcome differences we uncovered relates to adverse drug reactions. Women are more likely than men to suffer such reactions (Anderson, 2005; Miller, 2001; Rademaker, 2001), and such reactions may be “50 to 75% more likely in women than men” (Rademaker, 2001). Reasons why women may be more vulnerable to adverse drug reactions include the following:

- *Women use different drugs than men:* Women use a different range of drugs, especially related to contraception, menopause, and pregnancy (Rademaker, 2001).
- *Women take more drugs than men:* “Women take drugs for contraception, and a woman’s reproductive function increases the need for medical treatment at an earlier age than for men. Drug usage information shows that women use about 60% of all medications” (Miller 2001). Women are more likely to have a chronic condition than men (Salganicoff et al., 2005), and this may also increase their drug usage.
- *Women have different body compositions:* There are different body weights between males and females, as well as different percentages of body fat, all of which influence drug reactions (Anderson, 2005). Additionally, “genetics, age, height, weight, lean-fat ratio, diet, exercise, concurrent disease, smoking and alcohol, and the administration of concomitant drugs all contribute to antipsychotic drug response, as does end-organ sensitivity. Together, these factors can account for a 10-fold variability in the dose needed for effective response. Men and women show differences in all of these variables, either as a result of the action of sex-specific hormones or of divergent gender roles” (Seeman, 2004).
- *There are sex-based differences in drug responses:* “Sex-based differences in drug response can be due to the drug itself, resulting from the activity of transporters or metabolizing enzymes. It can also be due, in some part, to the interaction of the physiological differences between the sexes and the site of drug release and subsequent absorption controlled by the delivery system. The combination of sex-based

physiological differences with the fixed-release rate of these oral delivery systems leaves open a myriad of possibilities for differences in pharmacokinetics and pharmacodynamics to occur” (Donovan, 2005).

- *There are differences in drug absorption and disposition:* “Several mechanisms relevant to drug absorption and disposition have been shown to exert gender-specific activity differences, and for some drugs these have the potential to result in clinically relevant differences in pharmacological response” (Meibohm, Beierle, & Derendorf, 2002). Additionally, “all or some of the pharmacological dynamics of a medication (e.g., stereochemistry, drug delivery systems, pharmacokinetics, pharmacodynamics, pharmacogenetics, chronopharmacology, and modulators [ions]) can differ between women and men” (Correa-de-Araujo, 2005).

When drugs are specifically tested to look for potential differences, such differences appear to be at least somewhat common. One study found that “the Food and Drug Administration (FDA) reviewed 300 new drug applications between 1995 and 2000. Of the 163 that included a sex analysis, 11 drugs showed a >40% difference in pharmacokinetics between males and females, which was listed on the product label, yet no dosing recommendations were made based on sex” (Anderson, 2005).

This suggests that there is a need to do additional such testing for differences, especially in Phase I and II clinical trials where potential side effects and reactions are first observed (Mastroianni, Faden, & Federman, 1994).

Differences in diagnosis or referral rates:

Another indicator of possible differences in quality of care between men and women is differences in diagnosis or referral rates for treatment of the same condition when there is evidence that prevalence rates for men and women are similar. In other words, if one sex is more likely to be correctly diagnosed or referred to effective follow-up treatment, this is a possible indicator of higher quality of care. However, it is possible that other factors unrelated to quality could cause these discrepancies (e.g., age of presentation). Some of the studies we found on this topic control for such factors, and results from these studies should be viewed as more robust.

As in our examination of differences in outcomes, most of the data we found suggest that men receive better care than women. However, there are several examples in which women appear to receive better care, and these are noted as well.

The following are among the numerous examples of men appearing to receive better care (based on a higher percentage of cases diagnosed or more referrals or follow-ups):

- *Women receive less health counseling:* A study of the Department of Veterans Affairs care found that women were less likely to be prescribed nicotine patches to assist them in quitting smoking (Sherman, Fu, Joseph, Lanto, & Yano, 2005). Also, physicians “are less likely to counsel women than men about diet, exercise, and weight reduction” (Agency for Healthcare Research and Quality, 2004).
- *Women receive fewer high-technology treatments:* White men are 2.5 times as likely as white women to be recommended for kidney transplants for treatment of end-stage renal

disease, even controlling for clinical factors (Agency for Healthcare Research and Quality, 2002). Women also are “less likely to receive expensive, high-technology services, such as dialysis and transplantation, timely diagnosis of lung cancer, and specific diagnostic and therapeutic interventions for heart disease” (Bird, Shugarman et al. 2002).

- *Women may have a more difficult time receiving basic care:* A Medicare managed-care survey found that “women may have slightly more problems getting referrals, equipment, and assistance”; women also were less likely to get a flu shot (Cleary et al., 2000).
- *Women receive worse diabetes care:* Women may receive fewer secondary preventive services for diabetes; e.g., “women were less likely to have a lipid profile or receive retinal eye and foot exams” (Correa-de-Araujo, McDermott, & Moy, 2006). Additionally, women with diabetes “were less likely to use lipid-lowering medications and to receive a lipid profile” to assess and help manage cardiovascular disease risk (Ferrara, Williamson, Karter, Thompson, & Kim, 2004).
- *Women are screened less often for colon cancer:* Older women “may not be getting the most effective colorectal screening as often as older men” (Kosiak, Sangl, & Correa-de-Araujo, 2006). In general, women of all ages may be less likely to undergo screening for colon cancer, and this problem is exacerbated by women receiving primary care from gynecologists who may be less inclined to screen for this disease (Woods, Basho, & Engel, 2006).
- *HIV-infected women may receive less aggressive treatment:* HIV-infected women are “less likely than [HIV-infected] men to receive HAART [highly active antiretroviral therapy] (78% versus 82%, $p < .001$), receive PCP [Pneumocystis jiroveci pneumonia] prophylaxis (65% versus 75%, $p < .0001$), or have their hepatitis C virus status known (87% versus 88%, $p < .02$) despite being seen more regularly (69% versus 66%, $p < .04$)” (Hirschhorn et al., 2006).
- *Women receive worse cardiology care:* Women undergo procedures “such as angiography or angioplasty, less frequently than men” (Penco et al., 2003), and are “less likely to undergo diagnostic and therapeutic cardiac procedures” (Bird et al., 2003). Women are “40% to 50% less likely to have an angiogram than men even after adjustment for multiple clinical factors, including the results of exercise testing” (Daly et al., 2006). Women also may experience longer delays in the administration of thrombolysis (Grace et al., 2003). Women experience worse treatment for AMI [acute myocardial infarction], with fewer secondary prevention treatments and less rehabilitative therapy than men (Penco et al., 2003). Finally, men are “more likely to receive cardiac catheterization, PTCA [percutaneous transluminal coronary angioplasty], and CABG [coronary artery bypass graft] than women” (Jiang, Elixhauser, Nicholas, & al., 2002).

We found a smaller number of examples in which women appear to receive better care than men (based on a higher percentage of cases diagnosed or more referrals or follow-ups). These include the following:

- In a diagnostics study based on case scenarios, depression was more likely to be recognized in older female patients (vs. older male patients). Depression is more common in women, and this may be one reason it was more likely to be recognized (Stoppe, Sandholzer, Huppertz, Duwe, & Staedt, 1999).

- Men “receive fewer blood pressure measurements and cholesterol measurements. ... It appears that some of the discrepancy in receipt of preventive services between men and women younger than 50 results from the difference in the number of visits to healthcare providers [women make more visits]” (Viera, Thorpe, & Garrett, 2006).

Differences in overall quality of care:

In addition to observed differences in outcomes, diagnoses, and referrals, we found several studies with strong enough controls that we felt they represented significant differences in overall quality of care between men and women. As before, most of these differences favor men over women.

The first such difference has to do with the issue of cardiovascular care. Cardiovascular care has been extensively studied for gender differences, which means that increasingly sophisticated techniques are being utilized to determine where care differences are significant. An example is a study by Weisz, Gusmano et al. (2004), which involved patients in the United States, France, and England. They found a consistency of results across these three countries that suggests that their results are quite robust. They reported that

Despite differences in health system characteristics, including health insurance coverage, availability of medical resources, and medical culture, we found consistent gender differences in rates of percutaneous transluminal coronary angioplasty and coronary artery bypass grafting across the 9 spatial units. The rate of interventional treatment in women with CAD [coronary artery disease] was less than half that in men. This difference persisted after adjustment for the prevalence of heart disease. ... This finding is consistent with the results of clinical studies suggesting that gender disparities in the treatment of CAD are due at least in part to the underdiagnosis of CAD in women (Weisz et al., 2004).

Thus, it appears that women do receive worse care for cardiovascular disease, at least for some measures. Indeed, the U.S. Agency for Healthcare Research and Quality recently reported that “significant gender differences in cardiovascular care have been demonstrated” (2004), and Cabana and Kim (2003) reported that “the gender differences in cardiovascular care have been well documented.” This is consistent with the findings we reported previously that women are less likely to receive certain cardiovascular treatments.

Even where clinically significant differences in treatment are observed, however, correcting these differences remains complex. Continuing with the example of care for heart disease, women may do worse with some kinds of treatment because of their smaller vessel size. Thus, even as the medical profession becomes aware of these differences, it is still difficult to effectively address these issues:

Although recent technological advances have improved the success rate of PTCA [percutaneous transluminal coronary angioplasty] in women, reaching the same immediate and long-term results as in men, greater cardiac and peripheral procedural complications are still more frequent in women. This is mainly due to a more advanced age and more comorbidities – in particular diabetes –, smaller vessels and, probably, some sex-related factors. ... PTCA may become the preferable revascularization procedure for women (Presbitero & Carcagni, 2003).

As discussed previously, another disease in which well-documented differences exist between men and women is diabetes. An extensive literature review on this topic found that

women with diabetes, regardless of menopausal status, have a 4- to 6-fold increase in the risk of developing coronary artery disease (CAD), whereas men with diabetes have a 2- to 3-fold increase in risk. Women with diabetes have a poorer prognosis after myocardial infarction and a higher risk of death overall from cardiovascular disease than do men with diabetes (Legato et al., 2006).

The investigators also reported that most research on this subject has not effectively distinguished between the sexes, thus complicating the job of examining sex-based differences in care or response to treatment (Legato et al., 2006).

One area where women appear to receive more frequent care than men is in mental health treatment: “Overall men receive less mental health treatment in both the general health and mental health specialty sector than do women” (Hauenstein et al., 2006). This advantage for women has been found consistently and across numerous studies, including studies that controlled for multiple factors. For example, one such detailed study reported: “We found that gender differences in overall use of outpatient mental health services persist despite control for type of mental disorder and social and economic factors. Having a mood and/or anxiety disorder appears to be a direct determinant of use for men and women” (Rhodes, Goering, To, & Williams, 2002). In addition,

the persistence of the gender difference in use is compelling since this study overcame a number of the limitations of prior studies. ... At issue is the question of whether the remaining gender difference in use represents an unmet need for care for men and/or inappropriate use for women. Although the magnitude of the difference is not large (adjusted OR=1.72), the absolute number of individuals affected is large. ... Inappropriate use may lead to worse health outcomes for some women. On the other hand, some women may be seeking help at an earlier, less severe stage of their illness, which may lessen the impact of illness (Rhodes et al., 2002).

Differences with unspecified clinical significance:

There is an entire category of differences in care that we have not yet discussed. These are observed differences that may or may not have any clinical significance. In other words, care is known to be different between men and women, but no evidence yet suggests whether these care differences are meaningfully related to health outcomes. To be fair, many of the studies we have reported on thus far might reasonably be put into this category. However, we have made what we believe are reasonable classifications regarding the findings we have presented thus far, and we believe these assumptions are likely to be correct. For example, it seems a fair assumption that a delay in a correct diagnosis for a cardiac condition would negatively impact care, or that women’s greater difficulty getting referrals would harm their overall care.

Nonetheless, there are other differences we found reported in the literature that do not yet suggest a direction of clinical significance favoring one sex over the other. We include some examples of them here as a means to elucidate the difficulty and complexity of this field:

- *Coronary artery disease*: “CAD [coronary artery disease] affects a demographically different group of women compared with men. Women develop CAD at an older age, present with different symptoms and comorbidities, and respond to these symptoms differently than men. Once age, comorbidity, and contraindication are taken into account by multivariable analysis, gender differences in treatment are rendered small and, for the majority of treatments, insignificant. The exception is in the use of procedures, but the clinical significance of this different treatment pattern is unclear” (Gold & Krumholz, 2006).
- *Disasters*: “There is some evidence showing that women and men may suffer different negative health consequences following a disaster. It is not clear whether this is because of biological differences between the sexes, because of socially determined differences in women’s and men’s roles and status or because of an interaction of social and biological factors” (World Health Organization, 2002).
- *Clinical visit time usage*: The use of clinical visit time differs between male and female patients: “Female gender was associated with a higher proportion of the visit time spent on physical examination, structuring the interaction, patient questions, screening, and preventive services, such as Pap smear, and family and emotional counseling. Male gender, on the other hand, was associated with a greater proportion of time spent on procedures and on health behavior counseling” (Tabenkin, Goodwin, Zyzanski, Stange, & Medalie, 2004).
- *Asthma*: “Women report worse asthma symptoms and perceived quality of life due to their asthma while reporting better asthma care measures. Several studies have shown that although women report worse asthma symptoms or more asthma admissions, they have the same or better pulmonary function measures when compared with men. Better pulmonary function measures would suggest that asthma severity is lower for women; however, women consistently report more asthma symptoms” (Sinclair & Tolsma, 2006).

Much work remains to be done to determine whether such differences are clinically meaningful, and, indeed, to determine the importance of various factors in driving these differences; e.g., in the asthma example, it is not known whether these differences are caused by differing experience of the disease between men and women, differing perceptions of symptoms, differing treatments, or the need for sex-specific instruments to measure asthma symptoms. Some or all of these factors could be influential.

Summary opinions: Are there quality differences?

The evidence presented in this section thus far paints a splintered picture of quality, generally favoring men as the recipients of better quality across a wide number of health conditions. Here, we attempt to discuss the larger picture, drawing together the opinions of numerous experts in this field.

This discussion must begin with overall morbidity and mortality figures. In the United States, women live longer, “but they do not necessarily live those extra years in good physical and mental health. On average, women experience 3.1 years of disability at the end of life” (Agency for Healthcare Research and Quality, 2006). Women have “lower age-adjusted death rates than men for 13 of the 15 leading causes of death. However, women are more likely than men to

report having arthritis, asthma, autoimmune diseases, and depression” (Agency for Healthcare Research and Quality, 2004). Denton, Prus et al. (2004) nicely summarize this literature when they report that

while women generally experience poorer health than men, the pattern of gender differences in health is varied. Women have lower rates of mortality but, paradoxically, report higher levels of depression, psychiatric disorders, distress, and a variety of chronic illnesses than men. However, the direction and magnitude of gender differences in health vary according to the symptom/condition and phase of the life cycle. Female excess is found consistently across the lifespan for distress, but is far less apparent, even reversed, for a number of physical symptoms and conditions.

In other words, the pattern of gender differences in overall health across the lifespan is complex, with women living longer but suffering more from certain diseases and conditions.

The significance of this difference is debatable. While women certainly are disadvantaged in some areas, this disadvantage may be smaller than previously assumed and appears to be shrinking. Two recent summaries come to a similar conclusion in this regard:

The idea that gender differences in health may be not as simple as they seem was recently addressed in a special issue of *Social Science and Medicine* (1999) that re-examined the generalization of women’s greater morbidity. The studies yielded considerable variability in gender differences in health. For example, some reported that women’s poorer health was marked for mental and somatic symptoms, but less so for long-term illness and self-rated health. Others observed a weak female excess for malaise symptoms and minor psychiatric morbidity and no gender differences in physical symptoms. Still others found that, despite the greater prevalence of long-term illness, physical symptoms, and psychological distress among women, the magnitude of the differences was often small (McDonough & Walters, 2001).

Recent examinations of gender differences in physical health suggest that women’s disadvantage may be smaller than previously assumed, varying by health status measure and age. Using data from the 1997 & 2001 National Health Interview Surveys, we examine gender-by-age differences in life-threatening medical conditions, functional limitations, and self-rated health and consider whether potential mediating mechanisms (e.g., socioeconomic status, behavioral factors) operate uniformly across health measures. The results show that the gender gap is smallest for life-threatening medical conditions and that men do increasingly worse with age. For self-rated health, men are more likely to report excellent health at younger ages, but with increasing age this gap closes. Only for functional limitations do we find a consistent pattern of female disadvantage: Women report more functional limitations than men, and the gap increases with age (Gorman & Read, 2006).

Another factor to consider is women’s use of the healthcare system compared to men: “Women use health services more than men and consume more than twice as many drugs, due in part to the fact that they have more comorbidities, such as diabetes and hypertension, and are more likely to suffer from the chronic pain such conditions often entail. In contrast, men are more likely to have acute illnesses” (Kosiak et al., 2006). Women also are more likely to “establish routine care-seeking behavior early in life by undergoing regular Pap-smear tests, receiving

prenatal care, and managing well-child care in the family” (Asch et al., 2006). Women thus may be larger consumers of preventive and chronic care, while men use the system more often for acute care, which is still the focus of the U.S. healthcare system (Kosiak et al., 2006).

Consistent with this pattern of use, one study found that “women had higher scores than men for preventive care (57.8 percent vs. 50.1 percent, $p < 0.001$) and chronic care (57.9 percent vs. 54.5 percent, $p = 0.01$) but lower scores for acute care (51.9 percent vs. 58.4 percent, $p < 0.001$,” and “women had higher scores than men for screening (56.7 percent vs. 42.9 percent, $p < 0.001$) but lower scores for treatment (56.0 percent vs. 59.3 percent, $p = 0.001$)” (Asch et al., 2006).

This finding of lower scores for women on “acute care and treatment-related care [is] consistent with the literature on disparities in health care between men and women” (Asch et al., 2006). Indeed, “many women’s health needs are inadequately addressed” (Agency for Healthcare Research and Quality, 2004), and differences remain “between men and women in the receipt of evidence-based health care” (Correa-de-Araujo & Clancy, 2006). These differences are in many cases subtle, but the ability to detect and address them is increasing as medical knowledge of gender- and sex-based differences increases. If the trend continues, further study will negate the importance of some differences that are now believed to be significant, while highlighting new discrepancies of great importance.

If a quality gap in care does exist, it is important to understand why it exists. Numerous theories have been offered, and explanations include variations in the healthcare system, gender-related differences in work patterns and resources, and different stressors and disease patterns between men and women. Short summaries of two frequent theories appear below:

- *Structural, behavioral, and psychosocial forces:* “The pathways through which structural, behavioural and psychosocial forces influence health are different for men and women. ... While we found that there is considerable commonality in the social predictors of health, there are indeed important gender differences. First, age, family structure, main activity, education, income, occupation and social support are important structural determinants of health for both genders, although their effects differ for men and women. Second, smoking, alcohol consumption and physical activity are more important determinants of health status for men and body weight is more important for women. Third, the impact of childhood/life events, chronic stressors and psychological resources play an important role in determining health, but their effects are generally stronger for women than men” (Denton et al., 2004).
- *Constrained choices:* Bird and colleagues (Rieker & Bird, 2005; Ross & Bird, 1994) have argued that gender differences in health extend beyond disparities to include other differences in men’s and women’s opportunities to pursue a healthy life. Their earlier work identified “gender difference in labor and lifestyles” as critical (Ross & Bird, 1994). For example, “women are less likely to be employed, and are more likely to work part-time, have lower incomes and more economic hardship, and to do more unpaid domestic labor than men. ... Women also have more distress and fewer subjective work rewards, both of which are associated with poor health” (Ross & Bird, 1994). Their more recent work has focused on the notion of constrained choices: “Constrained choices impact on men’s and women’s stress levels as they experience competing demands on their time

and other resources, which can in turn affect their psychological and physical responses to stress. Such effects could occur through gender differences in exposure to role-related chronic stressors. ... Constrained choices may also impact positive and negative health behaviors and coping styles that affect both psychological and physical functioning. Consequently, we contend that gender differences in the constraints contribute to health disparities both directly and indirectly by affecting both men's and women's choices and their cumulative biological risk" (Rieker & Bird, 2005).

Quality of healthcare, other factors

Just as sex and gender are key influencers on healthcare quality, quality of care also varies by factors such as race, ethnicity, socioeconomic status, geography, sexual orientation, and disability status. Each of these variables can interact with others, which further complicates analysis. It is important to note that the pathways through which these variables impact health are complex, including "health care affordability, geographic access, transportation, education, knowledge, literacy, health beliefs, racial concordance between physician and patient, patient attitudes and preferences, competing demands including work and child care, and provider bias" (Fiscella, Franks, Gold, & Clancy, 2000).

In this section of the report, we briefly describe quality trends as they relate to race and ethnicity, socioeconomic status, geography, sexual orientation, and disability status. Our intention is to provide a broad outline of where these factors might interact in important ways with sex or gender.

It is worth noting, however, that sex and gender disparities in healthcare differ in substantial ways from racial, ethnic, or socioeconomic disparities. Most importantly, gender cannot be treated as a single-directional "cause" of disparities, because the interaction patterns are complex (Rieker & Bird, 2005). Gender differences in health are influenced by biology and physiology, with both sexes having unique needs. In comparison, nongender disparity models assume that the influences of discrimination and inequality tend to "go in the same direction for both biological and social factors" (Rieker & Bird, 2005).

Variations by race and ethnicity:

Numerous healthcare disparities related to race and ethnicity have been documented for any number of issues, including provision of screening, aggressiveness of treatment, and overall outcomes. Whites almost always receive better care and are frequently the reference group used in studies. Quality of care varies among blacks, Asians, Hispanics, and American Indians/Alaska Natives, with the most frequent differences in quality of care occurring between whites and blacks or Hispanics. This may be because "evidence suggests that institutionalized forms of racism are linked to both access and quality of care for all people of color, but are particularly detrimental to African American and some Latino subgroups" (Zambrana, 2001).

A comprehensive report produced by the Institute of Medicine (Smedley, Stith, & Nelson, 2003) found that "racial and ethnic minorities tend to receive a lower quality of healthcare than non-minorities, even when access-related factors, such as patients' insurance status and income, are controlled." The authors report that these disparities are complex, involving past and ongoing

discrimination, cultural and other barriers to care, the characteristics of the clinical setting, and the complexity of the healthcare system.

Specific examples of racial or ethnic health disparities include the following:

- Black patients “consistently received poorer health care relative to that of whites across all measures. ... Blacks with diabetes were less likely than whites were to have an annual eye exam or to have HbA1C testing. Blacks were also less likely to have an ambulatory/preventive care visit in the measurement year” (Virnig et al., 2002).
- Hispanics are “less likely than whites were to have a mammogram, LDL cholesterol testing after an acute cardiovascular event or as part of their diabetes care, or an ambulatory or preventive care visit with a doctor” (Virnig et al., 2002).
- Native Americans are “less likely to receive a mammogram, [and] to have their LDL cholesterol checked as part of their diabetes care” (Virnig et al., 2002).
- “Women of color are more likely to report that they are in fair or poor health. One-fifth of African American women, 29% of Latinas, and 13% of white women assess their health status as fair or poor. African American women are more likely to have a physical condition that limits routine activities such as participating in school or work or conducting daily housework. ... Over half (57%) of African American women ages 45 to 64 have been diagnosed with hypertension, twice the rate for white women (28%) of the same age. African American women (40%) are also significantly more likely to have arthritis than Latinas (33%) and white women (32%). African American (16%) and Latina (17%) women both experience higher prevalence of diabetes compared to white women (9%). However, African American women (4%) are less likely to have osteoporosis compared to Latinas (12%) and white women (10%)” (Wyn et al., 2004).
- “Black women are less likely than other women or men to have access to lifesaving therapies for heart attack” (Agency for Healthcare Research and Quality, 2002).
- “Black women have higher death rates than white women due to heart disease, cancer, and stroke” (Agency for Healthcare Research and Quality, 2004).
- “Mammography was received less often by black, Asian, and AI/AN [American Indian/Alaska Native] women compared with white women, [and] by Hispanic women compared with non-Hispanic white women” (Agency for Healthcare Research and Quality, 2004).
- “African American Medicare patients were less likely than whites to undergo catheterization, angioplasty and bypass surgery, and Latino Medicare patients were less likely than whites to undergo catheterization and angioplasty” (Lillie-Blanton, Evadne Rushing, & Ruiz, 2003).
- “Latina, Asian/Pacific Islander and American Indian/Alaska Native women are less likely to be screened for breast and cervical cancer than are white and African American women” (Lillie-Blanton et al., 2003).
- “As with breast and cervical cancer, mortality rates from colon and rectum cancer are higher among African Americans than among whites, despite comparable screening rates” (Lillie-Blanton et al., 2003).
- “Racial/ethnic minority groups are less likely than whites to have had a dental visit in the past year, regardless of age” (Read and Gorman 2006).

- Provider behavior may be a critical component by which African Americans receive worse care. For example, one study found that “African American women as a whole may be vulnerable to prejudice within reproductive health care contexts” (Thorburn & Bogart, 2005).

While race- and ethnicity-based discrepancies in quality of care are well-documented, controls for potentially confounding factors (e.g., socioeconomic status) often reduce or eliminate such disparities. In at least one study, such controls actually indicated that blacks had better quality of care scores than whites (Asch et al., 2006). Thus, socioeconomic status is often a better predictor of disparities in care, although institutionalized racism remains a key concern and should not be overlooked. As one author noted, “health and social scientists are moving toward consensus that health disparities between racial and ethnic minority populations ... arise from psychosocial and cultural factors related to the social definition of population groups [e.g., internalized racism], as opposed to genetic differences at the population level” (Hogue, 2002).

Variations by socioeconomic status:

Socioeconomic status exerts a powerful influence on quality of care. Higher socioeconomic status has multiple positive effects on health. For example, “socioeconomic status affects women’s health directly through access to resources and indirectly through psychosocial factors and social roles. Lower socioeconomic position is associated with lower levels of perceived control and self-esteem, both of which are associated with greater levels of depression and poorer self-rated health” (Read & Gorman, 2006). Socioeconomic status also is linked to greater access to insurance, but the effect of being low in socioeconomic status is more than an insurance effect (although having insurance contributes to visit continuity and coordination of specialty care): “Issues such as poor financial access (i.e., out-of-pocket costs for the primary care office visit), availability of high-quality practitioners, or other unmeasured factors may contribute to the failure of some lower SES women to attain ‘quality’ primary care” (O’Malley & Forrest, 2002). In addition,

women with less education have been found to be more intimidated by physician authority, and less likely to ask questions. ... Low socioeconomic status is closely associated with less access to and knowledge about favorable health care practices, more trusting or less trusting attitudes toward health care providers, less skills to successfully navigate the health care system, and less ability to afford the costs of the health care system (Zambrana, 2001).

Thus, higher socioeconomic status is linked to many variables that improve access to care, use of care, and overall health.

Healthcare related findings associated with socioeconomic status include the following:

- “Poor or near poor women are more likely to report fair or poor overall health; limitations of activity; and having anxiety or depression, arthritis, asthma, diabetes, hypertension, obesity, and osteoporosis” (Agency for Healthcare Research and Quality, 2004).
- Pap tests and mammograms are less common among women with lower socioeconomic status (Agency for Healthcare Research and Quality, 2004).

- “At the highest income level, both black and white women have a 5-year advantage in life expectancy over their male counterparts. ... Race, income, and gender all make independent contributions to disparities in health. ... White women with the highest level of income have the highest life expectancy at age twenty-five (58 years), while low-income black males have the lowest (42 years)” (Williams, 2005).
- “Low-income women, who are less mobile or empowered than other women, may have a narrower choice of health care settings or be more likely to encounter sites that are lagging in professional practices, which are demanded by more affluent patients” (Anderson, 2003).
- “Lower income and minority women not only have shorter life spans, but also experience a higher burden of illness during their lives” (Bierman, 2003).

Because of its multiple effects on health, controlling for socioeconomic status often corrects for other disparities. For example, one study on acute myocardial infarction found that “once a comprehensive set of covariables (including sociodemographic background, personal clinical history, and evidence-based medications) were accounted for, ... sex and racial/ethnic disparities no longer existed” (Iribarren et al., 2005). In another example, disparities in the rates of visiting a doctor were eliminated for African Americans when income was controlled for (Read & Gorman, 2006). Finally, “for self-rated health, the gender gap diminishes or disappears for all racial/ethnic groups once age and socioeconomic status are considered, a finding that appears to mirror those of prior studies” (Read & Gorman, 2006).

Variations by geography:

There is some evidence that rural residents experience worse care than urban residents, including overall worse reports of health, a greater frequency of chronic conditions, and higher death rates (Agency for Healthcare Research and Quality, 2004). Other factors that may vary at the geographic level also influence health. For example, work is emerging on the impact of social capital on health (e.g., see Browning & Cagney, 2002, for an example). Likewise, the “political, economic and cultural context of a community” all affect health (Gomez & Muntaner, 2005). These factors may influence health both on a larger regional level and at smaller neighborhood levels; e.g., studies have associated the receipt of health services with residing in specific ZIP codes (Elston Lafata, Cole Johnson, Ben-Menachem, & Morlock, 2001). Of interest to this review, the affect of these factors on health may differ in important ways between men and women. However, research to date has not examined the role of gender related to these issues.

Variations by sexual orientation:

Lesbians, as a subpopulation of women, may be at increased risk for adverse health outcomes. This is because of several factors, one of the most important of which is discomfort disclosing sexual orientation in a primary care setting. Lesbians who disclose their orientation are more likely to seek preventive care (Bonvicini & Perlin, 2003). Lesbians also seem to underutilize health services and present for healthcare at later stages of illness:

The infrequency of primary care visits by lesbians has been linked, in part, both to the mistaken belief that they are at low risk for gynecological diseases, and to [lesbians’] discomfort with health care providers. Lesbians also present for health care later in the course of their illnesses than heterosexual women; they are more likely to orient health

care around a specific crisis rather than routine evaluation. Thus, a principal health care risk for lesbians may be delayed diagnosis due to lack of seeking appropriate care or to inadequate screening (Barbara & Quandt, 2001).

Lesbians also may have more health risk factors:

It has ... been reported that smoking is more prevalent in lesbians than in straight women. In addition, according to Hall, lesbians are more likely to abuse alcohol. As a result of these behaviors, Harrison and Silenzio reported lesbians were predicted to have a higher risk of morbidity and mortality from breast, ovarian, lung, and endometrial cancers than their straight counterparts ... one of the most significant medical risks for gays and lesbians is that they avoid routine health care (Bonvicini & Perlin, 2003).

Similarly, Diamont and Wold (2003) report “higher rates of smoking and alcohol use among lesbians and bisexuals, greater prevalence of overweight, and higher use of mental health services. In addition, negative experiences and interactions that lesbians and bisexuals have had within the healthcare system appear to discourage many from seeking needed medical care.”

Variations by disability status:

Finally, we consider the quality of care received by women with disabilities. This is a research topic that has been “largely ignored until recently” (Mele et al., 2005). Disability status may pose special equipment needs for provision of even routine care. For example, for women with spinal cord injuries and disorders, “pelvic examination for cervical cancer screening ... may be more difficult (e.g., difficulty getting on the examination table) and, for that reason, may be neglected. In terms of breast examinations, although proper positioning for standard mammography is achievable, often the assistance of a well-trained technician or use of such equipment as a standing wheelchair is needed” (Lavela, Weaver, Smith, & Chen, 2006). Such difficulties mean that “health care facilities are often inaccessible and ill equipped to serve people with disabilities” (Mele et al., 2005). The result is that “commonplace procedures like CBEs [clinical breast exams], Pap smears, and mammograms are overlooked or omitted for women with disabilities because of inaccessible office environments” (Mele et al., 2005).

Conclusions

In this section of the report, we examined differences between men and women related to access to healthcare and quality of healthcare. Our findings suggest that women remain disadvantaged compared with men in both these regards.

Because women have fewer resources in terms of time, money, and insurance coverage in their own names, it is more difficult for them to access the healthcare system than it is for men. However, women are more likely to seek preventive care than men, perhaps because they have been socialized to seek care before a health crisis occurs. Additionally, a higher proportion of women than men become more accustomed to seeking routine medical care because of women’s use of reproductive medical services. Gynecologists remain a key access point to the healthcare system for women, especially among women of reproductive age.

Additionally, women appear to receive worse quality of healthcare than men do. This appears to be especially true for acute conditions. However, women, as more frequent users of preventive

care, may actually receive better preventive care than men. The fact that women's higher rates of healthcare utilization and preventive care does not carry over into better treatment in general is particularly striking and points to the need for new approaches to improve men's and women's healthcare.

Despite significant gains in recent decades, women remain relatively understudied as medical research subjects. As a result, medical treatments may not be as appropriate for women as they are for men; women are more subject to adverse drug reactions than are men.

A similar pattern of discrepancies in access and quality of care occurs for minority populations and for those low in socioeconomic status. Thus many of men's and women's relative disadvantages in healthcare are exacerbated for minority and low SES groups.

Research Question 2: Reaching the Underserved

- 2. What models or approaches have been successful in engaging and retaining people in systems of healthcare, especially the underserved, the “difficult to reach,” or low literacy populations? Are there sex/gender differences in the effectiveness of these approaches?*

The question of how best to engage and retain the underserved in the U.S. healthcare system is a critical one. Such populations, by definition, are not frequent users of the healthcare system. They encounter numerous barriers to care, including lack of insurance, lack of financial resources, cultural and educational barriers (including a lack of knowledge on how to navigate the system to obtain care), and time constraints, among others. Our analysis of this literature is divided into three main topics. First, we identify and discuss the main approaches that have been used thus far to reach underserved populations. Second, we describe several approaches that have been successful in engaging or retaining underserved populations, including a description of the work CoEs have done in this regard. Finally, we provide data on the effectiveness of various approaches. To conclude the section, we discuss sex/gender differences in these approaches.

It is worth noting that approaches to engage or retain the underserved require an initial investment of time and resources, and this poses a barrier which must be overcome before change can occur. At the same time, many healthcare systems are realizing they must address these issues:

There are many cases when health care organizations see little or no short-term direct financial gain from improved communications with vulnerable populations. It can take considerable resources, in the short term, to address communication gaps. For instance, it can be expensive to implement interpreter services, which are rarely reimbursed to the level of their immediate costs. And some of the populations that are most at risk for communication gaps are poor and uninsured or underinsured. As a result, activities that attract these patients for care might seem to present an initial fiscal risk to a health care organization. On the other hand, most leaders know that ignoring vulnerable populations is not a realistic solution for the long-term. And there are significant costs associated with knowingly providing ineffective communication (American Medical Association, 2006).

Perhaps because of this initial financial barrier, paired with differences across organizations in their willingness to invest resources in this area, there is a wide degree of variability in how organizations are addressing this challenge. In this section, we discuss some of the innovators in this area.

Overview of approaches

There are numerous approaches to reaching and retaining underserved populations in the healthcare system. These approaches include respecting cultural values, using community health workers, reaching people at nontraditional or community-based sites to provide care, using appropriate language, modeling behavior, meeting other needs, and using follow-up reminders. We discuss each of these approaches in more detail in this section of the report.

Respect cultural values and implement cultural competency programs:

One of the key approaches to designing healthcare systems that attract and retain underserved populations is to make these systems as culturally competent as possible. Cultural competency, at its core, simply means being aware of, respecting, and considering others' values. One technique that has been advocated to make care more culturally competent is for healthcare workers to inquire "into individuals' personal interpretations of their life's world experiences rather than relying on catalogs of cultural attributes or by adhering to popularly held opinions" (Kleiman, 2006). In particular, Kleiman (2006) highlights the need to ensure patients understand their treatment so that any objections or special needs can be addressed.

Cultural sensitivity creates a foundation for good relationships between healthcare providers and patients. If patients feel misunderstood, disrespected, or ignored, they are less likely to present for care. Cultural competency may be especially crucial for underserved populations (e.g., "lower-income respondents place more importance than counterparts on the doctor-patient relationship" (O'Malley & Forrest, 2002)), and, as America grows more diverse, cultural competency will continue to become more important (Strobino, Grason, & Minkovitz, 2002). Accordingly, cultural competency is increasingly being recognized as important by healthcare scholars and researchers (Fongwa, Evangelista, & Doering, 2006).

Studies repeatedly find that patients desire care that is culturally competent. For example, in a series of focus groups, "women expressed the importance of being in an all-inclusive, diverse, respectful, and nonviolent community, being treated as equal partners, being informed and skilled, continually learning and developing" (Kasle et al., 2002). A Canadian study of women's health needs reached a similar conclusion: "Both clinic staff and women drew attention to the importance of respectful and culturally appropriate interactions during clinical encounters" (Bottorff, Balneaves, Sent, Grewal, & Browne, 2001).

Studies of disadvantaged women also emphasize the need for care that is sensitive. For example, in a study of homeless women, their No. 1 complaint about the healthcare system was a perceived lack of respect from providers (Gelberg, Browner, Lejano, & Arangua, 2004). Lesbian women report similar problems. One set of authors has concluded "there is an absolute necessity for physician training programs ... [so that] lesbian women do not feel invisible, threatened, or estranged" (Bergeron & Senn, 2003). Another set of authors recommended seven steps for healthcare providers to make their settings more appropriate for lesbians, including not assuming that all patients are heterosexual (and changing routine forms to reflect that), creation of a safe environment where anti-gay/lesbian conversation is not tolerated, and assurances of confidentiality (Barbara & Quandt, 2001).

In addition to helping to attract and retain patients, cultural competency also may be related to a higher quality of care: "A recent review of published studies using an experimental or quasi-experimental design concluded that patients who received culturally competent care had significant improvement on multiple health outcomes, compared with those who did not" (Williams, 2005).

Use community health workers:

Another strategy to reach underserved populations is the use of community health workers. These lay health workers are called many things, including neighborhood workers, linkworkers, indigenous health workers, family health advocates, patient navigators, lay health advisers, *consejeras*, or *promotoras*. However, “a common definition of community health workers is that they are members of the community who work outside established health care locales to serve as connectors between populations that have been traditionally underserved and health care providers” (Brach & Fraserirector, 2000). As reflected in these many names, how these programs are implemented “on the ground” varies considerably.

To provide an example of how such a program might work, the “Woman-to-Woman Project” used family health advocates as a community-based intervention to reduce infant mortality rates. Trained women advocates from within the community met multiple times with young mothers and families to facilitate help-seeking and to create a social support network. Early results indicate that this approach is working (Baffour, Jones, & Contreras, 2006).

The study of such community health worker programs is becoming more common. For example, the National Cancer Institute recently awarded \$25 million in grants to eight research institutions to fund patient navigator research programs. Each grant will focus on “cancer patients from racial/ethnic minority groups, patients with low socioeconomic status, and patients from medically underserved areas” (National Institutes of Health, 2005). Results from this research are not yet available.

The use of community health workers seems promising enough that at least one researcher has called for “the institutionalization of link workers, health advocates, or lay workers (*promotoras*) as part of the U.S. health care system” as a successful approach to correct some of the known deficits (Zambrana, 2001).

Reach people where they are:

Another approach to reaching disadvantaged populations is to reach people where they are. For example, sex workers in Thailand were reached using a mobile bus that traveled to locations frequented by sex workers, where they were offered free and immediate screening for sexually transmitted diseases (Bush, Moss, & Wallis, 2006). Another “reach people where they are” approach that has been suggested is to screen new mothers for depression at well-child pediatric visits (Feinberg et al., 2006). Such approaches create opportunities to interact with otherwise hard-to-reach patients.

This approach is especially important as a means to reach people who may never go to a traditional healthcare location. For example, “seeking out women at popular gathering sites in the community, rather than waiting for them to present to a health care facility, is particularly appropriate for women affected by mental illness or homelessness” (Heyding, Cheung, Mocariski, Moineddin, & Hwang, 2005).

Places of religious worship are key sites for such interventions, especially for certain population segments. For example, studies have identified “community organizations, civic groups, and especially churches to be important channels of information to increase screening rates among

African-American women” (Reid, Marshburn, & Siddharthan, 1999). Partnership with influential community organizations (such as faith-based groups) emphasizes the importance of health-related messages while providing an additional support structure for such messages. For example, “Project Joy, a faith-based initiative jointly funded by the Centers for Disease Control and the [NIH] Office of [Research on] Women’s Health, showed improvement in body weight, waist circumference, systolic blood pressure, and healthful eating. ... An important component of this intervention was the involvement of the church community in its development” (Johnson & Fulp, 2002).

Use appropriate language:

When trying to reach disadvantaged populations, the use of appropriate language (including the use of native or dominant spoken and written languages, and appropriate delivery, tone, and literacy level) is crucial. Jackson, Camacho et al. (2001) nicely summarize this literature:

Differences in spoken language present some of the greatest hurdles to both the delivery and receipt of appropriate healthcare. Whether the differences are in primary language (e.g., Spanish vs. English) or in jargon/terminology (e.g., “hypertension” vs. “high blood pressure”), the inability to communicate effectively severely limits all aspects of the care process. Even healthcare professionals perceive significant improvements in the efficacy of care provided when skilled interpreters are available. Unfortunately, most written documents and ancillary services are English-only, further complicating care delivery for non-English-speaking populations. Other cultural differences also can lead to difficulty in scheduling appointments, miscommunication between providers and patients, misdiagnoses, and poor compliance and poor follow-up on the patient’s part.

Model behaviors:

Another approach that has been used to reach underserved populations is modeling of appropriate behaviors. For example, one study of African-American and Latina women found that such women did not see themselves as having been “brought up” knowing how to exercise:

Latinas indicated that young girls were not encouraged to be as physically active as boys and this had a negative effect on physical activity levels as the girls became adult women. African American women, in turn, indicated that their role models during their childhood were too busy with caregiving responsibilities to exercise or do any type of self-care. Without role models, it was difficult to adopt physical activity themselves (Eyler et al., 2002).

Thus, some patient populations may need role models to learn how to adopt specific behaviors. Community health workers may be able to serve in this function.

Addressing other needs:

Even the best-designed programs will suffer if patient populations are distracted by other needs. Studies have found that barriers such as substance abuse, lack of housing, jobs, inadequate transportation, and childcare may prevent people from seeking care, using preventive services, or maintaining contact with the healthcare system (Biermann, Dunlop, Brady, Dubin, & Jr., 2006; Strobino et al., 2002). Thus, to reach disadvantaged populations, additional needs may also need to be addressed.

Use of follow-up reminders:

While initially reaching disadvantaged populations is a challenge, an additional challenge is ensuring that such populations continue to receive adequate follow-up care. Patients who are unsure about where to receive care are less likely to return for follow-up care (Kaplan, Crane, Stewart, & Juarez-Reyes, 2004). To increase use of follow-up care, telephone calls, mail reminders, and interventions from social workers may be helpful (Kaplan et al., 2004). Additionally, “mailing several reminders is even more effective” than mailing one reminder (Reid et al., 1999). Reminders are likely to be more effective if they are culturally competent (Weinrich, Weinrich, Weissbecker, Brent, & Seger, 2004).

Examples of programs to reach the underserved

To better understand how the challenge of reaching underserved populations can be overcome, we provide several detailed examples of existing programs to reach the underserved. In these cases, various approaches are used, including many of the methods described previously. We also describe the work being done by CoEs to meet the needs of underserved populations. CoEs have been leaders in offering such services to disadvantaged women.

Several key themes emerge in this discussion. First, to effectively reach underserved populations requires innovative approaches, as traditional approaches have largely failed in this regard. Second, effective programs invest the effort to know and understand the population they are targeting so that innovations can be as specific and motivating as possible. Finally, reaching underserved populations requires an investment of time, staff, and money, especially up-front.

St. Agnes Nurses Center:

The St. Agnes Nurses Center in West Chester, Penn., provides quality preventive health services to a vulnerable population of women and children. Its challenge is providing preventive health counseling, follow-up care, and health screenings. To better address these issues, the center implemented a structured preventive health screening form which was written into the patient intake materials.

In addition, the center has taken many steps to make its services more accessible to patients. It is located within the at-risk community and uses planned dinner discussions as a means to provide preventive health education. Center staff members work to be emotionally available to all patients, and emphasize patient communication. The Center also enhances physical availability through free cab rides, etc. The program attributes its success to

each professional becoming fully committed to the provision of [preventive] services in his or her own practice. This may mean development of a standardized form to help improve screening rates among even the most forgetful of providers. Communication between all members of a given practice is paramount. Collaboration and discussion of patient needs are key factors in successful programs. Community access and trust are also important ingredients to successful and timely prevention campaigns (Kotarski, 2000).

New Leaf ... Choices for Healthy Living:

New Leaf is an intervention program designed to help women quit smoking. It uses “behavior change theory to help counselors and patients remove obstacles to lifestyle modification (e.g.,

complexity, cost, lack of time, cultural irrelevance) by developing practical strategies to integrate more activity into participants' daily work and household and social activities" (Will, Farris, Sanders, Stockmyer, & Finkelstein, 2004). It was designed for a specific "Southern, multiethnic, low-literacy population" but has been adapted for other audiences (Will et al., 2004). Women who are interested in quitting smoking are referred to a state quitline, where up to six telephone contacts may occur (Will et al., 2004).

WISEWOMAN:

WISEWOMAN is a program sponsored by CDC to provide low-income, under- or uninsured women with the knowledge and skills to change their behavior related to cardiovascular disease and other chronic conditions. WISEWOMAN projects have discovered that many women entering the program are "unaware of their high blood pressure or their high cholesterol" and "nearly three quarters of the women who attended baseline screenings were overweight or obese" (Will et al., 2004). Each sponsored program has made efforts to be as culturally relevant as possible for the specific population it is serving: "We have learned that cultural adaptation involves more than simply translating interventions into a different language. It also requires careful formative research to understand dietary and physical activity practices, facilitators and barriers to behavioral change, and cultural norms" (Will et al., 2004).

To address structural barriers faced by women, the programs are "encouraging projects to develop multifaceted interventions that address intrapersonal, organizational, community, and policy influences on health and health behaviors. For example, to strengthen the family and peer support available to participants, some projects now invite family members and friends to attend the interventions" (Will et al., 2004). Other approaches being used include extended staff hours, hiring community health workers, making telephone calls to encourage attendance, and arranging transportation (Will et al., 2004).

Grady Memorial Hospital:

Grady Memorial Hospital in Atlanta has created a care program for at-risk women who are in between pregnancies with the goal of helping women to appropriately space children and to avoid future births of very low birth weight infants. The program uses a Resource Mother "trained by the Fulton County Health Department" to provide home visits, and includes "24 months of integrated primary health care and dental services through enhanced nurse case management" (Biermann et al., 2006). All women delivering a very low birth weight infant at the hospital are given the opportunity to enroll in the program. There has been limited evaluation to date on this program, and drop-out rates have been high. However, among those who have stayed there have been no unplanned pregnancies within nine months after giving birth (Biermann et al., 2006). Pending funding, the program is hoping to expand to include services such as job skills training.

Magnolia Project:

The Magnolia Project in Jacksonville, Fla. targets high-risk women to provide clinical services as well as "outreach, case management, risk reduction, support, well-woman prenatal care, health education, and community development" (Biermann et al., 2006). The program is staffed clinically by a nurse-midwife and other support staff, and uses a full-time health educator to

provide “a brief counseling intervention on key issues (e.g., use of multivitamins, nutrition, douching, and safe sex) to every woman” (Biermann et al., 2006).

The program has been successful: “Participants receiving case management services from 2001 to 2003 successfully addressed two priority risks: 86% of participants with family planning issues were consistently using a method at closure; 74% of participants with repeated STDs had no recurrent STDs at closure” (Biermann et al., 2006). However, the success of the project has been limited by insufficient funding, siloed funding (e.g., funding focused specifically on STDs, primary care, or prenatal care, but not for an approach that addresses all these issues), and a lack of acceptance for a case management/risk assessment approach (Biermann et al., 2006).

Fitting in Fitness for Life:

Fitting in Fitness for Life! “takes a novel approach toward increasing physical activity levels among middle-aged women” (Segar, Jayaratne, Hanlon, & Richardson, 2002). Women participate in a series of “six moderated group sessions, [where] consciousness-raising methods are used, and ... participants discuss barriers to physical activity with particular attention to those that are specific to women” (Segar et al., 2002). The intervention “focuses on the importance of making time for self-care behavior, being active in ways that are pleasurable or enjoyable, and fitting convenient lifestyle physical activities into daily life” (Segar et al., 2002). The program has been successful, showing increased levels of physical activity among participants, and highlighting the importance of specifically tailoring interventions.

WomanKind:

WomanKind was created in 1986 as part of the Fairview Health System in Minneapolis, Minn. Its mission is to provide “services to victims of domestic violence in combination with specialized education and training for health providers throughout the health care system” (Short, Hadley, & Bates, 2002). The program is “based on the assumption that health professionals fail to intervene because: they have little or no training to help them recognize the signs of domestic abuse; they are uncomfortable intervening with a victim of abuse; they don’t see such intervention as their responsibility; [and] they don’t have the time or the resources needed to assist the victim of abuse” (Short et al., 2002).

The program uses training and continuously on-call staff and volunteer advocates to address these needs. Results show that staff who have undergone the training are more comfortable initiating conversations about domestic violence, and that they provide more crisis-intervention and community referrals to patients (Short et al., 2002). One of the reasons the program has been successful is because of its emphasis on training: “Specific training on the dynamics of IPV [intimate partner violence], screening, identification, intervention, and documentation provide the knowledge and skills that enable health care providers to respond more effectively to IPV victims” (Short et al., 2002).

Models used by CoEs:

As noted, CoEs have been innovators in designing programs to reach underserved women with health services. Some efforts by CoEs include the following:

- To address cost barriers, the Boston University CoE “successfully networked with the Boston Medical Center, which serves as the safety net institution for the City of Boston. As a result of this linkage, the BU CoE is able to use resources from the uncompensated care pool provided by the State of Massachusetts, interpreter services in multiple languages, outreach programs to specific communities, and a network of referral services that accept patients regardless of ability to pay” (Jackson et al., 2001).
- Another CoE built on an existing program to provide additional services for ethnic minority patients. The program, Cultural Mediators, “consists of trained professionals drawn from the ethnic community who are then assigned to patients and are available for clinic and home visits. In this way, potential gaps between the healthcare providers and patients have been effectively bridged” (Milliken et al., 2001).
- Several of the CoEs have targeted efforts toward African-American women: “The Indiana University CoE, for example, sponsored the Indiana Black Expo Fair, which addressed such topics as domestic violence, sexually transmitted diseases (STDs), HIV education and screening, family planning, osteoporosis, smoking cessation, and exercise. Magee-Women’s Hospital CoE supports the African American Womencare Program, which plans educational events for African American women in the community, such as the African American Women’s Health Wellness Day, and publishes an African American Womancare Newsletter. The University of Illinois CoE launched the Roseland Project to increase physical activity among middle-to-older aged African American women in the Roseland community area” (Weitz, Freund, & Wright, 2001).
- The University of Pennsylvania CoE developed the Health Tip Card Project, a project for African-American women that earned it national recognition: “These easy-to-read cards with large, beautiful pictures cover such topics as cardiovascular disease, depression, cancer, and female aging issues. ... The Tip Cards emphasize the role women can take to ensure healthy lifestyles and include a list of community resources as well as a heart healthy recipe” (Weitz et al., 2001).
- The Puerto Rico CoE has been active in developing materials for the Hispanic population: “In addition to providing direct care, the Puerto Rico CoE disseminates educational materials and newsletters to partner organizations. It has developed a conference room on wheels, which can travel to off-site locations to provide educational programs to local communities” (Weitz et al., 2001).
- The CoEs also are developing programs to reach women with physical disabilities: “Several of the CoEs have fitted their clinical and mobile units to accommodate women with physical limitations” (Weitz et al., 2001). In addition, “researchers at the University of Pennsylvania CoE created an outreach program entitled ‘Did You See What She Said? Creating Access to Healthcare with Deaf Women.’ The goal of this program is to overcome healthcare barriers and optimize the use of visually accessible information pathways to empower deaf women as informed and effective consumers and advocates of healthcare services. The program seeks to provide training and support to deaf women, as well as to include deaf women in the training, advocacy, and technical assistance” (Weitz et al., 2001).

Effectiveness information

Several of these approaches to reach underserved populations are relatively new, and effectiveness information is still accumulating regarding what works and what does not. In this

section of the report, we summarize available evidence. We divide these data into a discussion of specific projects and larger-scale analyses of what approaches are likely to be successful.

Specific project evaluations:

We found effectiveness data for two specific intervention studies:

- Rates of mammography screening were increased for inner-city women suffering from mental illness and/or homelessness “through a simple collaborative program involving the drop-in center and a nearby hospital, in which small groups of women were accompanied for mammography visits at a pre-arranged time” (Heyding et al., 2005).
- Another intervention used a “patient-navigator-like” approach to increase cancer screenings: “Women randomized to the intervention group received a series of phone calls from trained care managers who motivated them to get the required screening tests, answered questions about cancer screening, and offered assistance like making appointments or arranging transportation. Those randomized to usual care received one phone call advising them to get the tests they needed. All women also received a brochure with information on recommended screening tests. Over 18 months, screening rates for all 3 cancers went up significantly in the intervention group compared with the control group” (American Cancer Society, 2006). Each care manager received about seven hours of training, and managers were already health professionals (e.g., medical assistants) (American Cancer Society, 2006).

Large-scale analyses of what works:

We also found several larger-scale attempts to summarize what is working in this area. The first such analysis looked at community health workers and concluded that

in the past several years, a number of studies using control group comparisons have supplied evidence that community health workers can improve, although sometimes modestly, access to and utilization of health care. These improvements include increases in breast screening practices, higher retention in patient education programs, increased follow-up, and better cervical cancer knowledge and/or screening practices (Brach & Fraserirector, 2000).

Another study concluded that there is “evidence to support the use of health care navigators—trained health professionals or lay community members who assist patients with specific conditions (such as an abnormal mammogram). Such navigators help patients maneuver their way through the health care system to obtain needed diagnostic or therapeutic procedures” (Betancourt, 2006). Thus, community health workers appear to be an effective technique to reach underserved populations.

Other reviews have looked at the role of interpreters and cultural competency to reach the underserved and to improve health outcomes. Many studies conclude that more evidence is needed for definitive results. However, findings include the following:

- *Interpreters improve doctor-patient communication:* “There is clear evidence that interpreter use can improve doctor-patient communication, patient satisfaction, patients’

understanding of their conditions and follow-up instructions, and, by proxy, patient-centeredness” (Betancourt, 2006).

- *Interpreters seem to improve patient outcomes, but the largest gains are associated with having language-concordant physicians:* “After adjusting for socioeconomic characteristics and physician’s discharge diagnosis, those clients who reported that an interpreter was needed but not used were more likely to be discharged without a follow-up appointment than clients with language-concordant physicians (OR=1.79, 95% confidence interval [CI]=1.00–3.23). Similarly, those clients who communicated through an interpreter were more likely to be discharged without a follow-up appointment than clients with language-concordant physicians” (Anderson, Scrimshaw, Fullilove, Fielding, & Normand, 2003).
- *Multi-language signage likely improves outcomes:* “Although no definitive studies exist, it is likely that multilingual hospital signage and written materials requiring low levels of health literacy (such as for the preparation regimen for a colonoscopy or informed consent) would improve patients’ ability to take active roles in their care and thus improve quality” (Betancourt, 2006).
- *Culturally competent care can improve disease outcomes:* “There are several emerging models of ‘culturally competent’ disease management—disease management programs that also focus on sociocultural and linguistic barriers—that have proven successful in improving outcomes and addressing racial/ethnic health disparities” (Betancourt, 2006).
- *Culturally competent approaches can overcome fear and resistance:* “Several approaches have been found to be effective in overcoming resistance and increasing screening rates [among African-American and Latina women], including providing messages that emphasize the peace of mind that comes from screening and that cancer can be cured. Stories placed in newspapers, radio, and television publicizing role models, especially from minority communities have increased mammography screening rates” (Reid et al., 1999).

A comprehensive examination of cultural competency techniques was conducted by Brach and Fraserirector (2000). They divided the most frequent techniques into nine categories:

1. Interpreter services
2. Recruitment and retention of minority staff
3. Cultural competency training programs
4. Coordinating with traditional healers
5. Use of community health workers
6. Culturally competent health promotion
7. Including family and/or community members in healthcare decision-making, as appropriate
8. Staff worker immersion into another culture
9. Administrative and organizational accommodations, including selection of clinic locations, hours of operation, network membership, physical environments, and written materials

These nine techniques are hypothesized to improve communication and trust and expand understanding, leading to increased provision of appropriate services and better outcomes (Brach

& Fraserirector, 2000). The authors conclude that “unfortunately, at this point there is little by way of rigorous research evaluating the impact of particular cultural competency techniques on any outcomes, including the reduction of racial and ethnic disparities. The only exception is that subset of techniques related to overcoming language barriers” (Brach & Fraserirector, 2000).

Another large study (Silow-Carroll, Alteras, & Stepnick, 2006) details the important components of providing patient-centered care to underserved populations. The movement toward patient centered care has aimed at making care more suitable, accessible, and effective for patients rather than having it organized in ways that historically worked well for providers. Patient-centered care deals with a similar set of issues to those involved in reaching the underserved:

The barriers that make it difficult for underserved populations to access care in general are the same ones that make it difficult to create a patient-centered environment. Language and other cultural differences among immigrants are major obstacles to both access to care and to developing positive relationships between patients and providers. Viewing medical professionals as “superior” and “authoritative” is very common in certain cultures and among those with low “health care literacy.” This may impede patients’ ability or willingness to take an active role in their own care. The alternative perspective, in which an immigrant patient does not trust or respect Western medicine, can also create a barrier to developing a strong provider-patient relationship. Conversely, if a provider does not understand that certain individuals and cultures place faith in folk remedies and alternative healing, he/she may not see the need to educate the patient about the importance of filling prescriptions and taking medications appropriately – perhaps along with folk remedies that will not harm the patient. Also, if a clinician does not trust that a patient will follow his/her instructions, that provider will be less likely to teach the patient and his or her family how to take on more responsibility for their own care (Silow-Carroll et al., 2006).

To create a patient-centered environment, and also to help recruit and retain underrepresented individuals in the health system, the authors recommend the following:

- A. *Welcoming environment*: provide a physical space and an initial personal interaction that is ‘welcoming,’ familiar, and not intimidating;
- B. *Respect for patients’ values and expressed needs*: obtain information about patient’s care preferences and priorities; inform and involve patient and family/caregivers in decision-making; tailor care to the individual; promote a mutually-respectful, consistent patient-provider relationship;
- C. *Patient empowerment or ‘activation’*: educate and encourage patient to expand their role in decision-making, health-related behaviors, and self-management;
- D. *Socio-cultural competence*: understand and consider culture, economic and educational status, health literacy level, family patterns/situation, and traditions (including alternative/folk remedies); communicate in a language and at a level that the patient understands;
- E. *Coordination and integration of care*: assess need for formal and informal services that will have an impact on health or treatment, provide team-based care and care management, advocate for the patient and family, make appropriate referrals and ensure smooth transitions between different providers and phases of care;
- F. *Comfort and support*: emphasize physical comfort, privacy, emotional support, and involvement of family and friends;

- G. *Access and navigation skills*: provide what patients can consider a ‘medical home,’ keep waiting times to a minimum, provide convenient service hours, promote access and patient flow; help patients attain skills to better navigate the health care system;
- H. *Community outreach*: make demonstrable, proactive efforts to understand and reach out to the local community (Silow-Carroll et al., 2006).

Silow-Carroll, Atleras, et al. (2006) identify feedback and measurement, patient/family involvement, employee training, organizational leadership, and structural support at the institutional level as important to achieving a patient-centered environment. They also report that even institutions that have successfully implemented patient-centered care struggle to recruit and maintain underrepresented minority physicians, deal with “boundary” problems as staff are overwhelmed by nonhealth-related patient issues, suffer from lack of finances, and encounter resistance to change. When a patient-centered system is successfully implemented however, it may lead to “better health outcomes as well as greater clinician satisfaction, reduced malpractice claims, and higher clinician loyalty” (Silow-Carroll et al., 2006).

In question 3, we discuss further how gender-based medicine can learn from and align with efforts such as those to create patient-centered care.

Conclusions

There are a variety of approaches being implemented to engage and retain the underserved in systems of healthcare. These approaches include community health workers, an emphasis on cultural competency, reaching people where they are, and providing information in the appropriate language or literacy level to facilitate understanding. Efforts to recruit populations into care focus on using community health workers and removing barriers to access (e.g., providing transportation or taking care to the people). Efforts to retain populations focus on ensuring that healthcare providers are aware of and responsive to cultural needs, including different traditions, expectations, values, and languages. Implementing such programs requires strong organizational leadership, adequate funding, and ongoing attention to overcome institutional barriers and resistance to change.

Limited efficacy data are available on the effectiveness of such programs, but available data suggest that such programs can be very effective in getting underserved populations into the system to receive care. In particular, efforts to work with community-based partners seem promising. Both men and women have been reached by efforts undertaken in partnership with community groups (e.g., religious organizations) that help promote knowledge of risk, screening, and positive health behaviors as well as the utilization of preventive and chronic care to improve health outcomes. Data are lacking, however, on the cost-effectiveness of such programs, and on whether there are gender differences in the effectiveness of these programs.

All of these programs include a focus on understanding the patient and patient values, and we would expect that patient needs and expectations would differ at least somewhat between male and female patients. To date, however, evaluations of such programs have not been sophisticated enough to make specific suggestions relating to how to engage or retain male vs. female patients.

Research Question 3: Systems Approach and Insurance/Cost Trends

3. *What are the trends in demographics, service delivery, costs, or other sectors that could be addressed via a systems approach? To what extent are patients reimbursed for care for specific services (i.e., prevention, mental health, etc.)? Are there gender or sex differences in out-of-pocket patient costs?*

The third research question focuses on large trends in the healthcare system that could be addressed via a systems approach, with a particular emphasis on cost data. Our analysis begins with a discussion of what some of the current problems are in the healthcare system, and then continues with a discussion of which of these issues a systems approach could address. We then discuss various large-scale movements to enact systems-level change, all of which are potential models or allies for a movement toward gender-based medicine. Next, we look at trends in health insurance coverage, with an emphasis on coverage differences between males and females. Finally, the section concludes with a discussion of cost data, including trends in out-of-pocket costs, as well as whether men or women bear a disproportionate burden of these costs.

Problems in the U.S. healthcare system

The U.S. healthcare system is fragmented, decentralized, and needlessly complex. There is almost universal consensus that the system has problems, but limited consensus as to what to do about these problems. Some of these problems are briefly discussed in this section of the report. These problems include high costs, inefficiency, disparities, and reduced quality of care.

Cost and inefficiency:

The U.S. healthcare system is costly; we spend a greater percentage of our gross domestic product on healthcare than other industrialized nations (Gauthier & Serber, 2005). Unfortunately, this high cost is not justified by the quality of care received. Consider the following four findings:

- *The U.S. system is inefficient:* “The need for fundamental transformation of the U.S. health care system has become increasingly apparent. Research reveals a fragmented system fraught with waste and inefficiency. Among industrialized nations, the United States spends well over twice the per capita average [on care]. High spending, however, has not translated into better health” (Gauthier & Serber, 2005).
- *The U.S. system is expensive:* “As a share of total health expenditures, U.S. insurance administrative costs were more than three times the rates of countries with the most integrated insurance systems. The U.S. lags well behind other nations in use of electronic medical records: 17 percent of U.S. doctors compared with 80 percent in the top three countries” (Commonwealth Fund, 2006b).
- *U.S. performance lags behind other countries:* “Overall, the performance of the U.S. health care system falls far below the level it can and should achieve. On many dimensions of performance—from timely access to needed services to the deployment of health information technology—we lag behind other industrialized nations” (Commonwealth Fund, 2006a).

- *The U.S. system is full of missed opportunities:* “We fall far short of what is achievable on all major dimensions of health system performance. The overwhelming picture that emerges is one of missed opportunities—at every level of the system—to make American health care truly the best that money can buy. ... If we closed just those gaps that are described in the Scorecard—we could save at least \$50 billion to \$100 billion per year in health care spending and prevent 100,000 to 150,000 deaths. Moreover, the nation would gain from improved productivity. The Institute of Medicine, for example, estimates national economic gains of up to \$130 billion per year from insuring the uninsured” (Commonwealth Fund, 2006b).

Disparities:

In addition to being costly and inefficient, our current system of care produces numerous disparities. The Agency for Healthcare Research and Quality (2004) reports that “disparities are observed in almost all aspects of health care”:

- “Across all dimensions of quality of health care including effectiveness, patient safety, timeliness, and patient centeredness.”
- “Across all dimensions of access to care including getting into the health care system, getting care within the health care system, patient perceptions of care, and health care utilization.”
- “Across many levels and types of care including preventive care, acute care, and chronic care.”
- “Across many clinical conditions including cancer, diabetes, end stage renal disease, heart disease, and respiratory diseases.”
- “Across many care settings including primary care, dental care, mental health care, substance abuse treatment, emergency rooms, hospitals, and nursing homes.”
- “Within many subpopulations including women, children, elderly, persons with disabilities, residents of rural areas, and individuals with special health care needs.”

Reduced quality of care:

Finally, the current U.S. healthcare system produces suboptimal quality of care. A detailed study of the quality of care received by U.S. residents in 12 communities found that “participants received 54.9 percent of recommended care” (Asch et al., 2006). While there were some differences in scores between subgroups (e.g., women and those with higher incomes received a better quality-of-care score), “the differences among sociodemographic subgroups in the observed quality of health care are small in comparison with the gap for each subgroup between observed and desirable quality of health care” (Asch et al., 2006). In other words, while disparities in care are important, they need to be viewed against a larger backdrop of overall failures in the healthcare system to deliver quality care. Another study found that U.S. adults receive only a little more than half of the recommended care for most medical conditions, although the percentage of care received varied by condition (Gauthier & Serber, 2005).

As these examples show, the U.S. system is far from realizing its potential. The Commonwealth Fund (2006a) identified several barriers that will have to be overcome to see progress in this area. Key sources of failure with the current system include the following:

- General support within the healthcare sector for maintaining the status quo, despite acknowledgment that some level of change is necessary.
- Misaligned payment incentives.
- Inadequate information systems.
- A system of regulatory oversight that is duplicative and costly.
- An inappropriate balance between autonomy and accountability.

Assuming these barriers can be overcome, changes at the systems level could lead to dramatic improvements in our current healthcare system.

Potential benefits of a systems approach

Large-scale systems-level changes could include changes in insurance coverage, changes in records or reporting requirements, changes in reimbursement or payment structures, improved or more frequent preventive services, or many other factors. Such changes could improve quality of care, reduce disparities, reduce fragmentation, and improve access or improve incentives, in addition to offering potential cost savings.

Improved quality of care:

One of the primary reasons to consider systems-level changes to the healthcare system is to improve overall quality of care. Quality improvements can be realized with systems-level changes. For example, the Veterans Affairs (VA) health system utilizes “one of the country’s most mature electronic medical-record systems, decision-support tools at the point of care, automated order entry, routine measurement of and reporting on quality, and financial incentives for performance” (Asch et al., 2006). The VA is “is the largest health care system to have implemented an electronic medical record, routine performance monitoring, and other quality-related system changes” (Asch et al., 2004).

The VA has not only been an early and successful adopter of large scale systems changes, but the adoption of such systems also facilitated marked improvements in the quality of care provided there. Less than 20 years ago, the VA was not known for providing outstanding quality care; now, comparative studies show that the VA provides better than average care. For example, in the VA system participants receive a higher percentage of recommended care than the general population (67 percent vs. 55 percent), and these wide-scale changes are commonly attributed as being part of the reason for this success (Asch et al., 2006). Another study comparing care at the VA to that of the Medicare fee-for-service plan found that the VA performed better on 12 of 13 care indicators, suggesting that “the quality-improvement initiatives adopted by the VA in the mid-1990s were effective” (Jha, Perlin, Kizer, & Dudley, 2003).

Thus, the VA example lends substantial support to the notion that improvements in care can be realized via increased structure, coordination, data collection and evaluation, and other oversight and incentives.

A large-scale reorganization of the healthcare system also could improve the ability of the system to treat chronic illness, thus improving quality. While the current system works well for acute treatment of disease, it is “not always conducive to preventive care” (Cabana & Kim, 2003). Currently, there are “five system barriers to high-quality chronic illness care, which

include organization of care around the acute care visit, reliance on the physician, lack of access to medical and nonmedical expertise, inadequate information, and lack of incentives to provide better care for chronically ill patients” (Cabana & Kim, 2003). A modified system might include more emphasis on “allied health professionals to counsel and educate patients or reinforce educational messages,” or could create a system with additional “registries, reminder systems, and nontraditional follow-up visits” to improve adherence to treatment guidelines and prevention strategies (Cabana & Kim, 2003).

Sophisticated data collection systems (such as those employed by the VA) also can provide information to improve care. For example, large managed-care systems use “administrative databases that make it possible to measure clinical performance and compare it to nationally accepted best practices. This allows physicians to compare their approaches to the latest scientific literature on diabetes, congestive heart failure, heart attacks, breast cancer screenings, immunizations, and asthma” (Ignagni, 2001).

Finally, quality of care could also be improved through better timed care interventions. For example, one trigger for additional care in the current U.S. system is pregnancy. Thus, when pregnant, many low income women may become eligible for additional health services. However, this additional attention is in many cases too late to provide optimal care. Indeed, organizations such as the Centers for Disease Control and Prevention (2007) are encouraging a focus on “Preconception Care” as a better way to improve maternal health outcomes. A systems approach to care might be better equipped to provide such services.

Reduced disparities:

Another primary goal of any systems-level change would be to reduce disparities in access to coverage and quality of care. Universal coverage, with adequate funding to ensure appropriate wait times, would attenuate most inequities in healthcare (Lasser, Himmelstein, & Woolhandler, 2006). However, to eliminate all health disparities, change would also need to “address inferior systems of care in institutions serving the poor and nonfinancial access barriers such as cultural and language barriers” (Lasser et al., 2006).

Reduced fragmentation:

In our current healthcare system, continuity of care has been “systematically disrupted,” “owing to increasing specialization among medical professions and disruption of long-term patient–primary care provider relationships” (Misra & Grason, 2006). Systems-level changes to the healthcare system could reduce this fragmentation, thus improving care.

Reduced duplication of services:

A systems-level approach to change can also lead to the reduction or elimination of redundant utilization, which results from patients receiving care in different systems. For example, many young women who lack pharmaceutical coverage may seek care at Planned Parenthood or another similar setting, which can result in duplicate exams and Pap smears. Similarly, many VA patients may have duplicate coverage. Even privately insured patients and those on Medicare who need specialty care often receive duplicate services. Such patterns reflect over-utilization by those with better access to care and increase the costs of care nationally.

Improved access:

Another way in which a systems-level approach could improve the healthcare system would be to simplify and standardize access to the system. Such a change could apply to processes such as applying for insurance, end-of-life decision making, and medication instructions. All patients would “benefit from a reduction of paperwork, plain and simple communication, and standardized processes” (Paasche-Orlow, Schillinger, Greene, & Wagner, 2006). Moreover, the authors found that satisfaction, comprehension, and retention of information also were improved by materials presented in accessible language.

Improved incentives:

A systems-level approach to care also could reorganize the incentive structure of the current system, making it cost-effective to offer certain services that are infrequently offered now. For example, healthcare has been becoming increasingly specialized. Specialized care approaches are financially lucrative for those involved in them, but “threaten to strip services and reduce quality in neighboring general hospitals, with potentially serious implications for their bottom line” (Stevens, 2005). A reorganized health system could create “a renewed market for primary care,” which “would prompt more medical students to become residents in family medicine, internal medicine, and pediatrics” (Stevens, 2005). Such a response is not “economically rational” in the current system, but a change in the incentive structure could correct that (Stevens, 2005).

Another similar example relates to colorectal cancer screening (colon cancer is a leading cause of death in both men and women):

The technologies for [colorectal cancer] screening (sigmoidoscopy and colonoscopy) are not new, but at least in the United States, public awareness of their availability for screening is growing. ... At the same time, studies evaluating the effectiveness of these technologies for screening are maturing and showing clear evidence of benefit. ... The main barrier to achieving the potential benefits of these screening technologies is a manpower issue: there are not enough trained endoscopists (Carlson, 2001).

Changes in the incentive system could correct this type of deficit. Changes in the incentive system also could create an impetus for movements toward patient-centered care (Davis, Schoenbaum, & Audet, 2005), or other quality structures that could improve overall quality of care. In addition, changes in incentives may be able to reduce gender-based or other disparities in screening. For example, returning to the example of colorectal screening discussed above, white men are most likely to receive a colonoscopy screening than either women or African American men (McMahon et al., 1999), and men remain more likely to receive screenings for colon cancer (Meissner, Breen, Klabunde, & Vernon, 2006). Changes in the incentive system could correct some of these deficits.

Models and potential partners to move toward systems-level change

Any effort to create large-scale change in the healthcare system to implement gender-based care would be well-served by learning from and aligning with other large-scale movements in the healthcare system. This sort of alignment would take advantage of natural synergies and avoid the potentially negative consequences of “competing” with other movements. In this section, we describe some other movements that are attempting to promote large-scale change, and we

highlight possible synergies or lessons learned as they relate to gender-based care. These efforts to enact systems-level change include patient-centered approaches, family-centered care, consumer-driven care, and pay-for-performance.

Patient-centered care approach:

There has been a movement in medicine in recent years toward adopting approaches that focus on the delivery of patient-centered care (patient-centered care was discussed previously in research question 2). Here, we list institutional factors that must be addressed to implement such care (Silow-Carroll et al., 2006). Some of these same factors may need to be addressed to implement gender-based approaches to care:

- “*Feedback and measurement*: seek and respond to suggestions and complaints from patients and families; develop, collect and evaluate data on measures of patient-centered care, and feed back the results into further improvements; incorporate accountability for addressing deficiencies and continually improving indicators.”
- “*Patient/family involvement*: include patients and family members in the planning, design, and ongoing functioning of the organization; consider the patient a member of his/her care team.”
- “*Workforce development*: employ, train, and support a workforce that reflects, appreciates, and celebrates the diversity of the communities and cultures that the organization serves; reward and recognize staff exhibiting patient centeredness principles; develop communication skills among all levels of staff; empower staff to be part of patient-centered teams.”
- “*Leadership*: top management, Board, and department heads make a clear, explicit commitment to patient centeredness and act as role models.”
- “*Involvement in collaboratives, pilots*: seek out and join pilot research projects and collaborative relationships with other organizations that attempt to ‘push the envelope’ in developing new methods to operationalize patient-centered principles.”
- “*Technology and structural support*: use electronic systems/user-friendly software programs that promote patient/family education and compliance, and minimize medical errors; structure the physical environment to optimize patient flow and safety.”
- “*Integration into institution*: tie patient-centered care to other priorities such as patient safety, quality improvement, etc., and incorporate patient-centered practices into daily operations and culture.”

To implement a patient-centered care model, the authors found that change needs to occur

simultaneously at four levels: 1. Organizational level, e.g., structures, processes, leadership, funding, information technology; 2. Patient level, e.g., navigation, translation, convenient access, education; 3. Provider level, e.g., training, interdisciplinary teams, diversity, cultural competence; and 4. Community level, e.g., outreach, recruitment, partnerships (Silow-Carroll et al., 2006).

A comprehensive framework such as this to implement a patient-centered approach provides a useful model for thinking about how to implement gender-based medicine; in fact, a gender-based approach might best be implemented concurrently with such a comprehensive approach to

take advantage of synergy and momentum for change. Thus, this detailed description provides a fairly comprehensive outline of some of the factors that might need to be addressed at the institutional level to adopt gender-based medical practices.

Family-centered care movement:

The family-centered care movement is based on the core values of dignity and respect, information sharing, participation, and collaboration (Conway et al., 2006). Efforts to enhance family-centered care have resulted in both improved quality and efficiencies. For example, the MGC Health System in Georgia adopted a family-centered approach throughout the entire organization, including a commitment on the part of senior leadership. This approach has resulted in increased patient satisfaction scores, reduced medical stays, reduced medical errors, and reduced nursing shortages (Conway et al., 2006).

Lessons learned from this field regarding partnership-development include (Conway et al., 2006):

- Having senior leaders who are knowledgeable about and committed to collaboration with patients and families.
- Designating a staff member, with patient- and family-centered knowledge and skills to serve as a liaison for collaborative endeavors.
- Creating a variety of ways for patients and families to serve as advisors within an organization and ensuring that they can contribute meaningfully to decision-making— that their presence is not merely tokenism.
- Recruiting patients and families continually for various terms of service to support sustainability and ensuring that these individuals represent the diversity of the community served.
- Investing in orientation and training in patient- and family-centered care and in strategies for effective collaboration for patients, families, staff, and physicians.
- Investing in educational and planning activities for patients, families, physicians, and staff to engage in together in order to develop trusting relationships and understanding of shared and differing perspectives.
- Supporting the development of patient and family leaders.
- Providing staff and physicians with ongoing support and mentoring to address challenges related to collaborating with patients and families as they arise.
- Understanding that patient- and family-centered care is cost-effective—that initial investments in training are modest and will be quickly repaid in terms of increased family and patient satisfaction, improved staff satisfaction and retention rates, and greater market share.
- Ensuring that everyone involved realize that moving toward patient- and family-centered care is a process and that they trust this process and one another.
- Measuring outcomes.
- Celebrating accomplishments and rewarding efforts.

As with other approaches described in this section, a movement toward large-scale change to create gender-based medical care may benefit from attention to some of these same issues.

Consumer-driven healthcare:

Another potential model to consider regarding a large-scale systems change is the movement toward consumer-driven healthcare. This movement, at its core, involves an effort to get consumers more involved in the financial and other implications of their own care decisions.

The most common use of the term “consumer-driven healthcare” has referred to benefit plans with “a personal care account; insurance coverage designed to create a ‘gap’ between the dollars in the account and the level at which a deductible is reached; and various Internet support tools intended to facilitate more extensive, better-informed consumer involvement in health care decisions” (Christianson, Parente, & Feldman, 2004). The idea behind this movement is that giving consumers greater personal control over their use of the health system will reduce unnecessary medical visits and encourage the use of lower-cost options. One possible drawback of this model, however, is that underutilization of services may be a greater problem than overutilization, and “even clear instances of overutilization are often the result of provider decisions and may not be responsive to consumer incentives” (Davis, 2004).

Four main conclusions have been drawn to date about this consumer-driven healthcare movement: 1) voluntary enrollment is relatively limited; 2) enrollees tend to be higher-income and healthier; 3) enrollees tend to reduce their use of services; and 4) enrollees tend to be satisfied (Davis, 2004). Thus, the movement has been successful in some areas but likely does not hold great promise as a universal solution to healthcare problems.

However, as a movement, the consumer-driven healthcare trend may have important lessons for gender-based care.

Pay-for-performance systems:

A final potential model to consider related to gender-based systems-level change is the pay-for-performance model. Pay-for-performance systems are an attempt to bridge the gap between healthcare quality and price, and they have shown some initial successes (Thrall, 2004). These programs reward or penalize hospitals and physicians based on their performance, with the most common model being “a straight bonus system that rewards providers with additional payments for achieving stipulated performance targets” (Thrall, 2004). Many payers are adopting such an approach, including the Centers for Medicare and Medicaid Services, which is embarking on demonstration projects with hospitals (Thrall, 2004).

These plans frequently rely on pre-existing measures (collected initially for other purposes) to reward or penalize performers. For example,

many pay-for-performance plans use quality criteria originally developed for other purposes like the Health Plan Employer Data and Information Set (HEDIS) program of the National Committee for Quality Assurance. The quality criteria defined in the HEDIS program have been used in the managed care industry for many years as measures of health plan and provider performance. The major categories in HEDIS are effectiveness of care, access to and availability of care, satisfaction with the experience of care, health plan stability, use of services, and health plan descriptive information. Within these broad categories, there are several dozen specific quality measures (Thrall, 2004).

Another set of issues related to measurement of pay-for-performance is how to control for year-to-year variations based on statistical fluctuations in cases, a particular problem for smaller practice settings (Thrall, 2004).

Pay-for-performance systems are of interest to gender-based care because they involve an attempt to improve quality while also controlling cost and working within an existing health structure.

Trends in health insurance coverage

Insurance coverage is a critical part of the U.S. healthcare system, and coverage patterns and rates can vary considerably according to gender, race, ethnicity, sexual orientation, and geography. In this section, we outline overall coverage patterns (including sex- and gender-based patterns) as well as factors that are associated with health insurance coverage. We then examine trends among the uninsured and discuss the implications of lack of insurance on overall health. We conclude our analysis of insurance coverage with an examination of trends for other specific populations groups (i.e., minorities, gays and lesbians, and rural residents).

Overall coverage patterns:

Most people in the United States have some form of health insurance coverage, with the most common form being managed care, which serves approximately 170 million Americans (Ignagni, 2001). However, a significant minority are without coverage, and lapses in coverage are common for a substantial minority. Based on a recent review of available data, The Commonwealth Fund (2006a) reports the following:

- “Fifty-nine percent of the U.S. population is covered by private health insurance, with nearly 92 percent of this coverage linked to employment.”
- “Twenty-seven percent of the population receives health insurance coverage from the government—through the Federal Medicare program, military health care, the state-Federal Medicaid program, and the State Children’s Health Insurance Program (SCHIP).”
- “Sixteen percent of the population is uninsured. Millions more endure a period without insurance during the year: almost one of three civilian, non-institutionalized citizens under the age of 65 was uninsured for a period of at least one month in 2003.”

Sex- and gender-based differences in coverage patterns:

Coverage patterns are similar between men and women. More women have Medicaid as a source of insurance (9 percent vs. 6 percent), while men are somewhat more likely to be uninsured (22 percent vs. 19 percent) (Salganicoff, 2004). The same proportion of men and women (64 percent) have job-based insurance; however, a greater proportion of women than men have job-based insurance as a dependent (25 percent vs. 13 percent), while men are more likely than women to hold job-based insurance in their own names (51 percent vs. 39 percent) (Salganicoff, 2004). Women may be less likely to participate in employers’ health plans because “they are more likely to work part-time, have lower incomes, and rely on spousal coverage” (Henry J. Kaiser Family Foundation, 2006b). As a result, “the take-up rate for job-based coverage among workers is 80% for women and 89% for men” (Henry J. Kaiser Family Foundation, 2006b).

Khoury and Weisman (2002) summarized the literature on sex- and gender-based differences in insurance coverage as follows:

More men than women are uninsured at any given point in time, largely because Medicaid targets poor pregnant women and parents of young children. In general, women are more dependent than men on publicly financed health insurance (Medicaid and Medicare) and have fewer financial resources with which to pay for care. ... Privately insured women rely more than men on dependent coverage and less on private insurance through their own jobs. Dependent coverage may become more difficult to obtain as premiums increase and employers seek ways to reduce health insurance costs.

Another issue to consider is the content of coverage. Zimmerman and Hill (2000) have argued that “ideally, because of differences in health care requirements, insurance should work somewhat differently for women and men,” although current coverage patterns tend to serve men better. Their argument is based on life span and illness differences between men and women:

Men and women have different life spans and illness patterns, making their health care needs substantially different and requiring accessibility to different types of health care services. Men tend to have more acute conditions that can result in hospitalization, whereas women more often suffer from chronic problems that require ambulatory or home health care. The Medicare reimbursement structure is geared to hospital care, so among older people women bear a greater financial burden, which may impede their access to care. Inadequacies also exist for younger women. For example, 9 percent of privately insured women have policies that exclude maternity coverage, and 27 to 36 percent of insurance plans do not cover induced abortion. All but 16 percent of HMOs cover oral contraceptives, but only 31 to 60 percent of other plans provide such coverage. Another study that included a range of health plans found that 85 percent covered medication and services related to impotency, whereas only 59 percent covered oral contraception and only 7 percent covered infertility. ... Because women live longer than men, they are more likely to require nursing home services. And associated with living longer, older women have chronic illnesses and disability and are therefore more likely than men to require adaptive aids, home health, community-based services, and outpatient prescriptions (Zimmerman & Hill, 2000).

In summary, U.S. men are slightly less likely to have access to coverage than their female counterparts. However, men are more likely to have health insurance in their own names, and men’s care needs may be better addressed by the types of coverage offered.

Predictors of insurance coverage:

The primary predictors of insurance coverage are income and employment status.

Low-income families (families who earn less than 200% of the poverty level) “run the highest risk of being uninsured” and “over a third of the poor and 30% of the near-poor (100-199% of poverty level) lack health coverage” (Henry J. Kaiser Family Foundation, 2006a). Additionally, “reliance on public coverage increases dramatically as income declines. When comparing older widowed or divorced women to their married or single counterparts, dramatic differences in public coverage emerge. ... Widowed or divorced women are at least twice as likely to have

public coverage compared to married or single women (18.6 percent vs. 7.9 percent)” (McCloskey & Klein, 2001).

Employment status is related to insurance because of the “predominance of employment-based coverage in the United States” (Merzel, 2000). Employment-based coverage generally favors men, who are more likely to hold a policy in their own names (Dewar, 2000). In addition, women “may find themselves without coverage if they do not work continuously or full time because of childbearing and family responsibilities” (Kasper, 2004). Moreover, “women are more likely than men to change jobs for family reasons, including childbearing. This makes them vulnerable to becoming ineligible for private insurance or to paying higher premiums because of medical conditions that have developed during interruptions in private insurance coverage and adversely affects their eligibility for pension-based insurance” (Miles & Parker, 1997).

While one study found that “in general, the determinants of health insurance coverage were quite similar for men and women” (Merzel, 2000), there is some disagreement as to whether women or men are more likely to work in jobs that offer coverage. Dewar (2000) and Kasper (2004) both report that women have more limited access to insurance because of lower wage jobs with more limited fringe benefits. However, Merzel (2000) found that “single women who work full time are slightly more likely than men to be covered through their jobs, primarily as a result of differences in the types of jobs held by single men and women.”

It does appear that “women are more vulnerable to losing their insurance should they become divorced or widowed, because they are more likely than men to be covered as dependents. Women are also at greater risk of losing coverage if their spouse loses his job or his employer drops family coverage or increases premium and out-of-pocket costs to unaffordable levels” (Henry J. Kaiser Family Foundation, 2006b). Additionally, widowed or divorced older women may “face problems gaining access to the health insurance market” (McCloskey & Klein, 2001).

Other barriers to acquiring health insurance include being foreign-born (perhaps because of language barriers and cultural differences) (Freeman & Lethbridge-Cejku, 2006), and having less than a high school education (Freeman & Lethbridge-Cejku, 2006).

Numerous factors affect access to health insurance, and these differences are reflected in insurance rates across various categories (e.g., sex, age, race/ethnicity, income, and education):

The percentage of females without insurance (14.4 percent) is slightly lower than the percentage of males (16.8 percent). However, non-White women are more likely than White women to lack coverage: 10.4 percent of non-Hispanic White females (of all ages) were uninsured, compared to 17.8 percent of Black females, 18.5 percent of Asian females, and 29.6 percent of Hispanic females. The percentage of people without health insurance also varies greatly by age. Young adults of both sexes are the most likely to be uninsured: 34.5 percent of 21 to 24 year-olds lack health insurance, as do 26.6 percent of 25 to 34 year-olds. In contrast, because of the Medicare program, fewer than 1 percent of women aged 65 years and older are uninsured. Rates of uninsurance decrease steadily as household income increases, ranging from a high of 24.2 percent for those with incomes below \$25,000 to a low of 8.2 percent for those with incomes of \$75,000 or more (Health Resources and Services Administration, 2005b).

Health insurance stability is higher “for those who have higher levels of welfare receipt, have more work hours, have fewer job changes, have higher education levels, are African American or Hispanic, and who live outside central cities” (Anderson & Eamon, 2005). A longitudinal study found that point-in-time estimates tend to dramatically overestimate coverage, because coverage lapses are quite common; in this case, 24 percent of respondents lacked coverage in a 1998 interview, but 49 percent lacked coverage at some point during the three-year study period (Anderson & Eamon, 2005). Such coverage lapses result in disruptions in access to care, quality of care, and compliance with treatment.

Trends among the uninsured:

Estimates of the number of Americans who are uninsured increase every year (Henry J. Kaiser Family Foundation, 2006a). Based on 2004 census data, almost 46 million Americans are uninsured (Gauthier & Serber, 2005), and many millions more are underinsured (Kasper, 2004). Altogether, “61 million adults, a third of those under 65, are uninsured or underinsured” (Gauthier & Serber, 2005). In 2003, 44 percent of the uninsured were men, 36 percent were women, and 20 percent were children (Salganicoff, 2004).

Because of their more frequent status as healthcare dependents, older women may be especially at risk of losing health coverage:

- “One in four women between ages 50 and 70 was uninsured when her older husband retired” (Kasper, 2004).
- “The patchwork of different private sector and publicly-funded programs in the U.S. leaves nearly one in every five nonelderly women uninsured” (Henry J. Kaiser Family Foundation, 2006b).
- “Although the majority of widowed or divorced women aged 55 to 64 have insurance, nearly one in five is uninsured and may have difficulty finding quality, affordable health coverage. Widowed and divorced older women with low incomes are most likely to be uninsured or to face problems gaining access to health insurance. Older widowed or divorced women face many barriers in the private insurance market. Insurers may refuse to sell them a policy—especially if they have a history of health problems or a chronic or disabling condition. When a policy is available, it is likely to be expensive and may be unaffordable for those most in need of coverage” (McCloskey & Klein, 2001).

Growth in the uninsured population is occurring primarily among adults and those with low incomes (Henry J. Kaiser Family Foundation, 2006a). Additionally, “women who are Latinas, low-income, single, and young are particularly at risk for being uninsured” (Salganicoff et al., 2005). Another group with limited to no coverage is men recently released from prison, fewer than 10 percent of whom have any coverage (Jarrett, Adeyemi, & Huggins, 2006).

Health implications of being uninsured:

Numerous studies have found that being uninsured is related to negative health outcomes. The most significant of these is the increased mortality rate among the uninsured: “Uninsured persons are more likely to be in poor health and to die earlier, even when analyses controlled for other sociodemographic factors” (Freeman & Lethbridge-Cejku, 2006). The Henry J. Kaiser Family Foundation (2006a) offers a more detailed explanation of this increased mortality rate:

The uninsured are less likely to receive preventive care than those with insurance and more likely to be hospitalized for conditions that could have been avoided. For example, people with insurance are significantly more likely to have had recent mammograms, and other types of cancer screenings than the uninsured. Consequently, uninsured cancer patients are diagnosed later and die earlier than those with insurance. Researchers estimate that a reduction in mortality of 5% to 15% could be achieved if the uninsured were to gain continuous health coverage. The Institute of Medicine estimates that at least 18,000 Americans die prematurely each year because they lack health coverage. Charitable care and the safety net of community clinics and public hospitals do not fully substitute for health insurance. Lack of health coverage matters for millions of uninsured Americans, affecting their access to care, health status, job decisions, and financial security, as well as exacting an indirect toll on society in terms of more disability, lower productivity, and increased burden on the health care system.

Lack of insurance also costs the United States financially. The Institute of Medicine estimates these costs at \$65 billion to \$130 billion annually (Gauthier & Serber, 2005). Lack of insurance or inadequate insurance can have a larger personal financial impact, putting individuals and families at substantial financial risk if a family member becomes critically ill: “Over a third of the uninsured have a serious problem paying medical bills, and nearly a quarter are contacted by collection agencies for medical bills” (Henry J. Kaiser Family Foundation, 2006a).

In addition to an increased mortality rate and significant financial costs, lack of insurance also is associated with greater barriers to care, reduced access to care, fewer preventive visits, and the forgoing of needed medical services (such as prescriptions). Findings in this area include the following:

- “Uninsured persons use less preventive health care than do those with insurance” (Reid et al., 1999).
- “People who are uninsured are less likely than those with insurance to seek preventive care, which can result in poor health outcomes and higher health care costs” (Health Resources and Services Administration, 2005b).
- “Lack of health insurance coverage is associated with reduced access to health care and poorer medical outcomes. Several studies show that uninsured persons are less likely to have a regular source of care, less likely to receive preventive and primary care, less likely to receive required preventive services, and more likely to delay needed medical care than insured persons” (Freeman & Lethbridge-Cejku, 2006).
- Sixty-one percent of the uninsured had an access problem (e.g., not filling prescriptions, not seeing a specialist) during the past year (Gauthier & Serber, 2005).

Uninsured women face a similar set of issues, in addition to problems that are unique to women. Findings specific to women include the following:

- “Uninsured women are the least likely to have had a provider visit in the past year (67%), compared to women with either private (90%) or public insurance-Medicaid (88%) and Medicare (93%)” (Salganicoff et al., 2005).

- “When women are uninsured, they are more likely to postpone care and to forgo filling prescriptions than their insured counterparts and often delay or go without important preventive care such as mammograms and Pap tests” (Henry J. Kaiser Family Foundation, 2006b).
- “Women without insurance consistently report lower use of preventive services, more difficulty paying for care and medicines, and greater barriers to obtaining services” (Salganicoff et al., 2005).
- “Women without insurance consistently fare worse on multiple measures of access to care, including contact with providers, obtaining timely care, access to specialists, and utilization of important screening tests” (Salganicoff et al., 2005).
- “Studies have shown that uninsured women have difficulty accessing care; go without needed care; are less likely to fill a recommended prescription; do not receive preventive care services such as clinical breast exam, mammogram, or Pap test; do not have a regular source of care; and are more likely to rely on episodic emergency room or clinic care” (Kasper, 2004).
- “Uninsured women faced larger access barriers and utilized fewer services, particularly preventive care services, than women with either public or private coverage” (Almeida, Dubay, & Ko, 2001).
- “Uninsured women face significant barriers to care not met by the current safety net system, especially medical, surgical, and dental services” (Almeida et al., 2001).

It is important to note that while not having insurance is associated with poor quality of care, access alone does not guarantee quality:

Although having insurance increases the ease of access to the health care system, it is not sufficient to ensure appropriate use of services or content of care. Indeed, within systems where access to care is more equitable, disparities in quality due to race or ethnic group or to other characteristics are often reduced or even reversed, but substantial gaps between observed and optimal quality remain (Asch et al., 2006).

Variations in coverage by race and ethnicity:

Minority populations in the United States are less likely to be insured than the majority white population, and this is true for both men and women.

The percentage of women who are uninsured varies by race and ethnicity. White women are least likely to be uninsured (14%), followed by Asian/Pacific women (22%), American Indian/Aleutian Eskimo women (34%), and Latina women (38%) (Salganicoff, 2004). Minority women also are more likely to rely on public coverage such as Medicaid (Wyn et al., 2004), and are more likely to experience gaps in their coverage (Wyn et al., 2004). Insurance rates for Hispanic women also vary by country of origin: “Among both the currently employed and unemployed Hispanic or Latino women, Mexican and Central or South American women were more likely to be uninsured than Puerto Rican, Cuban, and other Hispanic women” (Freeman & Lethbridge-Cejku, 2006).

Among men, “Hispanic, Black, and AI/AN [American Indian/Alaska native] men are less likely than their White counterparts to be insured all year” (Ro et al., 2004). Latino men are particularly

at risk, as “nearly half of the non-elderly Latino male population is uninsured” (Rich & Ro, 2002). Another at-risk group among men is young men of color, who “because of their socioeconomic position, are less likely to qualify for public sources of insurance such as Medicaid” (Rich & Ro, 2002).

Variations in coverage for gays and lesbians:

Gay and lesbian patients may experience additional barriers to coverage:

Coverage is often unaffordable or unavailable to the gay and lesbian patient, compared with heterosexuals. Domestic partnership coverage is still rare, although some progress has been made. ... The lack of insurance coverage contributes to overall poorer health maintenance behaviors among gays and lesbians. Both gay men and lesbians in committed relationships are at a disadvantage compared to married straight couples because many insurance companies and employers continue to deny spousal benefits to unmarried partners (Bonvicini & Perlin, 2003).

Moreover, many individuals may still not feel comfortable revealing their sexual orientation at work in order to request domestic partner coverage, which further limits access.

Variation in coverage for rural residents:

Rural residents also experience problems obtaining health insurance:

Health insurance coverage for rural Americans [compared with urban residents] may be even more troubling. Rural residents have lower incomes, tend to be in poorer health, and have fewer preventive services than their urban counterparts. Twenty-five percent of people who live in rural areas are uninsured; and they tend to be uninsured for longer periods of time than those in urban centers (Kasper, 2004).

Trends in costs

In general, costs are a greater barrier to care for women than they are for men. Women have lower incomes than men, and

women’s financial resources have to go farther than men’s because women are more likely to become single parents and to become caretakers to their elderly relatives. ... Women experience higher rates of economic hardship than men, especially in their later years when they are more likely to have outlived a spouse and less likely to have a pension to help support them in retirement (Bird & Rieker, 1999).

Perhaps as a result of these economic differences, more women than men do not receive care because of costs (5.8% vs. 5.0%), and delay care because of cost (8.3% vs. 7.0%) (Adams & Barnes, 2004).

Salganicoff, Ranji et al. (2005) provide a comprehensive summary of cost trends as they affect women:

Health care costs are increasingly acting as a barrier to health care for many women. One-quarter of women delay or don’t get needed medical care because they cannot afford it. Furthermore, cost-related problems appear to have worsened since 2001. Many women

also cannot afford prescription drugs. They do not fill prescriptions or resort to skipping doses and splitting medicines. These problems do not just affect uninsured women, but are also reported by some women with private health coverage. Over one-quarter of non-elderly women (27%) say they delayed or went without medical care they believe they needed due to costs, a significantly larger share than in 2001 (24%). Women (56%) are more likely than men (42%) to use a prescription medicine on a regular basis, and are also more likely to report difficulties affording their medications. In the past year, one in five women (20%) report that they did not fill a prescription because of the cost, compared to 14% of men. While the problem is greatest for uninsured women (41%), one in six women (17%) with private coverage and nearly one in five women with Medicaid (19%) also say they faced the same barrier. One in seven (14%) women also report that they skipped or took smaller doses of their medicines in the past year to make them last longer. Nearly one in 10 women say they have spent less on basic family needs to pay for their medicines.

In this section, we examine trends in costs, including out-of-pocket costs. As noted, these trends show that out-of-pocket costs are a greater burden for women than men, and that healthcare for women may be more expensive than healthcare for men.

Overall findings related to out-of-pocket costs:

Out-of-pocket costs for “copayments, deductibles, coinsurance, and payments for services not covered by insurance” are 12.6 percent of total U.S. health expenditures, or \$236 billion annually, based on data from 2004 (Commonwealth Fund, 2006a). U.S. out-of-pocket costs per capita were \$737 in 2002, higher than in other countries even after adjustments for cost of living (Gauthier & Serber, 2005). Out-of-pocket costs place a greater burden on those with lower incomes, with 11 percent of all households paying more than 5 percent of income in out-of-pocket costs; this percentage rises to 29 percent for households earning less than \$20,000 per year, and to 23 percent for households earning between \$20,000 and \$34,999 (Gauthier & Serber, 2005).

Drug costs are a significant component of out-of-pocket expenditures, and such costs are substantially higher for those without prescription drug coverage. For example, Blustein (2000) found that such costs were twice as high per tablet for Medicare beneficiaries without drug coverage, and “out-of-pocket expenditures are very high” for Medicare recipients who are unable to afford a Medigap policy to cover prescriptions (Rice, 2000).

While out-of-pocket costs have been rising, this rise has occurred simultaneously with an overall rise in costs. Consumers are reacting to this rise because they have “historically been sheltered from much of the bite of rising health costs by a continuous decline in the out-of-pocket share of spending” (Borger et al., 2006). Out-of-pocket costs are predicted to rise with overall costs; however, as a share of total personal healthcare spending, out-of-pocket costs are “projected to decline from 15.1 percent in 2004 to 12.6 percent by 2015” (Borger et al., 2006).

Out-of-pocket costs have been found to have a greater impact on care than was previously suspected. For example, the threshold at which increased co-pays affect patient compliance with medication usage is surprisingly low. A \$10 increase in co-payment for medication for angiotensin-converting enzyme (ACE) inhibitors resulted in a “2.6% decrease in the medication

possession ratio ... but a predicted 6.1% increase in the risk of hospitalization for CHF [congestive heart failure]” (Cole, Norman, Weatherby, & Walker, 2006). Another study of antihypertensive medications found that “co-payment level is a strong and independent predictor of medication compliance after adjusting for other model explanatory variables” (Taira, Wong, Frech-Tamas, & Chung, 2006). Such findings make the setting of pharmaceutical prices an important issue for healthcare quality.

Sex- and gender-based differences in out-of-pocket costs:

Like other lower-income groups, women pay a greater proportion of their total income in out-of-pocket medical costs and also have higher costs overall than men. Partly this is because women are more frequent users of the healthcare system: “Ninety percent of females had at least one health care expenditure in 2002, compared to 80 percent of males” (Health Resources and Services Administration, 2005b). Women also may make more visits to the doctor than men (Bertakis, Azari, Helms, Callahan, & Robbins, 2000), as well as use more prescriptions (Correa-de-Araujo, Miller, Banthin, & Trinh, 2005).

Women on Medicare “spend a greater share of their incomes on health care than men, and the most vulnerable, those who are sicker, pay significantly more. Women use 22% of their total income for out of pocket healthcare expenses, compared with 17% for men” (Rice, 2000). Women also pay more than men out-of-pocket for prescriptions:

While 15% of women report they paid no out-of-pocket costs for their medicines in the past month, over one-third (36%) say they paid up to \$50 and an additional 20% paid from \$50 to \$99 of their own money. However, one in four women (24%) face significant out-of-pocket expenses for prescription medicines, paying \$100 or more in the past month, including 10% who paid at least \$200 in the past month for their medicines (Salganicoff et al., 2005).

Costs are even higher for uninsured women: “Nearly four in 10 uninsured women (38%) say they spent \$100 or more in the past month, including 19% that spent \$200 or more. Given that most uninsured women are disproportionately low-income, these costs place a great strain on their already very tight budgets” (Salganicoff et al., 2005).

Variations in women’s out-of-pocket costs also occur according to race, ethnicity, age, and insurance status. Taylor, Larson, et al. (2006) report the following differences:

- “Variation in out-of-pocket expenses for health care as a percent of family income was also related to insurance status. Among women under age 65, the uninsured, and those with public insurance only were more likely than the privately insured to have high levels of out-of-pocket expenses relative to income. A different distribution of out-of-pocket spending in relation to income was observed for women age 65 and older in 2000. Those with Medicare only and Medicare plus other public coverage were more likely to have had relatively high levels of out-of-pocket expenses relative to income than those with Medicare plus private insurance.”
- “The highest out of pocket expenses as a percent of family income were incurred by women age 75 or over; almost one quarter in this group (21–23%) spent 10% or more of

their income on health care in 2000. In the general population only 6% on average had out-of-pocket expenses at this level.”

- “Poor, near poor, and low-income women, widows, women who lived in rural areas, those in fair or poor health, and those women with less than a high school education were also more likely to have spent 10% or more of their incomes out of pocket for health care.”
- “Another important socio-demographic difference may be found in a comparison among white, black, and Hispanic women. Proportionately fewer Hispanic women than white women spent 10% or more of family income out of pocket for medical care.”

Sex- and gender-based trends in out-of-pocket costs for older adults:

Women’s greater burden in out-of-pocket expenses is exacerbated among older adults (typically defined as age 65 and older): “Older women bear a disproportionate burden of out-of-pocket health care costs; these costs consume 20% of the income of an older women, as compared to 17% of the income of an older man” (Blustein, 2000). This discrepancy may be because of women’s lower incomes combined with potentially worse drug coverage: “Women are less likely to have employer-based (‘retiree’) plans, which include particularly good drug benefits. Therefore, older women may face higher out-of-pocket costs when they purchase medications” (Blustein, 2000).

A more detailed description of trends for prescription drug use among older adults follows. The study results are based on interviews with individual adults over the age of 65 about their own use of prescription medications:

Women accounted for a somewhat larger portion of prescription drug use and expenditures in this population. Women accounted for 56.3% of the average annual total of 237.4 million prescriptions and 54.6% of the average annual total of \$12.7 billion in drug expenditures by the privately insured older adults. Examination of per capita use and expenditures shows that the disproportionate share of drug expenditures by women resulted from higher rates of use. Women were more likely than men to purchase at least one prescription during the year (91.9% vs. 87.5%). Further, among persons with use, women purchased more prescriptions, on average, than men (24.7 vs. 20.7). Men, however, purchased drugs with a somewhat higher average prescription price than women (\$55.68 vs. \$51.84). Overall, women had total expenditures averaging \$1178 per year for drugs, about 17% more than the \$1009 in average expenditures by men (Correa-de-Araujo et al., 2005).

The new Medicare Part D drug coverage (effective January 1, 2006) will certainly impact these trends, but data on the effects of this coverage change are still being collected. The Centers for Medicare and Medicaid Services reports that more than 31 million seniors had enrolled in the plan as of May 2006 (Bach & McClellan, 2006). The standard benefit of the coverage entails a “\$250 annual deductible, followed by 75 percent coverage for the next \$2,000 in drug costs, then by a ‘doughnut hole’ in which patients pay the next \$2,850 in drug costs, and finally by catastrophic coverage for 95 percent of any further prescription-drug costs in a given year” (Bach & McClellan, 2006). This “doughnut hole” may be more likely to negatively impact women than men because of women’s lower incomes, but studies on this question are still pending.

Other cost trends:

In addition to higher out-of-pocket expenses, women appear to have higher healthcare expenditures than men. While this is true in general, there are exceptions for certain procedures and kinds of care:

- “Among those who had at least one health care expense in 2002, the average per-person expenditure was higher for females (\$3,461) than for males (\$3,116). However, men’s expenditures exceeded women’s for hospital inpatient services (\$14,221 compared to \$10,371), home health services, and hospital outpatient services, while women’s expenditures exceeded men’s in the categories of office-based medical services and prescription drugs” (Health Resources and Services Administration, 2005b).
- “Women ... had significantly lower self-reported health status and lower mean education and income than men. Women had significantly higher mean number of visits to their primary care clinic and diagnostic services than men. Mean charges for primary care, specialty care, emergency treatment, and annual total charges were all significantly higher for women than men; however, there were no differences for mean hospitalization or hospital charges. This confirms the notion that women have higher medical care service utilization and higher associated charges than men” (Bertakis et al., 2000).

Costs also may be driven by age as well as gender:

- “Medicare spending in the last year of life is strongly associated with age, rather than gender. Our age-specific analyses showed that total Medicare expenditures were 70% higher for the youngest decedents, those who were age 65 to 69 than for the oldest, who were age 85 and above. Indeed, overall Medicare expenditures did not differ by gender. However, Medicare expenditures for SNF [skilled nursing facilities] and home health care in the last year of life were higher for women than men and expenditures for inpatient and outpatient care were higher for men” (Bird, Shugarman, & Lynn, 2002).

Conclusions

The U.S. healthcare system is a patchwork overlay of a number of distinct systems of care and a variety of programs intended to serve as safety nets. Consequently the resulting system is imbalanced in many ways that complicate access to care and fail to maximize overall quality of care. Thus, despite spending more money per capita on healthcare than other industrialized nations, the quality of care in the United States remains poor by comparison. Several estimates project that U.S. patients receive a little over half of the care they should receive. This performance is better in other nations, as well as in systems such as the Department of Veterans Affairs’ that are more structured and take advantage of technological advances to coordinate and improve quality of care for their beneficiaries. Thus, systems-level changes to the U.S. healthcare system likely would result in substantial improvements to quality of care, as well as reducing disparities and potentially reducing overall costs. Several movements to enact systems-level change (e.g., the movement toward patient-centered care), may provide useful models or partners in a movement toward gender-based medicine.

Nearly a fifth of the U.S. population lacks health insurance coverage. More women than men have health insurance coverage; one contributing factor is that women are more likely to get

public assistance through Medicaid because of pregnancy. Men are more likely to hold health insurance policies in their own names, while women are more likely to be covered as dependents, making them vulnerable to disruptions in care due to death and divorce (or because a husband is older and retires before his wife is eligible for Medicare). Income is highly associated with private health insurance status, with higher-income people having more coverage. Minorities, and recent immigrants in particular, are less likely to have health insurance. Lack of health insurance is associated with worse health outcomes across the board, including increased mortality rates and the receipt of fewer preventive services.

Women are financially disadvantaged compared with men and also have greater family responsibilities. This makes healthcare costs, including out-of-pocket costs, a greater burden for women than for men. Women pay a larger percentage of their income out-of-pocket for prescription drug coverage and also are more likely than men to skip needed doses of medications because of cost limitations. Because of their lower incomes, women also may be more sensitive to differences in co-pay amounts, thus contributing to poorer quality of care and reduced care outcomes.

Research Question 4: Integrating a Model Program

4. How does a service delivery site successfully integrate a model program into its current infrastructure of delivering care? How are results tracked?

This research question addresses how model health programs can be successfully implemented. We discuss five categories of successful models: Centers of Excellence (CoEs); Community Centers of Excellence (CCOEs); other U.S. Federal women's health programs; other women's health programs in the United States; and other women's health programs outside the United States. For each identified model, we focus on factors that help and hinder successful implementation. We also discuss other healthcare models, with a focus on what such models can teach us about successfully implementing change.

Centers of Excellence

The Centers of Excellence (CoEs) sponsored by the Office on Women's Health have been recognized as changing the landscape of women's health (Collins, 2002). Each Center successfully implemented a new model for women's care. While each Center took a slightly different approach to implementing this model, the CoEs collectively offer many important lessons. Here, we discuss lessons learned from CoEs in implementing this new model program.

We mark with an asterisk those CoEs which have not continued in the program, as there has been some turnover among the CoEs. However, we include these examples because even the CoEs that are no longer funded have made a variety of contributions to our understanding of these issues.

Indiana University:

The Indiana University CoE was funded in the second round of CoE competitions in 1997. Crucial to the success of implementing this Center was the extensive collaboration of multiple partners:

[The CoE was] able to create a strong and collegial alliance that initially included the Schools of Medicine and Nursing; the Wishard Health Services, the community hospital for Marion County that is located on our medical school campus and is staffed by our faculty, and its community health centers around the city. ... We also discovered that we were not alone in not knowing who all of our potential partners might be, and one of the truly valuable and enduring outcomes of the creation of the IU CoE has been the development of links among so many groups providing care and support to women (Fife, 2003).

These partners were crucial to enabling the CoE to garner additional needed funding, to secure space for the new Center, and to generate publicity for Center activities, all necessary factors for a successful implementation. The IU CoE believes that cross-collaboration, creativity, and funding have been critical to its success in implementing a new model (Fife, 2003).

Yale University:*

Yale University established an Interdisciplinary Women's Health Clinic (IWHC) in 1995, prior to its selection as one of the first CoEs in 1996. The goal of the clinic was to train internal medicine residents in women's health issues (Henrich, Chambers, & Steiner, 2003). The clinic was subsequently expanded after the CoE designation.

One of the university's considerations was where to house the IWHC. The decision was made to house it within an existing clinical facility because of financial considerations, internal politics, and ease of access for patients, all critical factors to consider in implementing a new model:

Funds were not available for the creation of a geographically separate facility, and the IWHC, designed primarily as an education and training model, would not be self-supporting as a separate clinical cost center. The development of a new women's health care facility would have also raised potentially divisive discussions about departmental ownership and control, political issues we wished to avoid. From the patients' perspective, the Primary Care Center was an established site that provided a comprehensive range of services in a location that was accessible and convenient to women in the community (Henrich et al., 2003).

In addition to careful consideration of its location, one of the reasons for the project's success was the strong interdisciplinary coordination that promoted learning, one of the goals of the CoE program: "The complexity of the cases seen in the IWHC and the choices regarding care provoked a level of discussion that stimulated each practitioner, whether faculty or resident, to constantly expand his or her understanding of the interconnection of the disciplines that provide the majority of care to women" (Henrich et al., 2003).

Based on its experiences, the Center offers the following advice to others seeking to establish model programs: "Our recommendations ... are to embed the program into the educational and training mission of the institution, align the program with broader departmental or school-wide initiatives, and seek long-term programmatic support through research-based clinical studies and educational grants" (Henrich et al., 2003).

Cross-cutting findings from studies of multiple CoEs:

In addition to the experiences of individual CoEs, cross-cutting studies from multiple CoEs provide additional lessons learned on how to implement a model program.

In implementing any new model, it is important to "adapt to the local climate and circumstances" (Milliken et al., 2001). One of the key lessons learned from multiple CoEs is that flexibility is important in implementing any model program:

[Although] CoEs share a common mission and set of core program components, they reflect broad geographic and cultural diversity as well as important differences in their organizational characteristics and structures. As a result of this diversity, the CoE model has had to remain sufficiently flexible to accommodate the variations among centers and to capitalize on their experiences and resources while still defending the model's integrity in the face of an ever changing healthcare environment (Gwinner, Strauss, Milliken, & Donoghue, 2000).

This flexibility in action means that some CoEs provide “one-stop shopping” where women can get all the care they need for themselves in one location, whereas others are “centers without walls” that offer services at multiple locations within one healthcare system. Significantly, most of the CoEs have employed some aspects of each of these approaches, further demonstrating the importance of flexibility (Milliken et al., 2001).

Another crucial component in each Center’s success is the Center of Excellence designation itself, which enhances credibility and provides an impetus for change. The designation of a Center as a CoE has value in and of itself to the recipient institution (including as a marketing and fundraising vehicle), and serves as a useful tool to begin the process of change (Weiner, Frid, Droker, & Fife, 2001). The CoE designation has “encouraged—or is giving visibility to—academic health centers that are furthering the institutional integration of women’s clinical care, women’s health research, and medical education in women’s health” (Weisman & Squires, 2000). Additionally, the designation “has further helped the CoEs to resolve institutional divisions” (Gwinner et al., 2000) by creating a common vision and direction for innovation in women’s health.

Funding is an important initial barrier that must be overcome for the implementation of any model program. While OWH was able to provide some initial funding to each Center (averaging \$172,000 per Center per year prior to 1998 (Gwinner et al., 2000), and slightly less than that after 1998), the collective experience of the CoEs has been that these funds served only as seed money. Fortunately, the combination of initial funding with the status and recognition provided by CoE designation has allowed the Centers to leverage a significant amount of additional funding:

The CoEs have indeed delivered the leveraging results, in terms of both finances and recognition, hoped for since their inception. The sources of the funding include the institutions themselves (and not merely the 25% institutional match required by the DHHS/OWH contract), other federal sources, not-for-profit foundations, philanthropists, industrial sources, in-kind donations (e.g., space, furniture, computers), and others. These numbers are substantive and demonstrate that this model has indeed worked, probably beyond the most optimistic visions of the OWH (Weiner et al., 2001).

Related to this need to leverage funding, the CoEs have built strong partnerships to maximize their potential to impact change. A common theme among all the CoEs is “collaboration and coordination between the CoE and existing community groups, from state agencies to patient advocacy groups” (Fife et al., 2001). This has allowed the CoEs to make “even more substantial contributions to their communities through interactions with other groups involved in women’s health,” instead of “duplicating already extant services” (Fife et al., 2001).

To secure funding and build partnerships, CoEs have also found it beneficial to maximize their credibility as expert spokespeople. CoEs have the ability to “become the community spokespersons for desired projects and for the dissemination of important information necessary to activate specific healthcare policy” (Weiner et al., 2001). As part of this effort, CoEs have taken advantage of marketing opportunities, consistently using their logos, participating in health fairs, granting interviews, and collaborating with community groups (Weiner et al., 2001).

An important component of implementing a new model program is creating internal support to provide the structure, resources, and leadership to accomplish change. The CoEs have found that necessary institutional buy-in components include “fully operational women’s health clinical service facilities, research facilities, teaching facilities, student training and placement opportunities, technological infrastructure, staff resources, education specialists, administrative support, outreach workers, information specialists, technical support staff, service providers, researchers, and teaching faculty from numerous disciplines” (Gwinner et al., 2000). Key to securing such resources is the presence of an effective internal spokesperson who can exert constant pressure for change (Gwinner et al., 2000).

Part of implementing successful internal change is also good timing. Organizations may be more receptive to change during times of restructuring: “At these times, institutions are examining old structures and creating blueprints for conceptualization of program missions and goals. ... These formal processes have served to rationalize the institutional approach to women’s health and to underscore the similarities and common women’s health goals of differing departments within the institution” (Gwinner et al., 2000).

Another lesson learned by the CoEs is the importance of paying attention to multiple factors simultaneously. For example, to create a woman-centered atmosphere, CoEs have focused on:

- (1) availability of primary care services for women that include both reproductive health and preventive care, (2) high visibility of female providers and staff, (3) an atmosphere and environment that is welcoming to women, (4) availability of information of particular interest to women, and (5) absence of materials and attitudes that would be perceived as threatening or inappropriate to women (Milliken et al., 2001).

Finally, to maximize their own success once implemented, CoEs have found that it is important to create continued opportunities for internal collaboration, for example by bringing faculty and researchers together “through interdisciplinary workshops, seminars, and meetings” (Gwinner et al., 2000). This creates learning but also helps to foster “contacts among those investigators in disparate fields who may be unaware of particular funding opportunities in women’s health or who have not considered a gender or hormonal slant to their current studies” (Weiner et al., 2001).

Community Centers of Excellence

In addition to CoEs, OWH has also created Community Centers of Excellence (CCOEs). These community centers are based on a model designed to “develop an integrated, innovative, community-based, comprehensive, and multidisciplinary care delivery system that extends quality services to women of all ages and racial and ethnic groups” (Office on Women's Health, 2004). This program was implemented in 2000, and 14 CCOEs are currently funded (Office on Women's Health, 2004).

Implementing CCOEs:

We found one report on the implementation of CCOEs (Office on Women's Health, 2004). CCOEs have found that several staff positions have been crucial to their success. These include a

Center Director, a Program Coordinator, and Community Health Workers (Office on Women's Health, 2004).

In addition, establishing early and effective partnerships has been critical to the success of the CCOEs. CCOEs have aggressively used existing partners, as well as their advisory boards, to reach out to and include the community in center activities (Office on Women's Health, 2004). Another important aspect of the CCOEs' success has been a commitment to maintain ongoing communications with the CCOEs' parent organizations, to ensure that their missions are complementary and not in conflict (Office on Women's Health, 2004).

Selected other Federal women's health programs

While the CoEs and CCOEs have been leaders in implementing a model program for women's health, numerous other federally supported efforts exist to promote women's health. We identified several programs sponsored by the Centers for Disease Control and Prevention (CDC), the Department of Veterans Affairs (VA), and the Department of Defense (DOD). In this section of the report, we discuss how such programs have been implemented.

CDC WISEWOMAN:

CDC sponsors the Well-Integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) project. WISEWOMAN is a cardiovascular "risk reduction program for underinsured and uninsured women ages 40-64 years" whose goal "is to implement interventions to improve diet, increase physical activity, and promote smoking cessation, thus decreasing clinical CVD [cardiovascular disease] risk factors and optimizing participants' health" (Jilcott et al., 2004). WISEWOMAN funds more than a dozen projects in as many states, and has been generally successful in achieving its health promotion goals (Jilcott et al., 2004).

WISEWOMAN promotes behavioral change interventions, and has found that "health department staff accustomed to passively distributing health education materials to clients may lack the training and experience to engage in a more involved and tailored counseling process" (Jilcott et al., 2004). Accordingly, WISEWOMAN projects have found that effective staff training is crucial to implementing the model. Staff training needs to overcome doubts about the effectiveness of the model, as well as bolster patients' motivation to change. Staff training is most effective when it is offered both before and during the intervention (Jilcott et al., 2004).

Department of Veterans Affairs:

Historically, patients served by the VA have been almost exclusively male. Increasingly, however, VA patients are female, and the VA has engaged in a comprehensive effort to revamp its services to meet the needs of these female veterans. The Veterans Health Care Act of 1992 and the Veterans' Health Care Eligibility Reform Act of 1996 require the VA to provide high-quality services to female patients (Washington, Yano, Goldzweig, & Simon, 2006). "Although VA facilities have reconfigured themselves to address this legislative mandate," it has proved difficult to provide quality care "to a group that is an extreme minority within the VA" (Washington et al., 2006).

As part of its response, the VA has established comprehensive women's health centers and full-time women veterans' coordinators (Grubaugh, Monnier, Magruder, Knapp, & Frueh, 2006).

The VA now offers services for women such as “Pap smears, mammography, and general reproductive healthcare (including birth control and treatment of menopause)” (Lavela et al., 2006). The VA has moved toward a more “gender-sensitive” system of care over a 15-year period:

The development of women’s health care in the VA mirrors the evolution of care delivery in other settings, from a “patchwork quilt with gaps” towards more gender-sensitive care models. ... [The VA established] eight Comprehensive Women’s Health Centers [WHC] throughout the U.S. These “one-stop shopping” models, partnered with university-based women’s health programs, had women’s health training programs and created models of care delivery not unlike carve-outs designed to market women’s health care in private sector settings. ... An underlying tension has resulted regarding how best to organize VA women’s health care. Proponents of integrated primary care approaches argue that integrated care assures women veterans of access to a more cost-effective and coordinated system of care. ... Proponents of separate WHC models speak to the special needs of women veterans. ... Perhaps not surprisingly, these arguments parallel the competition for women patients across specialties (e.g., ob-gyns, internists, family practitioners) and may reflect the debate over women’s health as a distinct specialization and concerns about possible erosions in gains made to create separate programs (Yano, Washington, Goldzweig, Caffrey, & Turner, 2003).

In the midst of this tension over how best to deliver care to women veterans, three main women’s service models have emerged, with no one model dominating: “1) Separate women’s health clinics providing specialty services such as preventive health screenings or gynecology services; 2) The integration of women’s health into existing primary care services; and 3) The development of comprehensive women’s health programs that provide both gender specific primary care and specialized services for women” (McNeil & Hayes, 2003).

Because women are still a very small minority of patients served, the VA must pay attention to issues such as scheduling multiple women’s visits on the same day (to ensure a critical mass), making sure needed equipment is available (such as pelvic examination tables and Pap smear kits), and training staff on issues of special concern to women (such as domestic violence issues) (McNeil & Hayes, 2003). Almost all VA sites now offer basic healthcare services for women on-site, while other services (e.g., mammography) are available off-site (Washington, Caffrey, Goldzweig, Simon, & Yano, 2003). However, comprehensive services are more likely to be available on-site in geographic areas where no other such services are likely to be available (Washington et al., 2003).

In general, the VA has had to make efforts to be somewhat judicious with how it uses limited resources to provide care for women. For example, “a majority of VA facilities reported having women’s health specialists available for gynecologic and mental health emergencies during usual clinic hours. However, a significant proportion rely on general surgeons and existing mental health personnel rather than women’s health care specialists to deliver these services, particularly for after-hours care” (Washington et al., 2006). Likewise, “women’s health care specialists for emergency mental health conditions specific to women were available at all times for 51.7% of sites and only during usual clinic hours for 31.0% of sites. Women’s health care specialists for emergency gynecologic problems and emergency mental health conditions specific to women were not usually available, even during clinic hours, for 35.6% and 17.2% of sites, respectively”

(Washington et al., 2006). Such staffing patterns “likely represent a practical solution for a health care entity with a small number of women patients and an inability to staff reliably or with women’s health care specialists” (Washington et al., 2006).

Thus, the VA has responded to the challenge of better meeting the needs of women by expanding its health services for women (particularly as they relate to women’s obstetrics and gynecological needs), as well as creating new centers for the study of female veterans and considering factors such as equipment and privacy needs to provide appropriate care.

Department of Defense:

A small-scale example of providing woman-specific services is the “Teen Women’s Health Clinic” which was sponsored by an Army Community Hospital. The clinic was established to increase the use of preventive services by teen girls. Services were offered one day of the week, and comprehensive services were available through the simple cooperation of existing departments and resources. The result was successful on all fronts, demonstrating that “improved access to comprehensive teen women’s healthcare is achievable at the community hospital level, at little expense, through cooperation between departments. This clinic was well attended, on average working near full capacity, with a low no-show rate for teenagers” (Adelman, 2004). The model is seen as replicable.

Selected non-Federal women’s health programs based in the United States

In addition to the CoEs, CCOEs, and various Federal women’s health programs, we also encountered some literature on other women’s healthcare models in the United States. For these models, one key theme that emerged is the importance of market research. Talking with people who will be affected by change, both at the patient level and at the administrative/staff level, is critical to creating and implementing successful model programs.

Columbia University Center for Women’s Health:

Columbia University’s Center for Women’s Health operates under a similar model to the CoEs. Established in 1994, the center’s objectives were to achieve “comprehensive, integrated, multidisciplinary care for women of all ages” (Giardina et al., 2006). To achieve this vision:

The departments of medicine and obstetrics/gynecology took the lead in identifying physicians, financial resources, and space to support a multidisciplinary program. Physicians in specialties, such as internal medicine and obstetrics/gynecology, and advanced practice nurses formed the nucleus of the providers. In addition, on-site cardiologists, gastroenterologists, endocrinologists, breast surgeons, and experts in menopausal issues, social workers, and nutritionists were also considered necessary to address healthcare needs. Furthermore, this base of clinical faculty provided the opportunity to fulfill the institutional educational mission to teach students, physicians, and the public about the unique clinical presentation and treatment of gender-based health (Giardina et al., 2006).

The center’s approach to integrating services was to use a common practice site and a common chart, which was seen as “an important way to unify encounters with providers at the center as well as others who do not practice within the center” (Giardina et al., 2006). A primary source of patients for the center was referrals (68% of all patients), which indicates a high degree of patient

satisfaction with the center (Giardina et al., 2006). The founders of the center have been quite positive about the experience:

That a centralized model can be developed to transform traditionally fragmented activities into an integrated system, thereby improving and advancing care for the health of women, is compelling. One notion for advancing women's health is to streamline fragmented, multidisciplinary, and decentralized forces into an environment of coordinated care. Paradoxically, medical centers espousing comprehensive women-focused care are often examples of decentralized care (Giardina et al., 2006).

Three main barriers have been identified to implementing this program (Giardina et al., 2006):

- “If key departments, such as medicine or obstetrics/gynecology, are not able to meet a commitment to subsidize faculty or if revenues are expected to completely cover faculty salaries, fringe benefits, malpractice insurance, rent, administrative costs, and other costs, the program will falter.”
- “If the institutional stakeholders do not acknowledge significant downstream revenues (from procedures, hospitalizations, and benefits to other programs), the program will not succeed.”
- “If the women's health faculty does not step up to the responsibility of curriculum development and training the next generation of students and physicians, there is a limited future for women's health programs.”

University of Washington Woman's Health Center:

The University of Washington opened a Woman's Health Center in 1995 to provide ambulatory care services in a multidisciplinary team setting. The center conducted early market research with its potential client base and was established to meet both a staff and customer interest in specialized women's services. The center has been largely successful, perhaps because it has maintained a focus on women's health and educational materials while providing a team atmosphere during its consultations (Phelan, Burke, Deyo, Koepsell, & LaCroix, 2000).

Sutter Health:

Sutter Health runs 26 hospitals and has more than 35,000 employees in northern California, southern Oregon, and Hawaii. George F. Lee, M.D., senior vice president of medical affairs for the California Pacific Medical Center, remarked on the importance of integration across multiple healthcare settings in achieving successful change (Walowitz et al., 2000). He discussed the example of moving toward a single perinatal record as one example of Sutter's work in women's health, and the importance of the early involvement of nurse managers in accomplishing such a change. A summary of his remarks appears below:

“Those of you who are involved in management of an obstetrics unit know what it's like to have every physician bring in his or her own OB record and then to have the nurse managers and the nurse clinicians have to abstract from those records the pertinent information,” Dr. Lee told the attendees [at a conference where his remarks were made]. He explained how the concept [of integrated records] initially met with great opposition from hospital managers and clinicians, but, he said, “If you are going to act like a system, what could be more basic in women's services than a standard OB record? If we can't

accomplish this one thing, we have no future as a system.” By engaging the early participation of nurse managers in all the OB units, as well as physicians who are department chairs, the system is now moving forward rapidly, Dr. Lee said, toward a single perinatal record across all 26 hospitals (Walowitz et al., 2000).

This is just one example of how to enact women’s care programs. Dr. Lee and other leaders in women’s health offer the following tips on how to accomplish systems integration for women’s health services:

Clinicians should be brought into the process as early as possible in the role of full partners. The system should be flexible enough to respond quickly to changes in both the market and the health care field. Competition and cultural dissimilarities should be identified and addressed among the system’s different units and organizations. Women’s health services must continually demonstrate its direct and indirect value to the system and find creative ways to differentiate itself in the marketplace (Walowitz et al., 2000).

Selected women’s health programs based outside the United States

The struggle to implement effective approaches to women-centered care is occurring in numerous countries, and there are many lessons to be learned from programs implemented outside the United States. We identified efforts in Canada, Brazil, and Thailand.

Canada:

Health Canada implemented an effort in 1996 to create “Centres of Excellence for Women’s Health” with initial funding of \$12 million over a six-year period (1996-2002) (Health Canada, 1996). Each Centre is guided by a framework that

promotes the use of a health determinants approach, emphasizes the concept of gender as an important variable in health, draws attention to the need for a critique of the health system’s traditional view of women and the implications for practice and service provision; identifies the need for change in our approach to women’s health bearing in mind the health system is undergoing rapid change; points out some of the issues related to the status of women in the formal and informal health systems; and urges greater responsiveness of policy-makers at all levels to the health concerns of women (Health Canada, 1996).

Health Canada currently funds four of these Centres (Health Canada, 2005).

In addition to this national effort, other women’s health efforts exist in Canada. For example, a Canadian study observed that “innovative and comprehensive approaches to women’s health needs are required to encourage the development of health services that are based on the principles of women-centered care” (Bottorff et al., 2001). Bottorff, Balneaves, et al. (2001) examine three such approaches to enhancing cervical cancer screenings in Canada. One of their key findings is that to successfully implement such a program, it is important to involve affected physicians early on and to address their concerns (e.g., about losing patients to other systems of care).

Brazil:

A model to reach poor women with integrated reproductive healthcare was implemented by the Perola Byington Hospital in Sao Paulo, Brazil. One challenge with the new model was to create integrated services for women to treat women efficiently and with dignity for preventive care (Pinotti & Tojal, 2001). As part of its approach, the model relied on giving women a voice. The fundamental principles of the program included the following (Pinotti & Tojal, 2001):

- “Women’s participation in the health system must be permitted and encouraged at all levels, not only at the level of leadership but also and particularly as users of services at the level at which they are attended.”
- “Expansion of service provision by nonmedical personnel, so that women may, as far as possible, have all their needs taken care of at the same place and time.”
- “The greatest reduction possible in existing bureaucracy and other obstacles to women’s access to health care.”

Thailand:

A project was undertaken in Thailand to train staff in rural reproductive health clinics to be more gender-sensitive. Staff “underwent five days of intensive technical training and three days of cultural training,” on topics such as communication, counseling on sexual health topics, and technical competence in skills such as administering a Pap smear (Boonmongkon, 2000). Training also focused on “other aspects of reproductive health care such as care of cancer patients; provision of client-centred, gender-sensitive and holistic services that would help reduce clients’ fear, anxiety and concern; the concept of one-stop reproductive health services; and the involvement of men” (Boonmongkon, 2000).

The project focused on changing staff attitudes, knowledge, and beliefs as a means of implementing a new care structure. The training was successful in broadening staff perceptions of what care meant:

Before the study intervention, health staff perceived reproductive health as referring to family planning and maternal and child health, and identified their target group as only women between the ages of 15-49. ... As a result of the training, health staff began to provide holistic and integrated services, cared for women’s quality of life, involved men as target groups, used client-care approaches, became gender and culturally sensitive to clients’ needs and tried integrating several aspects of reproductive health services into one visit (Boonmongkon, 2000).

Thus, detailed staff training was essential to the implementation of a gender-sensitive program in Thailand.

Healthcare models that describe possible approaches to change

Various models have been developed to describe how to implement change in the healthcare system. In this section, we discuss several of these models, with a focus on what such models can teach us about how to implement gender-based approaches to medicine.

Chronic care model:

The chronic care model (CCM) “synthesizes the elements of successful chronic-disease-management programs, and relates them to improvements in outcomes” (Glasgow, Oreleans, Wagner, Curry, & Solberg, 2001). The model consists of six elements—resources, policies, self-management support, delivery system design, decision support, and clinical information systems—that work together to create productive interactions related to informed patients and prepared practice teams (Glasgow et al., 2001). The model was created after a literature search “for studies of practice innovations and interventions associated with improvements in care and outcomes” (Wagner et al., 2005). Its goal is

to shift the orientation and design of practice in order to promote a systematic, planned approach to care for those with ongoing health problems through productive (planned) interactions between informed, activated patients (and families) and prepared, proactive practice teams. To be productive, interactions must assure consistent delivery of evidence-based treatments in tandem with support for patient self-management. The literature on effective self-management support, with its emphasis on patient activation or empowerment and active participation in setting goals and developing action plans, appears consonant with emerging concepts of patient-centered care (Wagner et al., 2005).

While the model was developed for chronic diseases, its potential applications are broader: “The CCM can be used as a blueprint for efforts to improve the delivery of clinical preventive services, to help understand and analyze prevention failures, and to develop effective systems-based solutions” (Glasgow et al., 2001). In the case of gender-based medicine, the CCM could be used to outline the necessary components and interactions of any new care model.

Evidence-based behavioral interventions:

The CDC Division of HIV/AIDS Prevention has developed draft guidance on how to adopt evidence-based behavioral interventions. The guidelines underscore “the idea that adaptation should be a planned process that maintains fidelity to core elements and is based on sound rationale from formative evaluation” (McKleroy et al., 2006). The guidelines are currently being pilot tested, and they will be reviewed and finalized in the coming years (McKleroy et al., 2006). In the meantime, the guidelines “can be used by researchers developing behavioral interventions to begin to think about adaptation during the early stages of conceptualization” (McKleroy et al., 2006).

The guidelines divide the adaptation process into three stages: assessment, preparation, and implementation. Each stage includes action steps, feedback loops, and monitoring and evaluation. In the assessment phase, the potential adaptation is studied for quality of fit with the affected population and other stakeholders. At the end of this stage, it is either selected for adoption or other interventions are considered. In the preparation phase, the adaptation is pre-tested with the target population, and the organization prepares for the change. Finally, in the implementation stage, the adaptation is adopted with minor refinements (McKleroy et al., 2006). Such a model is useful to consider when thinking about a potential new model for gender-based medicine, as it outlines some of the factors that potential adapters will need to consider before they can utilize the model.

Local health information infrastructure:

A more specific model that still might have broad applications is a model to implement a local health information infrastructure (LHII). The premise of this model is that success is built incrementally, and that previous stages affect latter stages. Thus, the model is designed as a pyramid. The pyramid begins with community leadership and continues with commitment to the change, followed by initial and detailed planning, launch, and ongoing operation (Lorenzi, 2003).

Two successful local health information infrastructures were put into place in Indianapolis and Santa Barbara. Common success strategies across these two sites included the following (Lorenzi, 2003):

- Making partners feel valued.
- Gaining community support.
- Having a shared vision.
- Mobilizing around focused concepts.
- Ensuring strong physician involvement.
- Following a strong leader.
- Including the health department.
- Having a neutral managing partner.
- Forming appropriate leadership groups.
- Using a technical model.
- Communicating effectively.
- Having effective change management strategies.
- Paying attention to legal issues.
- Modeling for sustainable funding.
- Dealing with politics in a proactive manner.

A similar model of incremental change may be helpful to think of in terms of how to successfully implement a gender-based approach to change. In addition, some of these issues may be important to consider for a gender model; however, which of these issues may be most important to gender-based medicine is a question that requires further investigation.

Traumatic brain injury:

A final specific model (with a potentially more general application to consider) relates to severe head trauma. Severe head trauma affects multiple body systems, and its treatment involves multiple providers. Thus, to treat traumatic brain injury (TBI) requires “timely, consistent, and coordinated care” (March, 2006). A model for how to treat such injury and achieve care coordination was developed based on an analysis of barriers to compliance with treatment guidelines and an analysis of three case studies where such barriers were successfully overcome (March, 2006).

One of the key findings of this study is that “the fragmented structure of trauma care must be counterbalanced by an equally powerful set of forces for integration” (March, 2006). This effort must include investments in education and training for physicians and nurses, as well as

leadership in the form of “physician champions, administrative and high-level medical support, and hands-on change agents” (March, 2006). These were the five main conclusions of the study (March, 2006):

- “Coordination across disciplines and clinicians is needed to provide *unified* care (from a provider perspective) for patients. But, from the patient’s perspective, care becomes *seamless* only when there is consistency and continuity of care as well as coordination.”
- “The 3Cs [consistency/continuity/coordination] model and the brain/skeleton/flesh [guidelines/protocols/pathways] metaphor are two ways of saying the same thing. One focuses on the goals of seamless care, and the other focuses on a set of tools for reaching them.”
- “Well-implemented guidelines, protocols, and pathways redesign the default structure for care of a particular patient population. At their best, these three tools provide clear, well-considered default positions from which to deliver care.”
- “They must, of course, be flexible and responsive to the patient and to accumulating bodies of experience and evidence. Excellence in health care requires finding a balance between default structures and individual patients.”
- “Many kinds of decisions can appropriately be made for classes of patients, but all decisions must ultimately be tailored for individual patients, and some decisions must start with the patient and/or be made at that level.”

Again, this model outlines overall issues to be considered with any new approach to healthcare, as well as offering suggestions for how to overcome likely barriers.

Conclusions

Our goal in research question 4 was to locate and discuss effective models of service delivery sites integrating model programs, and to cull from those successes guidance on how to implement similar programs for gender-based medicine. Unfortunately, we found the literature in this area to be particularly sparse.

As will be discussed in greater detail in question 5, there are very few currently existing gender-based approaches to medicine. There are a substantial number of programs that are designed to serve women, and a smaller (yet growing, see question 7 for more details) number of programs designed to serve men. Thus, all of the “gendered” examples in this section concern women. Additionally, the literature on existing programs tends not to contain much more than anecdotal details pertaining to how to successfully implement model programs, instead focusing on a description of such programs and results to date.⁴

The studies we found indicate that the CoEs have been pioneers in this field, and some of the best data about how to implement new model programs comes from the CoEs. However, an additional highly relevant model is the Center for Women’s Health at Columbia University.

⁴ Individual interviews with key personnel involved in realizing such models may yield more useful data for OWH regarding how to successfully implement a new care model.

The themes that emerged from our analysis include the following:

- Funding is critical: Any new model program must begin with an initial funding source, but also must work to develop ongoing funding.
- Leadership matters: To create change, strong advocates for change must exist within organizations.
- Partnerships are essential: Community partners help to build support and spread the word, and also can be invaluable sources of funding.
- Market research sets the foundation: Model programs must be embraced by the people they are designed to serve, as well as the people who are being asked to implement them. Formative research with affected patients and staff is essential to identifying and overcoming barriers.
- Flexibility helps: Each healthcare setting is unique, and model programs may need to be tailored to individual healthcare settings.

Finally, we identified several models that offer helpful descriptions of factors to consider in implementing a model program, as well as potential barriers that must be addressed. Of particular interest is a new model being developed by CDC, which models factors related to the adoption of evidence-based guidelines. This model may be particularly helpful to OWH in thinking about how to implement a new evidence- and gender-based model of care.

Research Question 5: Sex- and Gender-Based Healthcare Practices

5. *How effective are sex- and gender-based healthcare practices? What measures have been used to determine the effectiveness of these practices? What barriers exist to translating/adapting these approaches into clinical practice?*

This research question looks at how sex- and gender-based approaches have been applied to healthcare practices, and how effective these approaches have been. We begin with a focus on women-specific programs, including overall trends in women's health centers and studies of how effective these centers have been. We then discuss more specific examples of women's health programs, including the Centers of Excellence (CoEs), Community Centers of Excellence (CCOEs), similar programs sponsored by other Federal agencies, other women's health programs in the United States, and other programs around the world. For each program, we look at measures of effectiveness as well as barriers to implementation. Next, we discuss the transition from an emphasis on women's health to one on gender-based health, including initial findings in this area. Finally, we conclude with a discussion of data quality issues and approaches to track the effectiveness of sex- and gender-based healthcare.

Overall trends in women's healthcare

The number of women's health centers has been steadily growing. These centers appear to be meeting a need for a population of women seeking care in a more female-friendly setting. Women's health centers are particularly effective at providing preventive care for women, and studies have found that women who choose to attend such centers tend to be younger and are more likely to prefer female doctors.

Women's health centers are becoming more popular and prestigious:

The number of women's health centers has been steadily increasing since 1990, "probably based on market analysis indicating that women-oriented services would attract women and their families to new and coordinated services, resulting in better health" (Giardina et al., 2006). Women's health centers have become so predominant that they are now "a common fixture in most academic health centers and community hospitals. ... With 3,600 women's health centers in the United States serving nearly 15 million women, it appears that women's health centers are here to stay" (Gharib & Manson, 2001). Despite their increase in number, however, we did not find much data related to the composition of such centers. One study suggests that about a quarter of such centers operate for-profit, with for-profit centers being more likely to be located in suburban areas (Khoury, Weisman, & Curbow, 1997). We did not find any data indicating what kind of services or care these centers provide.

With their growth, such centers also have become more prestigious. In particular, the creation of the CoEs did much to elevate the status of women's healthcare, as well as to legitimize and broaden research in this field. Center directors reported that before the creation of CoEs,

[w]omen's health was often viewed simply as reproductive health, and it was aligned with obstetrics and gynecology. With the development of a CoE, its clinical component

provided care to women in a more comprehensive way and, with its companion components of research, education, community, and leadership, the CoE viewed health among women more broadly to include such aspects as cardiovascular care and other health risks as they present uniquely in women. Such a comprehensive focus led to the expansion of the concept of women's health as a discipline (Goodman et al., 2002).

In other words, the creation of CoEs "acted as a catalyst for institutional change in expanding the field of women's health" (Goodman et al., 2002). The prestige associated with the CoE designation allowed the centers to develop new curricula and expand clinical operations and research (Goodman et al., 2002). CoEs thus have had a positive impact on the entire field of women's health, helping to establish women's care as a new academic discipline.

Trends in who goes to women's centers:

Women's health centers also are meeting the needs of a different type of patient. Comparisons among women choosing to attend such a center as opposed to a general practice have found that they are "younger, better educated, and have higher levels of physical function, though perhaps more psychosocial problems" (Carlson, 2000). They may also be more likely to be single, employed, to have fee-for-service insurance, and to choose their doctors based on referrals from friends (Harpole, Mort, Freund, Orav, & Brennan, 2001). Such women also are more likely to prefer a female provider and to demand more information from and easier communication with their physicians (Gharib & Manson, 2001).

Evaluations of women's centers:

Multiple studies have compared the care received by women attending women's health centers vs. other healthcare settings. The initial findings from these studies are quite positive. Women's centers seem to perform better on preventive services for women's issues, and comparably on most other general health issues. Women's care may also lead to higher satisfaction scores and potential cost savings. However, care may be worse for a small number of issues. Findings include the following:

- *Improved preventive screenings and satisfaction:* "Women who use specialized women's health settings have comparable or higher quality measures (e.g., preventive screening) and higher satisfaction compared to women in other community settings with traditional primary care" (Bean-Mayberry et al., 2006). These results are based on a study of women veterans receiving care in women's clinics or traditional primary care at ten Veterans Affairs (VA) medical centers.
- *Improved preventive screenings:* "The delivery of basic preventive health services ... was as likely to be received by patients in women's health centers as by those in traditional general internal medicine practices. However, patients who received their care at women's health centers were more likely ... to receive their breast exam and Pap smear from their primary care provider, suggesting a potential for increased efficiency in the provision of gender-specific preventive services at primary care women's health centers. Preventive counseling services such as discussions about the use of hormone replacement therapy and dietary calcium were also more likely to be received by patients who obtained their care at women's health centers" (Harpole et al., 2001). These results are

based on a study of quality of care in women's health centers compared to traditional internal medicine practices in academic medicine.

- *More recommended gender-specific services:* Women who attend women's health centers "are more likely to receive some recommended gender-specific preventive care, and have lower utilization rates for medical services. Thus, preliminary data suggest that women's health centers may add value through effects on delivery of preventive services, patient satisfaction, and resource utilization" (Carlson, 2000). These results are summarized from a study of quality of care in women's health centers compared to traditional internal medicine practices in academic settings.
- *Some recommended gender-specific services:* "The women's health center appeared to perform significantly better on mammography and modestly (though not significantly) better on other gender-specific measures. On non-gender specific measures, the performance of the women's health center was varied—while doing somewhat better on cholesterol screening, it performed significantly less well than the general medical clinic on colon cancer screening" (Phelan et al., 2000). These results are based on a study of quality of care at a hospital-based women's health center compared with care at a general medicine clinic.
- *Improved preventive screenings and satisfaction with provider communication:* "Satisfaction with communication with the physician was higher in the women's health centers, though overall levels of satisfaction were similar. Delivery of some gender-specific preventive services (hormone replacement therapy and dietary calcium counseling) was significantly higher at women's health centers; women were more likely to receive such services, as well as breast examination and Papanicolaou smears, from the primary physician. Less educated, lower income, and minority women attending women's health centers received benefits consistent with the entire cohort" (Carlson, 2000). These results are based on an analysis of three studies involving multiple care sites.
- *Potential cost savings:* "Women's health centers, if indeed fulfilling the promise of 'one-stop-shopping,' might offer a more efficient model of care with increased convenience and potentially lower cost" (Gharib & Manson, 2001). These results are based on an analysis of two studies involving multiple care sites.

Women's centers tend to have more female physicians, and some studies have indicated that female physicians offer more preventive services (see research question 6 for more information). However, "above and beyond the effect of physician gender, women's health centers offer an advantage to patients with respect to gender-specific preventive services" (Harpole et al., 2001). Thus, women's health centers do seem to improve care for women in some aspects, although the studies that support this finding are not comprehensive.

Centers of Excellence

Similar to the overall trends related to women's healthcare centers, CoEs have been found to serve a unique subset of the overall female population and to provide greater preventive care services. In this section, we discuss these trends, as well as barriers CoEs have encountered in implementing care specifically for women.

Who goes to CoEs:

A comprehensive study compared CoE patients to those in a nationally representative sample conducted by The Commonwealth Fund (CWF). Similar to the findings reported for all women's health centers, CoE patients have a higher income, are better educated, and are more likely to be employed. The study found the following:

Patients in the CoE clinical sample include a higher percentage of nonwhite women (African-American and Hispanic), were somewhat less likely to be unemployed (37% versus 41% in the CWF), had a higher proportion of college graduates (56% versus 21%), and were more likely to be in the higher income categories (e.g. 11% versus 4% reported an annual household income of \$75,000 to \$100,000). ... CoE patients were less likely to be uninsured than those in the CWF survey (4% versus 14% in the CWF) and more likely to be covered by private insurance (67% versus 53%). The proportions of respondents with public-sponsored insurance (Medicare and Medicaid) were similar. More striking differences between the CoE clinical sample and the CWF sample were found for enrollment in a managed care plan (78% versus 48%) and having a female physician (92% versus 24%) (Anderson et al., 2002).

Quality of care provided by CoEs:

The CoE model has been shown to increase preventive screenings for women:

Adjusting for region, age, education, perceived health status, and managed care enrollment, a statistically significant higher proportion of women in the CoE clinical sample report receiving all six screening tests compared with women in the CWF [Commonwealth Fund] sample. Likewise, women in CoEs were more likely to report counseling for smoking cessation, exercise, alcohol or drug use, domestic violence, and sexually transmitted disease. Effect sizes above 0.15 were found for Pap tests, physical breast examination, mammogram, and smoking cessation counseling (Anderson et al., 2002).

Similar findings have been reported elsewhere (Henderson, Hudson Scholle, Weisman, & Anderson, 2004).

Women using CoEs also report higher satisfaction with their healthcare: "A higher proportion in the CoE clinical sample were highly satisfied with their health care, compared with women in the CAHPS [Consumer Assessment of Health Plans] sample (81% versus 73%), and a higher proportion of women in the CoE clinical subsample were highly satisfied, compared with women in the community comparison sample (86% versus 79%)" (Anderson et al., 2002). This effect is especially pronounced among women who use a CoE as their first point of contact with the healthcare system (Anderson et al., 2002).

Women who attend CoEs thus experience a higher quality of care and greater satisfaction with this care. What is unclear, however, is why the CoE model works, and if "there are specific (replicable) aspects of the CoE model, which led to the higher quality performance, or whether the entire model as implemented is necessary" (Collins, 2002).

A possible explanation for the quality of care differences is that women visiting a CoE may experience a more comfortable and welcoming setting to discuss sensitive topics:

Counseling on sensitive topics such as domestic violence, sexually transmitted diseases, and sexual function or concerns is higher in CoE settings. The woman-friendly model of care in CoEs may help patients to feel comfortable talking about their concerns. Settings that are not explicitly dedicated to women's health care may be perceived by women as less able to address sensitive and gender-related concerns. The providers who work in these settings may be more attentive to psychosocial circumstances that affect women's lives and health by virtue of their exposure to research and the CoE model (Henderson et al., 2004).

Another possible explanation is that the co-location of multiple specialty services “enhances communication among clinicians and promotes integration of multiple specialty perspectives through informal encounters (hallway or lunchtime conversations) and formal exchanges (case conferences)” (Carlson, 2000). In addition, the co-location of services can “improve quality by increasing ease of access. ... Current standards of care for women stipulate periodic testing not routinely provided by primary care physicians, such as mammography and bone densitometry. Providing core services at the same place and, when possible, at the same time, increases the likelihood that women will obtain needed care” (Carlson, 2000).⁵

CoE directors believe that the strength of the CoE model is “leadership development such as mentoring; community outreach with an increased focus on community needs and services; clinical services that were expanded and improved; educational leadership that concentrated on gender-specific health issues and increased diversity; and research with a greater focus on women's health issues, coordination, and institutional support” (Goodman et al., 2002).

While all of these possible explanations could be related to a higher quality of care at CoEs, it is difficult to determine with certainty the reasons for this success because patients attending CoEs are self-selected. Thus, “some effects ... could have arisen because highly motivated patients sought out women-focused care” (Anderson et al., 2002). Additionally, patients may be seeking out other aspects of CoE care settings, such as the co-location of services. Studies are unable to control for such patient preferences. Another potentially confounding factor is that CoEs contain a higher proportion of female physicians, so observed effects could be physician-gender effects (see question 6 for a discussion of such effects). Studies have controlled for this difference, however, and the effect of CoEs continues while controlling for physician gender:

The hypothesis that CoE effects observed in the original evaluation might be attributed to physician gender was not upheld for breast cancer screening and detection, and counseling on domestic violence, STDs, sexual functions or concerns, and family or relationship concerns, or for satisfaction with care. These findings support the view that characteristics of the CoE settings, and not just the gender of the physicians in these settings, are responsible for higher quality of care for some measures (Henderson et al., 2004).

⁵ These benefits are not specific to CoEs but may occur for any site with co-located services.

Thus, more work remains to determine which aspects of the CoE model have been most crucial to its success and can and should be replicated. However, the initial results are promising enough that “extending the benefits of the CoE model to more women, including women in traditionally underserved areas such as rural communities, deserves to be a high priority for women’s health policy and health care quality improvement” (Henderson et al., 2004).

Barriers to good care:

The CoEs, like any model of healthcare, face certain barriers to successful implementation. Key barriers identified by CoE directors include “the CoEs’ acceptance, greater collaboration, and limited resources” (Goodman et al., 2002). In particular, a significant barrier to developing a one-stop shopping model is “financial and space constraints ... the financial pressures placed on these stand-alone facilities can be significant and thus a deterrent to institutions adopting this model” (Milliken et al., 2001). If CoEs attempt a center-without-walls approach, then they are subject to geographic problems for both providers and patients, an increased struggle to build a common identity, and increased infrastructure costs (Milliken et al., 2001). CoEs also may face problems with turf-guarding and demands on faculty time (Goodman et al., 2002).

Community Centers of Excellence

As noted previously, OWH also has created Community Centers of Excellence (CCOEs). These community centers were designed using an “integrative approach that links existing activities and resources, rather than creating new ones, with a community-focused organization as the nucleus for operationalizing the new model to deliver comprehensive services to women” (Office on Women's Health, 2004).

Evaluations of CCOEs:

We found one evaluation report for these CCOEs (Office on Women's Health, 2004). This report found that CCOE clients have a high degree of trust for CCOE providers (91%). In addition, CCOEs are meeting or exceeding their programmatic goals related to comprehensive and integrated delivery of women’s healthcare services, training for lay and professional healthcare providers, public education and outreach, community-based research, leadership development for women, and technical assistance and replication of the CCOE model (Office on Women's Health, 2004). Thus, early results suggest that the model has been a success.

Selected other Federal women’s health programs

In addition to the CoE and CCOE models, other Federal agencies support women’s health through a variety of approaches. These include clinical approaches to care as well as support for the study of women’s health issues. We describe some of these programs and their effectiveness for agencies such as the Department of Veterans Affairs (VA), the Centers for Disease Control and Prevention (CDC), and the National Institutes of Health (NIH).

Department of Veterans Affairs:

The VA’s approach to women’s healthcare was described in some detail in our discussion of question 4. In this section, we provide available data on the effectiveness of the VA’s approach to care for women.

More than half of all VA healthcare sites have a women's clinic or program (Bean-Mayberry et al., 2003). Women using these women's clinics "are more satisfied than those in general primary care" (Goldzweig, Balekian, Rolon, Yano, & Shekelle, 2006). Another study found that such women are more likely to "report excellent overall satisfaction (odds ratio, 1.42). ... Multivariate models demonstrated that receipt of care in WCs [women's clinics] was a significant positive predictor for all 5 satisfaction domains (i.e., getting care, privacy and comfort, communication, complete care, and follow-up care)" (Bean-Mayberry et al., 2003). The study authors recommend that "since these WCs show better quality in terms of satisfaction, other quality indicators should be evaluated. If WCs reduce fragmentation and improve health care delivery, the model will be applicable in VA and non-VA outpatient settings" (Bean-Mayberry et al., 2003).

Thus, the VA model, like the CoE model, may improve the overall care of women by treating them in gender-specific clinics. Note, however, that the data we found on the treatment of women in the VA system (one of the most comprehensive and well-developed), mostly includes improvements in process measures (e.g., cholesterol checks) and satisfaction, not intermediate outcomes (e.g., blood pressure control among individuals with hypertension).⁶ Thus, while these early data on women's care are encouraging and suggest that this kind of approach should continue, continuing attention must be given to the issue of data collection and analysis to allow for detailed evaluations of this type of approach (additional issues related to data collection are discussed in more detail later on in this section).

CDC WISEWOMAN:

The WISEWOMAN program also was described in some detail in question 4. In this section, we discuss the effectiveness of WISEWOMAN as a woman-specific intervention program.

One evaluation of a WISEWOMAN project in North Carolina "showed that women who received lifestyle counseling through the enhanced intervention reported less fat in their diets at follow-up than did women who received the minimum intervention" (Will et al., 2004). The WISEWOMAN project has been successful in reaching "financially disadvantaged, uninsured, and multiethnic women" (Will et al., 2004). WISEWOMAN projects have successfully increased physical activity and nutrition, but "have been less effective in influencing physiological measures (e.g., blood pressure, lipid levels, and anthropometric measures)" (Will et al., 2004). WISEWOMAN suggests that critical barriers (e.g., structural barriers) still need to be overcome, and is "now planning to supplement the current approach with a broader societal approach to improve health behaviors" (Will et al., 2004).

NIH BIRCWH:

The NIH Office of Research on Women's Health (ORWH), along with other Federal partners, developed the Building Interdisciplinary Research Careers in Women's Health program (BIRCWH) (Bierman, 2003). The program offers "career development and mentoring awards for junior faculty who have recently completed or are soon to complete clinical training or postdoctoral fellowships" (Pinn, 2004). The goal is to

⁶ We did find such measures used in evaluations of the entire VA system, however, which generally show that the VA's system-wide change has been able to improve some intermediate outcomes (Jha et al., 2003).

promote the conduct of interdisciplinary research and the transfer of findings to benefit women's health by increasing the number and skills of investigators at awardee institutions. This mentored research and career development experience is designed to lead junior researchers to independent interdisciplinary scientific careers addressing women's health. Thus, this program simultaneously promotes interdisciplinary research and the ability of investigators at awardee institutions to become independent career scientists in women's health (Pinn, 2005).

The program is relatively new, but BIRCWH awardees have proved to be successful scholars, publishing "more than 630 publications and 525 abstracts" and receiving 40 NIH grants (Pinn, 2005).

Unfortunately, these programs are not available to those studying these issues from a social sciences background. This excludes a potentially important group of scholars, and undermines the full effect of supporting interdisciplinary work.

NIH SCOR:

NIH also has established the SCOR (Specialized Centers of Research on Sex and Gender Factors Affecting Women's Health) initiative. SCOR is "another form of support for careers in women's health, engaging investigators at sites nationwide in studies involving a gamut of concerns, from pharmacokinetics in women to incontinence, pain sensitivity, irritable bowel syndrome, and the roles of sex and gender in drug abuse" (Pinn, 2004). SCORs help to "increase the transfer of basic research findings into clinical practice" by "conducting interdisciplinary research focused on major medical problems affecting women and comparing gender contributions to health and disease" (National Institutes of Health, 2006b). Their goal is:

to promote innovative institutional interdisciplinary research in areas important to women's health. The centers address ORWH research priorities for women's health, which are determined through annual reviews of current advances and continuing gaps in scientific knowledge by representatives from NIH institutes and centers and from the broader scientific, health professional, and advocacy communities. SCORs were envisioned as a national resource associated with one or more major medical complexes and dedicated to furthering the research effort on women's health or sex/gender factors to translate basic research to clinical application. Each SCOR is expected to have: (1) a theme for an overall research program for a disease or health topic that addresses a critical area of opportunity to advance knowledge and patient care; (2) an interdisciplinary team of basic and clinical researchers to provide a mutually supportive interaction in meeting the research objectives; and (3) both basic and clinical research projects that develop new approaches, significant hypotheses, and improved strategies for clinical advances in women's health or gender-specific medicine (Pinn, 2005).

As in the BIRCWH program, support is not available to those studying these issues from a social sciences background. Additionally, SCORs require a disease-based approach, so they exclude many potential applicant institutions, teams, and types of work.

Both the BIRCWH program and SCORs are relatively new. However, both programs already are contributing positively to interdisciplinary research and forging new relationships among researchers working in these areas (Pinn, 2005).

Selected non-Federal women's health programs based in the United States

We were able to locate evaluation data for one comprehensive approach to women's health, the Columbia University Center for Women's Health. Background information on this center was provided in question 4.

Columbia University's Center for Women's Health:

The Columbia University approach is in many ways similar to the CoE approach. Not surprisingly, quality of care and patient satisfaction with this model also are similar. Findings are based on a patient survey conducted in 2003:

The patients (ranging in age from 21 to 90 years) reported that their satisfaction was high: 82% appreciate the integrated preventive services and recommended the center to friends and family, 69% received care for over a year, and 65% rated their care as the "best care possible." Moreover, the majority indicated they received annual preventive examinations, including physicals, Pap smears, breast examinations, and cholesterol screenings, and preventive issues were discussed, including smoking, diet, exercise, hormones, vitamins, and calcium. These findings are comparable to a report that women seen in comprehensive programs of CoEs were more satisfied with care and received significantly more screening and counseling services than women in other settings. However, areas that were identified for improvement, such as greater availability for new and walk-in visits and access to physicians by e-mail, also were noted (Giardina et al., 2006).

Selected women's health programs based outside the United States

Women's health models are being implemented in many nations. Such models tend to be comparable to the U.S. model, with creation of women's centers predominating. As in the United States, such centers tend to attract a slightly different segment of the female population and seem to increase satisfaction among women patients. Some data are available to document differences in quality of care between women receiving care in a woman-only setting and care in a general setting. We report on findings from Canada, Thailand, Brazil, Australia, and the Netherlands.

Canada:

As noted previously, Canada created and implemented a model of national women's health centers that is similar to the CoE model (Health Canada, 1996). Like their U.S. counterparts, these centers have been successful in leveraging funds. For example, the British Columbia center was initially funded with \$2 million (Canadian) and has been able to leverage an additional \$7.5 million (Canadian) (British Columbia Centre for Excellence in Women's Health, 2001). The same center was rated quite positively by Health Canada for its capacity-building for women's health as well as for creation of new knowledge (British Columbia Centre for Excellence in Women's Health, 2001).

Thailand:

A Thailand project to implement a more gender-sensitive care model at rural women's health clinics was successful (more details on this project were provided in question 4). The project involved intensive staff training, and improved the quality of care received by patients as well as the patient/staff interactions:

Health staff who participated in the action-research ensured that they took extra time in providing advice, being more careful in recording medical history and getting permission from women before asking sensitive questions. Respect is given during gynaecological examinations, and explanations on the results of diagnosis and treatment are provided. Although clients wait longer, they are happier because they receive better care. Although clients are still shy to discuss sexual health problems with the staff, they are encouraged to do so by the staff. The staff learned to provide women-friendly services by being friendlier in their behaviour and choosing their words more carefully so as to build rapport with the women (Boonmongkon, 2000).

The clinics have found that they are now providing more services to women, and that women are reporting high overall satisfaction with the program (Boonmongkon, 2000).

Brazil:

Another women's care model that we previously described (see question 4) is a comprehensive approach to women's care implemented by the reproductive healthcare services at the Perola Byington Hospital in Sao Paulo, Brazil. The program made greater use of nurse-assistants to screen for the most common gynecological problems to increase the number of patients seen per doctor per hour (Pinotti & Tojal, 2001). Each doctor worked with four nurse-assistants, both improving the content of care and increasing the efficiency of care: "In the traditional model, care is given only according to symptoms presented and a physician can see on average ten patients per four hours of medical work. In the Perola Hospital model, integrated care was given and coverage per four hours was 40 patients, four times greater than in the traditional model" (Pinotti & Tojal, 2001).

Australia:

Australia has a series of Women's Health Centers (WHCs) that provide care to patients in a woman-only environment. Patients at these WHCs tend to be disadvantaged and see the WHCs as a safe setting (Broom, 1998). This is especially important for women who have previously been victims of abuse. Women patients like the longer appointments provided at the centers and tend to prefer female providers; women patients are extremely "enthusiastic" about the care they had received in such settings (Broom, 1998). In addition, the care women received at the centers was viewed as more holistic (Broom, 1998). This study did not report any findings pertaining to quality of care received at these centers; however, the results do suggest that the centers are meeting a need for some women.

The Netherlands:

Aletta is a women's health center in the Netherlands that was started in 1984. Its medical philosophy is similar to that of many U.S. health centers: "consideration of the patient's personal and social factors, respect for the patient, encouragement of self-responsibility, and demedicalization" (Carlson, 2000). A study was conducted to compare care at Aletta with that for other Dutch female patients (as reported in Carlson, 2000). The study found that Aletta patients were younger, better-educated, and less likely to be unemployed (Carlson, 2000). In addition, women reported more independence and individualism and "were less likely to seek help for minor illnesses" (Carlson, 2000):

Important measures of health status (perceived state of health and number of chronic health conditions) did not differ significantly between women receiving care at the women's health center and those receiving care elsewhere. However, patients at the women's health center reported more psychosocial problems and recent stressful life events. Utilization of medical care resources by visits to the general practitioner did not differ between the groups. However, mental health and alternative health care services were more frequently utilized by patients at the women's health center.

No data were reported on quality of care differences between the two samples.

The movement toward gender-based medicine

To date, we have been reporting primarily on care that concerns one gender (i.e., care for women). This is because the first movements toward gender-based medicine started with attention to women's healthcare as a means to correct for previous deficits. As the women's health movement has matured, however, it has brought with it the discovery that men also have specific health needs that have been neglected by traditional medical approaches:

Over the past 30 or so years, women's health advocates have argued—rightly, and with some considerable success—that women have been ill-served by a male-dominated health service, and that policies and practices need to change to reflect the specific needs of women. It is now becoming clear that men have also suffered a disadvantage from the way the health service has been structured and decisions have been made (Banks, 2004).

As a result of these findings, the research focus is slowly shifting from women's health or men's health to gender-based medicine.

Trends in gender programs:

Gender-based medicine is, in many ways, the natural progression from women's health. Gender-based medicine capitalizes on what research has discovered is unique about women and applies that knowledge to expand our understanding of both sexes. As one researcher in this field has said, "to continue to consider the health of women in isolation from the wider world of human health is to miss a spectacularly important opportunity to improve the health of all" (Legato, 2003). Another predominant expert in this field described the progression this way:

"Women's health" is expanding into the larger concept of gender-specific medicine. Women's health is no longer an isolated phenomenon, divorced from mainstream medicine and regarded as a political or feminist issue. Instead, thoughtful scientists now see women as important sources of new information that will correct essentially male models of normal function and the pathophysiology of disease (Pinn, Begg, Rudick, & et al., 2006).

The mission of gender-specific medicine is "to promote research that uses biological sex as an important variable in constructing scientific protocols" (Legato, 2006c). This movement, while a natural and perhaps inevitable progression, is still very much in its infancy:

The idea of establishing gender-specific medical practices, even as a pilot experiment, to test whether or not the new knowledge when applied to clinical care impacts the quality or length of life has not even been seriously approached. In fact, principles of best

practices for the sex-specific care of patients are only now being developed. Gender-specific medicine still means women's health to all but the indoctrinated few, and many continue to view women's health as a feminist, commercial, or boutique issue more suited to marketing teams for hospital centers than to serious practitioners of medicine (Legato, 2003).

However, important progress in this area is being made. Recent progress toward the adoption and expansion of gender-specific medicine includes the following:

- “In 2001, the World Health Organisation’s ‘Madrid Statement’ urged member states to ‘actively integrate gender mainstreaming into public policies that determine health’”(Banks, 2004).
- “This year [2006] the Committee of Experts on the Inclusion of Gender Differences in Health Policy was set up by the Council of Europe, in Strasbourg. The key aims of this committee are determining what is good practice and drawing up clear recommendations on how to integrate the biological, cultural and social dimension of gender into the Council of Europe Member States’ public health programmes (prevention, diagnosis, care), as well as, integrating the gender dimension in training programmes for the health professionals” (Rieder, 2006).
- In 2006, an announcement was made that a new global center, “The International Association for Gender-Specific Medicine,” is forming (Legato, 2006a). The Center’s founders are from Berlin, Sweden, and the United States, and the Center is hoping to increase international collaboration on these issues.

Evaluations of gender programs:

Thus far, data on the effectiveness of gender-specific medical interventions are extremely limited. We uncovered one report on such interventions that was produced by the Interagency Gender Working Group (IGWG) of the United States Agency for International Development (USAID). This report was an attempt to evaluate the success of reproductive health programs that have integrated gender, although the programs described are mostly interventions for females.⁷

Nine programs were evaluated for the report. Many programs were in settings where women had limited autonomy, and a goal of several of the programs was to help women learn to make their own health choices. Other programs offered training “in more than reproductive health, in areas such as literacy, employment skills, legal rights, parenting, child health, and social mobilization. Others focus on strengthening women’s voice in community planning, in bringing issues to government officials and donor organizations, and educating men on the importance of women’s reproductive health and family planning” (Feldman-Jacobs, Olukoya, & Avni, 2005). The interventions primarily accommodated, as opposed to challenged, gender differences:

For example, a health centre may decide to add a small childcare facility so that mothers can visit health care facilities even when they do not have anyone with whom to leave

⁷ The interventions described included approaches for both males and females. However, like most of the programs we have already discussed, the accommodations were overwhelmingly for females. We include the results here because of the authors’ broad emphasis on accommodating gender issues.

their children. Some health services have tried to make their settings more male-friendly, for example, by offering evening hours of operations, allowing the presence of male partners during childbirth, or introducing couple counselling. Still others, recognizing women's lack of economic resources, lower fees to make services more accessible (Feldman-Jacobs et al., 2005).

The conclusion of this report is that “integrating gender into reproductive health programmes has a positive impact on achieving reproductive health outcomes” (Feldman-Jacobs et al., 2005). The report offers the following four recommendations (Feldman-Jacobs et al., 2005):

1. “Integrate gender into programmes to achieve positive reproductive health outcomes. With very few exceptions, the programmes that integrated gender achieved positive reproductive health outcomes.”
2. “Focus on community participation or community empowerment strategies when seeking to transform gender relations. Gender-integrated components of reproductive health programming are often embedded in participatory or community empowerment initiatives.”
3. “Provide support for more rigorous evaluation of interventions that integrate gender. Further efforts in refining evaluation methods and indicators, especially gender indicators, are necessary to generate a solid body of evidence regarding the value of gender integration. Gender indicators are still being developed and tested. Researchers and programme implementers need to be trained in effective use of these measurement tools. Funding for evaluation needs to be allocated, scaled up, and long-term. Sufficient time and funding are needed for programmes to show effects.”
4. “Recognize the unique contribution that gender integration brings to the success of STI/HIV interventions, achieving sustainable health results and greater gender equity.”

Tracking success

Any effort to improve healthcare to accommodate sex- and gender-based differences will need to include an effort to track and evaluate the success of interventions. High-quality data are needed to either demonstrate or refute the effects of various approaches so that interventions can be tested and targeted. Data need to be collected for both men and women to allow for valid statistical comparisons. For example, “stratifying quality indicators by gender would allow [healthcare] plans to specifically evaluate the effectiveness of improvement interventions among women and men” (Bird et al., 2003).

In this section, we discuss issues that need to be resolved to ensure the collection of high quality data, discuss approaches to data collection, and highlight recent progress in this area.

Data collection issues:

There are two primary issues with collecting quality data to detect sex- and gender-differences in disease occurrence, diagnosis, or treatment. The first is that data on women may not be available. Women are still underrepresented in some medical trials (Azad & Nishtar, 2005). Additionally, data may not be collected in sufficient quantity to allow for subgroup comparisons between men and women. For example, a major source of care data is the HEDIS (Health Plan Employer Data

and Information Set), which is collected by the NCQA (National Committee for Quality Assurance):

To minimize burden on plans, for some measures the NCQA only requires participating plans to collect data from a sample (411 cases) of eligible enrollees. Though this sample size was selected to allow comparisons of performance rates between plans, the number of cases does not provide sufficient statistical power to compare performance between subgroups, such as men and women. The small denominator problem is not limited to HEDIS measures that combine administrative and chart data (i.e., “hybrid measures”) but also can occur for measures that plans can compute solely from administrative data (Bird et al., 2003).

Moreover, data may not be available because sex is not part of the reporting requirements. For example, although quality measurements are widely used in health plans and are “crucial to improving quality of care in general and reducing gender differences in care ... few [health] plans currently stratify such measures by gender” (Bird et al., 2003).

A similar, but more severe, shortage of data is common among those attempting to study potential racial, ethnic, or socioeconomic disparities, because these categories comprise even smaller segments of the population (compared with about half the patient population being male or female), and data on race, ethnicity, or socioeconomic status is collected less frequently than data on gender (Long, Bamba, Ling, & Shea, 2006). Finally, the small numbers problem makes it especially difficult to do an analysis of interactions between gender, race, ethnicity, and socioeconomic status.

In addition to problems with insufficient data, this field also suffers from a lack of reporting on gender similarities or differences even when data are available. Data may not have been recorded in such a way as to allow for gender- or sex-based analysis (Anthony, 2005). For example, Legato, Glezler et al. (2006) conducted an analysis of available data on the treatment of diabetes, looking specifically for information on sex- and gender-differences:

Often in the diabetes literature (as in the literature on other diseases), even when both men and women were included in studies, no attempt was made to assess the impact of sex-specific differences on the data. For optimal prevention and treatment of diabetes, these differences must be acknowledged, planned for, and factored into an effective treatment regimen, which will differ significantly as a function of the patient’s sex.

Thus, insufficient data on both sexes to allow for comparison (either because one sex was underrepresented in research studies or because collected data do not allow for analysis on the basis of sex) poses a challenge to study of sex- and gender-based differences in healthcare. The result is that while several studies provide data on the care of one sex, few studies have “directly examined gender differences in performance on a variety of objective quality measures” (Bird et al., 2003). As another researcher team put it, “lack of evidence ... plagues women’s health. ... Data on medical processes and outcomes in women has lagged well behind that on men” (McKinley et al., 2002).

One possible solution to gathering needed data is to pool data from various global sources (Legato, 2006b). Another approach is described by Bird, Fremont et al. (2003):

These challenges can best be addressed through a concerted effort. For example, it would be reasonable to encourage stratified reporting of selected measures such as a lipid check among diabetics which can be calculated solely from administrative data and generally have sufficient cases for subgroup comparisons. Furthermore, if the differences in measures requiring hybrid data are large enough, those comparisons should be made as well.

Additionally, useful data might be pooled from multiple sites to create a dataset that is sufficient for analysis. For example, the Department of Veterans Affairs collected data for analysis on “high-prevalence, high-cost, high-impact conditions among women veterans, as well as conditions with disproportionate burden among women (e.g., obesity, incontinence, osteoporosis) or with distinct clinical presentations in women (e.g., coronary artery disease)” through an effort to pool data from multiple VA sites:

Over 15 research centers responded to our requests for gender-specific analyses of existing data, demonstrating both the capacity and commitment to furthering the VA Women’s Health Research Agenda. While the results of these secondary analyses are too numerous to cover here, subsequent priority-setting was informed by the most prevalent diagnoses (e.g., post-traumatic stress disorder [PTSD], arthritis, chronic low back pain, hypertension, chronic lung disease, depression), most commonly prescribed drugs (e.g., simvastatin, levothyroxine, lisinopril), and gender comparisons in patient satisfaction, quality, and costs of care. This process highlighted that these data sources had been underutilized in the past, demonstrating substantial opportunities for additional analyses (Yano et al., 2006).

Suggested approaches to data collection and analysis:

Once data are available for analysis, the next consideration is how to identify significant sex- and gender-based differences. The first part of this task is to define what needs to be measured. The measurement of quality in healthcare is complex, requiring the measurement of numerous variables. While there is “no consensus on a definition of quality in women’s health care,” “organizations such as the National Committee for Quality Assurance (NCQA) have begun to develop and utilize indicators for process variables relevant to women’s health care” (Carlson, 2000).

Carlson (2000) suggests that any quality measure should include both process and outcome variables, including the following:

I. Process variables

- a. Adherence to guidelines for screening and preventive care (examples include screening for cervical and breast cancer, sexually transmitted diseases, depression, violence, and osteoporosis; counseling at menopause; and assessment of risk for diabetes and heart disease)
- b. Adherence to guidelines for management of conditions such as cervical dysplasia, osteopenia, diabetes, breast complaints, and chlamydial infection, including timely follow-up of positive screening tests
- c. Access to care

- d. Interpersonal aspects of care, such as the amount of information exchanged during an office visit and the active involvement of the patient in the decision-making process
 - e. Utilization of health care resources in the ambulatory setting, including number of office visits, use of diagnostic tests, time spent with providers, and changes in source of care over time
- II. Outcome variables
- a. Functional status, including general health, mental health, and social functioning
 - b. Clinical status, including condition-specific measures when available
 - c. Changes in patient behavior, such as smoking cessation or initiation of exercise
 - d. Patient satisfaction
 - e. Professional satisfaction

Another attempt to define what should be measured was conducted by the National Committee for Quality Assurance's Women's Health Measurement Advisory Panel (MAP). The MAP was established because "the Health plan Employer Data and Information Set (HEDIS) is limited in its scope of women's health-related performance measures"; thus, the MAP was asked to help "expand and develop HEDIS measures to better represent women's health issues" (McKinley et al., 2002). HEDIS measures at the time focused "only on a limited number of reproductive issues (prenatal care and childbirth) and on breast and cervical cancer screening" (McKinley et al., 2002).

This extensive review process led to the following results:

The Women's Health MAP initially prioritized a list of clinical conditions affecting women, based upon the prevalence of the conditions, the morbidity and mortality resulting from these conditions, and the ability of health care systems to affect care relevant to these conditions. The top conditions included cardiovascular disease, unintended pregnancy, osteoporosis, breast cancer, mental health, violence, lung cancer, cervical cancer, and obesity/eating disorders. Within each of these categories, the MAP reviewed scientific evidence and existing measures and then outlined potential new measures. ... The MAP systematically reviewed existing literature, deliberated issues at multiple meetings, and included discussions with external content experts to support the identification and evaluation of potential performance measures in several priority areas in women's health. Over 30 indicators were considered across the prioritized list of clinical conditions. ... These high-priority indicators frequently lacked one or more key attributes necessary for successful deployment as a comparative performance indicator in women's health (McKinley et al., 2002).

Note that, depending on where the healthcare system data are collected from, some of these measures can be measured electronically, some are measured via satisfaction or other surveys, some are measured from chart reviews, some are computed or derived, and some are hybrid measures derived from multiple sources. Thus, even after the data to be analyzed are well-defined, the collection of data itself remains a challenge.

Not surprisingly because of the numerous problems with data availability and collection, very few examples exist of gender-based quality measurements in healthcare. In their comprehensive review of quality of care data, Bird, Fremont et al. (2003) found just two examples of managed-care systems that are beginning the process of reporting quality results by gender:

Although we did not find any plans that were directly comparing objective quality measures by gender, several plans are working on addressing this issue and we did find a couple of examples worth noting. PacifiCare, based in California, recently began calculating performance on various quality measures, including several related to cardiovascular care, separately by gender. However, the data were used to prepare gender-specific reports of quality of care, rather than to compare men's and women's quality of care or to develop a quality improvement program aimed at women's care. In other words, the report on the quality of women's health only included performance scores for women enrollees in each plan. The other intriguing example comes from Cigna, which rather than stratifying existing quality measures has hired an expert consultant to develop gender-specific quality measures possibly with different parameters for men and women. Their intent is to ensure that quality measures are meaningful and reflect appropriate care for men and women and are based on the latest evidence showing differences in risk factors and physiology by gender.

In sum, much work remains to be done to collect, analyze, and report on sex- and gender-based medical differences. The MAP HEDIS effort concluded:

Health services researchers and funding agencies must now focus their efforts on identifying and overcoming the measurement challenges reported here: 1) better defining the scope of women's health, 2) recognizing and utilizing the expanding research base on women's health, 3) exploring gender differences in existing measures that are not presently reported by gender, 4) overcoming the problems of small sample sizes, 5) acknowledging and incorporating the slow diffusion of clinical practice guidelines, and 6) responding to the burden of reporting created by expanding measurement sets. These are large, but not insurmountable challenges, and they will require the development of more creative approaches to quality measurement, and a continuing focus on the quality of care provided to women through our nation's managed care organizations (McKinley et al., 2002).

Recent progress in data collection:

While there has been an historical shortage of data (on women in particular), some recent progress is worth noting. NIH's Office of Research on Women's Health (ORWH), for example, is helping to facilitate the reporting of sex-based data from clinical trials:

NIH was mandated to initiate and support the necessary outreach efforts to recruit and retain women as volunteers for clinical studies. Fueled both by the Act and by ORWH's existing mandate and established policy, a tracking system to monitor inclusion of women in research was initiated, in collaboration with several components of NIH including the Office of Extramural Research. For the first time in NIH history, it became possible to identify women's participation in human subject research, to accurately determine numbers of participants, and to productively analyze that data. The ORWH experience continues to demonstrate that strength, value, and utility rise from our differences. The understanding of variations and specificities in health and disease among women and men has fueled fresh insight far more than it has minimized either research arena. Women's health research has amply demonstrated its ability to add to the pool of scientific knowledge while shedding a sometimes unexpected light on men's health issues (Pinn, 2004).

Thus, while many barriers exist, progress is being made, and will continue to be made, to facilitate the collection and reporting of data on gender-based medicine.

Conclusions

This research question concerned the effectiveness of sex- and gender-based healthcare practices. In answering it, we must start with the caveat that most of our answer concerns the effectiveness of women's healthcare practices. Gender-based healthcare practices—that is, medical care that effectively addresses differences in men's and women's healthcare needs—is still in its infancy. As such, almost no data exist on the overall effectiveness of such approaches. We suspect, as do others (Legato, 2006b), that when gender-based medical practices are fully implemented, they will be highly effective. However, this assumption is speculative because this promising area of evidence based medicine is itself in its infancy.

The women's health movement, however, is beginning to produce effectiveness results, and these are quite promising. For now, women's care has primarily meant the treatment of women in a women-only setting. Accordingly, women's health clinics have arisen in the United States as well as in other countries. Universally, the women who attend such clinics rate their overall satisfaction as quite high. In addition, however, studies are showing that these women are receiving better quality care⁸, especially better preventive care on traditional women's issues (e.g., screening mammography).

CoEs clearly are leaders in this kind of woman-specific care, and the CoE model, as a women's healthcare model, can only be viewed as a success. This assessment, however, is primarily based on research undertaken by the CoEs themselves. Thus, while CoE-based studies demonstrate a variety of successes, additional comparative work is needed to show the relative and absolute contribution of these centers to women's healthcare above and beyond what may be occurring in healthcare delivery.

The primary barriers to implementing this kind of women's care model are inertia (that is, a lack of extrinsic motivators to change the way care has always been delivered), as well as insufficient funding and space. Having a national recognition program like that provided by the CoEs is very helpful in overcoming these barriers.

Finally, we must note that data to demonstrate the effectiveness of sex- and gender-based approaches to care are extremely sparse. Women are still at a deficit in terms of their inclusion in medical research trials. Likewise, existing reporting systems both fail to report on gender and do not collect adequate sample sizes to allow for gender-based analysis. These issues are slowly being addressed, however, and we expect the data available to analyze potential sex- and gender-based differences in healthcare to continue to improve. For now, though, we must conclude that data are insufficient to answer the question of whether sex- and gender-based approaches to healthcare are effective. As noted, we suspect that such approaches will be effective, based on the documented differences in men and women that appear to have clinical significance. The resolution to this question, however, requires additional research.

⁸ True quality care, in fact, inherently demands the recognition of gender/sex factors.

Research Question 6: Approaches to Improving Care

6. *How effective is a focus on clinical care at improving women's healthcare? How effective are systemic improvements (i.e. more women in professorships/research positions or emphasis on women's health in medical school curriculum) at improving women's healthcare? Are there other factors (e.g. continuity of care) that may be more important to women than to men or to women's outcomes vs. men's outcomes?*

In this research question, we examine various aspects of healthcare in which interventions can take place to improve women's care. One of the most obvious places to intervene, and the focus of much of this report thus far, is clinical care. Here, we discuss clinical care interventions briefly, and highlight how such interventions can effectively and efficiently improve care. Another possible intervention is to increase the number of women in healthcare leadership positions, for example as doctors, professors, or administrators. We discuss the potential benefits of such a change and also provide a short discussion of the related benefits of increasing the number of ethnic minorities in similar leadership roles. To better understand the impact of such changes, we briefly discuss the literature on male vs. female doctors and gender interactions between doctors and patients. Next, we discuss changes in the medical school, public health, and pharmaceutical curriculums to include a more detailed discussion of the effects of sex and gender on health, as well as efforts to increase the knowledge of existing caregivers. Finally, we discuss other factors that may be related to effective sex- and gender-based care, such as differing preferences between male and female patients.

Changes in clinical care

The clinical-care setting is the primary point of interaction between patients and medical providers. Changes in clinical care could improve the detection and treatment of sex- and gender-based differences in disease and would be especially beneficial in the provision of gender-appropriate preventive screenings. Elsewhere in this report, we have described common clinical care interventions such as women's health centers. Here, we offer some additional discussion of why the clinical setting is an excellent place to introduce concepts related to gender-based care.

Importance of the primary care setting and integrated care:

The primary care setting is a "preferred option for the delivery of community health services," and implementing changes in the primary care setting could have "benefits for the economy, for the health care system, for communities, for users, and for practitioners" (Hills & Mullett, 2005). A strong primary health infrastructure is associated with "improved quality of health reflected in lower rates of mortality and morbidity and higher rates of use of preventive health services" (Hills & Mullett, 2005). Thus, the primary care setting is a natural place to implement changes that improve women's healthcare (e.g., by adopting a woman-centered approach to care). This approach can be accomplished through standalone women's health centers, but "incorporating women-centred care guidelines into primary health care planning and design might be a more effective strategy" (Hills & Mullett, 2005).

Multiple benefits could be achieved by integrating woman-focused care into a primary care setting. For example, providers who offer more complete services obtain better service ratings from their patients: “Male and female providers achieve higher ratings when they offer more comprehensive services to women patients. Thus, primary care providers should consider expanding their scope of services to include routine gynecologic care or consider being aligned with a clinical center or setting that offers these additional services (through either primary care or specialty care)” (Bean-Mayberry et al., 2006).

Additionally, when care is integrated and a multidisciplinary approach is used, it can improve quality “by facilitating accurate diagnosis, the basis for effective treatment. Quality of care, especially that relevant to psychosocial aspects of illness, may be further enhanced by offering familiar surroundings and tangible evidence of collaboration among multiple caregivers in the same physical setting” (Carlson, 2000). In addition to quality benefits, “co-location of core women’s health services has great potential for decreasing inefficiency, improving access, and lowering costs” (Carlson, 2000).⁹

Changes in the primary care setting also increase opportunities for patient education about upcoming preventive care needs. Additionally, integrated and coordinated care allows for a single source for informing patients of what care they may need in the future (e.g., mammography or colorectal screening), as well as streamlining the reminder process for preventive screenings. While such education does not have to be a gender-specific issue, it does allow for gender-specific patient education (e.g., about coronary heart disease risk or gender-specific cancers).

Implementing changes in clinical care:

An emphasis on primary care settings that emphasize woman-oriented (or even gender-specific) care could include both changes in diagnosis procedures and care as well as doctor-patient interactions. For example, doctors can and should diagnose and treat diseases such as diabetes differently in men and women (Legato et al., 2006). At the same time, doctors need to educate their patients about gender-specific care, e.g., to explain why the care any given patient receives may differ from that of a spouse, friend, or sibling of the opposite sex.

In addition, however, changes to care can focus on interpersonal relationships. For example, providers following a gender-based model also would need to be attuned to the communication needs of their patients. In one study, “a single question, ‘What would you really most of all want me to do for you today?’ was more effective in eliciting responses from female patients than a series of medically oriented questions about the patient’s diagnosis” (Khoury & Weisman, 2002). Asking appropriate questions such as this allows providers “to focus on gender-based problems of the patient, often of emotional origin, rather than on the symptoms of the problems alone” (Khoury & Weisman, 2002).

Changes in the way care is managed and delivered in the clinical setting have been shown to affect the delivery of services and to improve overall care. For example, a study of delivery of woman-specific services in the VA found that clinics with well-coordinated care between

⁹ Additional benefits of co-location of services were discussed previously in our discussion of CoEs in question 5.

providers and specialists were more likely to offer breast cancer screenings (Goldzweig, Parkerton, Washington, Lanto, & Yano, 2004). Additionally, cervical cancer screenings were more likely to be offered in settings that saw a larger proportion of female patients and where the clinic had a quality improvement program (Goldzweig et al., 2004).

Increased female leadership

One of the widely held tenets of women's medicine is that women's leadership is crucial to success. Women have gained parity with men in terms of their representation as medical students; however, women are still underrepresented in positions of senior leadership. This section discusses trends in women's leadership positions. We also discuss barriers to women attaining leadership positions (e.g., overcoming the status quo), and recent efforts to address these barriers (e.g., mentorship programs).

Number of women in healthcare:

The number of women attending medical school continues to increase, so that women now make up about half of all medical students: "In 2000-2001, women constituted almost 46% of new entrants to the medical schools in the United States" (Franks & Bertakis, 2003). However, the number of women in academic leadership positions is still quite limited:

- "Data from *Women in U.S. Academic Medicine Statistics* [and in particular a survey of 126 U.S. allopathic medical schools] showed that women in general have an uphill battle in medical settings and still remain an underrepresented group. ... 30% of faculty members are women and at least 18 schools have no women serving as department chairs. This under-representation of female faculty is even more disconcerting when contrasted with a recent report ... [that] women represented the majority of medical school applicants. Of equal or perhaps greater importance, women are less likely than men to be promoted to the levels of associate or full professor and less likely to be appointed to search committees, which influence future faculty representation. ... Women comprise only 14% of tenured faculty and 12% of full professors, and ... the average number of female department chairs in the United States is just 1.7 per medical school" (King & Cubic, 2005).
- "Women are seriously underrepresented among the ranks of senior faculty and positions of leadership in academic medicine. In 1999, 27% of full-time medical school faculty were women, but only 15% of tenured faculty, 11% of full professors, and 6% of chairs of academic departments were women. Cohort studies comparing men and women medical school faculty have found that—even after adjusting for number of publications, amount of grant support, tenure versus other career track, number of hours worked, and specialty—women remain substantially less likely than men to be promoted to senior ranks" (Yedidia & Bickel, 2001).

Despite this lack of senior-level women leaders in academic medicine, some progress is being made in other sectors. For example, while still underrepresented, "women are succeeding in moving into the management hierarchy of the healthcare industry. One study found that the percentage of women in management positions increased from 13 to 36% in an 8-year span ending in 2001" (Neubert & Palmer, 2004).

Benefits of women in leadership positions:

The widely held assumption is that having women in positions of leadership will improve the quality of women's healthcare. To wit:

The early founders of women's health, and the federal bodies that supported its development, realized that their goals would be successful only if women's health had a structure, a source of funding, and a recognized place in academic institutions. Dedicated women's health offices or programs established at medical schools through federal or other sources of support have facilitated curriculum change and faculty development, and many play a key role in the recruitment and retention of women faculty. The importance of these functions cannot be overestimated because women students and faculty have been the driving force behind women's health curricular change at those institutions where it has occurred. These offices or programs are the repositories for the history of women's health ... and should be maintained until gender equity is attained at all levels of the education process (Henrich, 2004).

Put another way, the theory is that "as increasing numbers of women are being trained as physicians in the U.S., the needs of women are increasingly being integrated, at least into clinical training programs" (Strobino et al., 2002). This assertion seems logical, and certainly the prominence of the women's health movement has increased as women themselves have assumed greater positions of leadership. The evidence for this position is largely anecdotal, however:

Evidence supporting the link between women leaders in academic health sciences and women's health includes the historical observation that most major advances in women's health have been driven by women leaders, frequently those in academics. Furthermore, women's health research draws predominantly women investigators, as is evident from the gender composition of fellows in women's health training programs, attendees and presenters at clinical and scientific symposia on women's health, and principal investigators on proposals submitted to the NIH for research on diseases that occur predominantly or uniquely in women. This relationship between women's health and women leadership in academic medicine and other health science fields is underscored by the fact that the directors of 13 of the current 15 CoEs are women (Carnes et al., 2001).

Barriers to women's leadership:

Unfortunately, substantial barriers exist to the promotion of women to academic leadership positions in medicine. One study asked medical department chairs to identify such barriers:

The chairs we interviewed painted a broad tableau of factors constraining women's advancement to leadership positions in academic medicine, and they identified three sources of barriers: historical developments (e.g., shortage of women in the pipeline), broad social forces (e.g., gender roles and socialization patterns affecting women's status), and the expression of these forces in the medical environment (e.g., sexism in recruitment and promotion practices, a shortage of effective mentors for women) (Yedidia & Bickel, 2001).

Other barriers faced by women include more organizational resources being devoted to men, and increased family demands (e.g., women are much less likely to have a spouse who stays at home) (Committee on Maximizing the Potential of Women in Academic Science and Engineering,

National Academy of Sciences, National Academy of Engineering, & Institute of Medicine, 2006). Moreover, women physicians face a very different set of life opportunities compared to their male peers because of these spousal differences. Since the workplace has been historically dominated by men with greater stay-at-home spousal support, medicine has been much slower to adapt to the needs of women, and specifically to women in dual career households (Bird, Lang, Amick, & Chertoff, 2002).

Unfortunately, there is no easy way to increase the number of women in leadership positions:

Common interventions to remedy this inequity often fail. One approach advocates mandating increased opportunities for women to lead, but this approach is bound to encounter resistance as only 53% of male healthcare executives favor this approach. Another typical approach is to proclaim the competitive advantage of “feminine” management, but despite near unanimous agreement across men and women of the unique contributions of women to leadership, this may have the unintentional consequence of increasing the strength and divisiveness of gender stereotypes. A more effective approach may be for organizations to promote a set of leadership competencies that have a valid link to important organizational outcomes (Neubert & Palmer, 2004).

Thus, despite widespread acknowledgment that these barriers exist, “it would appear that, in the absence of significant changes at the institutional level, ... women will continue to be underrepresented among the leadership in academic medicine” (Yedidia & Bickel, 2001).

Efforts to create women leaders:

Several efforts are under way to overcome existing barriers and to promote women’s leadership, although it remains to be seen how successful these efforts will be. For example, NIH has a set of strong recommendations to promote leaders at all levels who are women and to move toward greater representation and inclusiveness (Pinn et al., 2006). Additionally, NIH (as described in our discussion of question 5) has a program to promote career development and mentoring in the field of women’s health (Pinn, 2005). Several of these efforts capitalize on the women’s health movement as a logical venue to promote the achievement of women. Women’s health is seen as “an opportune field in which to nurture the academic careers of women. It is an ideal venue to fill the pipeline with talented women who may become academic leaders in positions where they can promote positive change as well as mentor other women” (Carnes et al., 2001). An exclusive focus on promoting women as leaders only in women’s health may have the unintentional effect of stereotyping women, however.

The creation of inclusive mentorship programs is one way to promote the advancement of women (King & Cubic, 2005). Another recommendation, from the report *Increasing Women’s Leadership in Academic Medicine*, is that “medical schools, teaching hospitals, and academic societies emphasize faculty diversity and the development of women faculty in department reviews, target the career development needs of women within the context of helping all faculty, and enhance the effectiveness of search committees in attracting women candidates” (as cited in King & Cubic, 2005).

Increased minority leadership

The inclusion of racial and ethnic minority leaders in medicine, like the inclusion of women, is generally believed to result in better overall healthcare. In this section of the report, we briefly describe trends in minority medical leadership.

Trends in minority leadership:

Ideally, “care providers should reflect the diversity of the population served” (Jackson et al., 2001). At present, however, the U.S. population is not served by a diverse group of care providers. For example, “only 2.9 percent of U.S. doctors in 1999 were black” (Williams, 2005). These discrepancies exist at the physician level and continue all the way to the faculty level, where disparities are most pronounced for underrepresented minorities (Wong et al., 2001).

Benefits of minority leadership:

Despite the relative absence of racial and ethnic minorities in care settings, there is evidence that including minorities leads to better care outcomes, especially for low-income and minority patients. Benefits include the following:

- “Race-concordant visits averaged two minutes longer than race-discordant encounters among both black and white patients. Patients in race-concordant visits also reported higher levels of satisfaction and judged physicians’ participatory decision-making style more positively. Moreover, independent ratings of audiotapes of the encounters indicated that race-concordant visits had a more positive emotional context (as indicated by voice tone) and a slower pace” (Williams, 2005).
- “Black and Hispanic physicians are more likely than others to care for the uninsured and those covered by Medicaid, and to practice in underserved urban and rural areas” (Williams, 2005).
- “Diversity among health professionals is critical to excellence in the delivery of clinical services. Reasons cited include representation from different cultural perspectives, social equity, and improved access and health outcomes in underserved communities. ... Minority physician faculty help break down cross-cultural communication barriers through teaching of curricula that address sociocultural issues. ... In addition, studies have shown that many patients prefer women and minority physicians” (Wong et al., 2001).
- Minority doctors are more likely to adopt patient-centered care practices: “Thirty percent of minority physicians (black, Hispanic, or Asian) rated high on the patient-centered adoption scale, compared with 19% of white, non-Hispanic physicians ($p < .05$)” (Audet, Davis, & Schoenbaum, 2006).

Male vs. female doctors

Gender is an important variable at the level of the physician, especially as it relates to interpersonal interactions with patients. Men and women have well-documented differences in how they communicate. Not surprisingly, these differences also extend to how male and female physicians interact with their patients.

Patient interactions:

Several large studies have shown key differences in how male and female doctors communicate with their patients. Female doctors tend to spend more time interacting with patients, resulting in longer visits, and have a less dominant interaction style. A comprehensive literature review of studies based on audiotapes, videotapes, or direct observations found the following:

Medical visits with female physicians were, on average, two minutes (10%) longer than those of male physicians. During this time, female physicians engaged in significantly more communication that can be considered patient-centered. They engaged in more active partnership behaviors, positive talk, psychosocial counseling, psychosocial question asking, and emotionally focused talk. Moreover, the patients of female physicians spoke more overall, disclosed more biomedical and psychosocial information, and made more positive statements to their physicians than did the patients of male physicians (Roter & Hall, 2004).

By way of explanation, Roter and Hall (2004) offered the following accounting of their findings:

The pattern of results was almost entirely consistent with what one might expect from the nonmedically related literature regarding gender differences in communication. Female physicians spend more time during a typical visit talking with their patients than do male physicians. During this time, they engage in communication that more broadly relates to the larger life context of the patient's condition by addressing psychosocial issues through related questioning and counseling and through greater use of emotional talk, positive talk, and active enlistment of patient input. In contrast to the higher levels of psychosocial and socioemotional exchange, there is little evidence that physician gender is related to the more task-specific communication elements of care. Physician gender was not related to the provision of biomedical information (including discussion of the diagnosis, prognosis, and medical treatment). ... Patient behavior largely reciprocates gender-linked physician behaviors. Like their physicians, patients of female doctors talk more overall, make more positive statements, discuss more psychosocial information, and express more partnership building than do patients of male physicians.

Other studies have reported similar findings:

- “Female family physicians ... provide more counseling, have longer consultation time, spend more time listening to their patients, and give selective attention to preventive healthcare and female health issues than male physicians” (Ahmad, Steward, Cameron, & Hyman, 2001).
- “Female physicians adopt a less dominant interaction style with their patients than male physicians do and for female physicians it seems to be especially important to behave in a gender-congruent way and not to express much dominance if they want satisfied patients. Male physicians seem to have more latitude in their behavior” (Mast, 2004).
- “The fact that women doctors often exhibit more patient-centered behaviors and are more concerned about psychosocial health issues than are men is consistent with other evidence indicating that female clinicians generally are more interpersonally oriented, more concerned about emotional and social aspects of health, and more interested in the patient's input and partnership. Men, on the other hand, may take a more individualistic and instrumental approach to health management. Thus, whether as clinicians or patients,

men may spend proportionately more time focusing on biomedical issues, offering advice, expressing opinions, and independently making recommendations for the other to accept or reject” (Street, 2002).

Significance of differences:

A critical question is whether these differing interaction styles impact care outcomes. There are some quality-of-care differences that have been associated with physician gender: “Women who use female generalist providers are more likely to receive routine gynecologic and mammography services and more gender-specific counseling compared to women who use male generalists” (Bean-Mayberry et al., 2006). Likewise:

After multivariate adjustment, the patients of female physicians were more likely to receive scheduled follow-up visits and referrals to other physicians than were the patients of male physicians. The patients of female physicians were also more likely to receive preventive services, such as breast and pelvic examinations, Pap tests, mammograms, rectal examinations, and blood pressure measurements, supporting the findings of previous studies. Female physicians appear to be more prevention oriented, particularly for female prevention. For nongender-related prevention interventions, such as blood pressure measurement, cholesterol testing, and sigmoidoscopy, only blood pressure testing showed a modest physician gender effect (Franks & Bertakis, 2003).

Such clinical differences appear to be rare, however. Moreover, while there are clear gender differences in communication patterns, these differences are “small in magnitude,” and “male and female clinicians are generally more similar than different in their communication” (Street, 2002). Thus, while

research to date indicates that women health care providers generally tend to conduct longer consultations, give more information, engage in more partnership-building, are less directive, express more interest in psychosocial aspects of health (e.g. emotions, lifestyle, family), and are more explicitly reassuring and encouraging than are male clinicians ... to infer that women are more patient-focused and better health care providers than men would be an extremely simplistic generalization (Street, 2002).

This is partly because, as we will discuss in more detail, there is not a universal female advantage. For example, in a study on care for depression, it was found that while “female providers were more likely to counsel on anxiety,” male providers were more likely to counsel on alcohol and drug use (Chan et al., 2006). The authors concluded that physicians of both genders provided similar care for depression.

Moreover, physician gender differences can be overcome. From the patient perspective:

By actively participating in their consultations, patients can attenuate and even erase communicative behaviors stemming from a clinician’s style or preconceived attitudes and stereotypes. Health care providers usually accommodate a patient who asks questions, offers opinions, and expresses concerns either because they now have a better understanding of how to address the patient’s needs or because they feel some obligation to adhere to norms governing conversational conduct. ... The evidence to date indicates

that patients will indeed gain more information, support, and involvement in decision-making the more they actively participate in the consultation (Street, 2002).

Even from the provider perspective, such differences are not absolute. For example, “obtaining gynecologic care or being involved with a women’s clinic setting improved the ratings of male providers” (Bean-Mayberry et al., 2006).

Gender match between doctor/patient

In addition to gender differences between male and female doctors, the gender match between doctors and patients also may affect care. The reasons for these differences are complex. Partly, they are the result of patient preferences (e.g., studies consistently show that patients prefer a doctor of the same sex for sensitive examinations). Other differences may be due to doctors’ perceptions or comfort levels. These differences impact quality of care, but the effect is not always consistent—gender concordance influences care outcomes both positively and negatively.

Patient preferences:

Numerous studies have shown that patients prefer to receive care from a same-sex physician for sensitive examinations. For example:

- “For genital and rectal examinations, patients have been shown to prefer a physician of the same gender” (Franks & Bertakis, 2003).
- A VA study of older women found that women would be less willing to undergo a full-body skin examination if it was performed by a male physician (Federman, Kravetz, Haskell, Ma, & Kirsner, 2006).
- A study in the Netherlands found that “the physician’s gender is particularly salient under conditions in which examination require complete disrobing, extensive body probing or examination of the genitalia” (Kerssens, Bensing, & Andela, 1997).

Interestingly, doctors also may be somewhat reluctant to perform sensitive examinations on members of the opposite sex. A study of students in their final year of medical school at Monash University found that students

were more comfortable with and said that they were more attuned to the concerns of patients of their own gender. They were also more comfortable dealing with personal issues as opposed to sexual matters in the consultation, and again, more so with patients of their own gender. They were ... uncomfortable performing the more body-intimate examinations on patients of the opposite gender (Zaharias, Piterman, & Liddell, 2004).

Quality of care differences favoring gender concordance:

Sometimes, having physician-patient gender concordance leads to better care outcomes. For example, “female physicians considered depression more often, particularly with female patients” (Stoppe et al., 1999). Medical visits also may be longer when doctors and patients are the same sex:

Female physicians had significantly longer visits with their female patients than any other physician-patient dyad. The next longest visits occurred between male physicians and their male patients. When visits with pelvic and breast examinations were excluded, there

was no overall physician gender effect on visit length. It would appear that the observation that female physicians have significantly longer visits than their male colleagues is associated with the performance of gender-specific (breast and pelvic) physical examinations. As previously noted, female patients differentially see female physicians, and these patients may make their selection based on a preference for a physician of the same gender to perform their breast and pelvic examinations. When visits with pelvic and breast examinations were excluded, visit duration was related to gender congruence between physician and patient. Gender-congruent visits were longer than gender-discordant visits (Franks & Bertakis, 2003).

Additionally, Chan, Bird et al. (2006) did a study on gender concordance and detection and care for mental health problems in primary care settings. They found that females were more likely to receive counseling with a female provider, although no other gender-concordance differences were found (Chan et al., 2006).

Quality of care differences favoring gender discordance:

However, there are cases in which gender discordance leads to better care outcomes. For example:

- “During prenatal visits, Roter et al. observed that female physicians actually spent less time with patients, engaged in less facilitative communication, and made fewer expressions of concern than did the male doctors. Contrary to expectations, Huston et al. found that male doctors more often discussed hormone replacement therapy with their women patients than did female physicians” (Street, 2002).
- “Female physicians are significantly more likely than males to refer a patient with BPH [benign prostatic hypertrophy] to a urologist (37.5% vs. 24.9%, $p < 0.001$). Male physicians are significantly more likely to recommend that a woman with vaginal itching and discharge have an office visit (52.7% vs. 40.6%, $p < 0.001$). ... The results may suggest that physicians use fewer resources to treat the genital-specific conditions of patients who share their sex” (Boulis & Long, 2004).
- “Overall, the accuracy of the male and female cardiologists in diagnosing CAD [coronary artery disease] was identical (both 79%), although there were some noteworthy differences. ... The specificity to assess female patients by the female cardiologists (48%) and male patients by the male cardiologists (59%) was relatively low compared with the specificity to assess female patients by the male cardiologists (74%) and male patients by the female cardiologists (70%). Thus, the cardiologists tended to assess patients of the opposite gender with a greater specificity” (Wegmann et al., 2003).

Curriculum changes

One of the most logical places to introduce concepts relate to sex- and gender-based medicine is via the curriculum of medical, pharmaceutical, public health, and nursing schools. Historically, medical curriculums have overlooked such teaching in favor of a model that assumes a male norm (Alexanderson, 1999). Or, put another way, “it is ironic that it is in medical education, where would-be-physicians presumably learn the most about human biology and behavior, that they are taught to ignore fundamental gender differences” (Lazarus, 2001). Now, however, information on gender differences is gradually being introduced. In this section, we discuss how

such information is incorporated into an existing curriculum as well as where changes are occurring.

How curriculum changes occur:

Part of the context of this discussion is an ongoing call for such changes. For example, “the American Board of Internal Medicine ... has made specific recommendations for training in women’s health. These recommendations are based on the premise that ‘the knowledge base and clinical skills required to provide care for women are best addressed within the context of general skills acquired’ by trainees of internal medicine” (Nicolette & Jacobs, 2000).

Frequently, changes in the curriculum at individual medical schools have happened through the joint efforts of students and faculty. Such a process has been described in detail for the Department of Medicine at Stanford University School of Medicine. A student-faculty team analyzed the existing medical school curriculum in internal medicine for the third-year clerkship, and the team sees this process as illustrative of “the value of medical students’ contributions to medical education” (Nicolette & Jacobs, 2000). Here is one example of their process:

In our analysis of the pulmonary medicine module, we found that four out of the five cases described male patients. This is consistent with traditional male imagery in medical education, including textbook and lecture illustrations, as well as case examples. Discussions involving female patients have traditionally been relegated to reproductive health, mental illness, and pregnancy-related illness. This may affect trainees of medicine in two ways: encouraging the misperception of men’s health as the “norm” in medicine with women’s health as a deviation from this standard, and contributing to the designation of a disproportionate number of female patients’ complaints to mental, rather than systemic, illness. To avoid propagating these erroneous notions, the learning module’s cases were altered so that three of the five patients were women (Nicolette & Jacobs, 2000).

While helpful, note that this change is primarily cosmetic, and does not represent changes to include gender-based approaches to medicine.

In general, curriculum changes are “difficult and slow” and require “leadership and support; senior faculty or administrative leaders and designated women’s health programs or centers may facilitate this process” (Henrich & Viscoli, 2006).

Progress in medical school curriculums:

In recent years, there has been a “marked increase in the number of schools with an office or program responsible for integration of women’s health and gender-specific content into curricula” (Giardina et al., 2006). For example, there is now a major two-volume medical textbook on sex and gender differences; *Principles of Gender-Specific Medicine* is a collection of “articles detailing sex and gender differences throughout the life cycle, including early development, the central nervous system, cardiology, pulmonology, gastroenterology, reproductive biology, oncology, nutrition, drug metabolism, infectious disease, bone, immunology/rheumatology, and aging” (Legato, 2004). Even with such changes, however, “progress toward integrating women’s health and gender-specific content into medical school curricula has been uneven” (Henrich & Viscoli, 2006).

One study looked at the content of medical school curriculums as they relate to women's health and gender, and found that

few medical schools in this study offered interdisciplinary women's health courses or clerkships; most were elective or selective clinical rotations that, as a result of limited enrollments, benefited a small number of students. The majority of schools that provided detailed information in CurrMIT [the Association of American Medical Colleges' Curriculum Management and Information Tool] included important women's health topics in their curricula; however, there was considerably less emphasis on gender-specific information about many conditions that cause the greatest morbidity and mortality in women, a pattern that has persisted for a decade (Henrich & Viscoli, 2006).

More than half of the schools taught at least 11 of 18 identified women's health topics, but fewer than a third included gender-specific topics. A designation as a CoE, having a women's health program, and having a female dean were all associated with teaching more women's health or gender topics (Henrich & Viscoli, 2006). A tension with adding such curriculum materials is whether to teach them separately as a specialty (allowing for greater focus, but reaching only a subset of students) or whether to fully integrate them across the curriculum (exposing all students to these materials, but perhaps in less depth).

Another study examined the gender topics most likely to be included in a medical school curriculum. It found that women's reproductive health topics were most common, with limited information on gender-specific disease factors:

Most schools included information on sexual and reproductive function, medical interviewing and examination skills, and diagnostic tests specific to women. Fewer schools incorporated gender-specific information on heart disease, lung cancer, and stroke—leading causes of death in women—or chronic medical disorders that disproportionately affect women, such as temporomandibular joint disease, interstitial cystitis, and fibromyalgia (Henrich, 2004).

Yet another study cites as a critique of existing curriculum

the limited attention to how the social context of women's lives affect their health. Examples of topics that need to be integrated into the curriculum of medical schools include the effect of stress related to the multiple roles of women, the importance to women of relationships with their partners and their children, the social and economic circumstances of low income women, particularly those living in households with no other adult present, and the importance of cultural sensitivity in providing services to women from varied ethnic backgrounds (Strobino et al., 2002).

Several factors have slowed the speed at which curriculum changes are adopted. These include the following:

- “Uncertainty about the impact of women's health and what should be included in a curriculum, a lack of practical guidelines for implementation, reluctance to train faculty, and institutional resistance to change” (Giardina et al., 2006).

- “A lack of awareness of data on gender differences, the lesser importance generally placed on this information, or the difficulties schools face in adding new information to already overloaded curricula” (Henrich & Viscoli, 2006).

Fortunately, the emphasis on including sex and gender factors in the medical school curriculum will only increase as knowledge and understanding of such differences increases (Giardina et al., 2006).

Progress in pharmaceutical curriculums:

Pharmacists represent another important professional group to educate about sex- and gender-based medical differences. One recent study found that women’s health is increasingly being taught at such schools:

Women’s health instruction was specifically mentioned (in fall 2004) by just under 40 percent (n=34) of the 89 U.S. colleges and schools of pharmacy. At those institutions, some of which have multiple courses with women’s health content, 48 courses were identified: 21 didactic elective courses dedicated to women’s health issues, two elective experiential courses dedicated to women’s health; 3 didactic electives in which women’s health was one of a broad array of component content areas; and 22 required courses in which women’s health content was incorporated. Among those 22 required courses, 18 were courses in pharmacotherapeutics; two were pharmacokinetics/dose optimization courses; one was a pharmacy practice course, and one was a first-year orientation course on practice trends. Given the variability across colleges and schools in how course descriptions are worded and the level of detail provided, it is likely that women’s health issues are included, at the very least, in the pharmacotherapeutics courses in more colleges and schools than identified in this review (Health Resources and Services Administration, 2005a).

Progress in public health curriculums:

Another important group to reach with this information is public health students. A recent study involving focus groups with public health faculty members and an online survey of students and/or recent graduates found that:

1. Sex and gender differences, diversity within gender, social determinants of health, and a lifespan perspective should provide the foundation efforts to incorporate women’s health into the MPH [master’s in public health] core curriculum. Women’s health faculty proposed that the current focus in public health on health disparities and cultural competency should serve as the backdrop and rationale for inclusion of women’s health concepts in the educational core curricula of MPH students. There was substantial agreement among core course faculty, as well as among students surveyed, that these women’s health concepts were important. Moreover, the students and recent alumni surveyed overwhelmingly indicated that they anticipated needing women’s health knowledge in their professional careers.
 2. There should be greater emphasis on women’s health in the MPH core curriculum through integration into core courses rather than by requiring a separate course specific to women’s health. The main themes identified for integration into core courses included sex and gender differences, health disparities, and cultural competence.
 3. The principles identified as important by women’s health faculty currently are incorporated into the core MPH curriculum to at least a moderate degree.
- Overall, about one-third of the participating faculty believed that the concepts and

principles identified as essential already received full exposure when they considered the entire array of course offerings for their MPH programs. Student survey results appear to confirm these faculty reports. The systematic review of 2003 SPH course catalogues and follow-up with each school representative identified a total of 324 women's health-related courses. Slightly less than 20 percent (60 of 324) of the total number of courses identified appeared to have a focus on women's health beyond reproductive health, maternal and child health, or nutrition. ... Not surprisingly, the elective courses were more frequently offered in the largest schools. Only two schools did not offer courses in the categories named (Health Resources and Services Administration, 2006).

Thus, while progress is being made, Schools of Public Health continue to teach women's health as mainly maternal/child health. This overlooks many important issues to women's health, especially later life issues and the appropriate conveyance of gender- and evidence-based preventive strategies.

Progress in nursing curriculums:

A study of nursing curriculums is more encouraging. The report, *Women's Health in the Baccalaureate Nursing School Curriculum: Report of a Survey and Recommendations*, found that "entry-level courses and evidence-based interventions do address women's health issues" (Health Resources and Services Administration, 2001). The report found that "virtually all schools require their students to take courses that address issues such as breast cancer; contraception and fertility management; normal and abnormal female anatomy and physiology; and sexually transmitted diseases and prevention of risk" (Health Resources and Services Administration, 2001). In addition, "four-fifths of the responding schools teach cultural competency as part of women's health communications" (Health Resources and Services Administration, 2001).

Progress in training for researchers:

In addition to training students, there is also work to be done to train researchers on sex- and gender-based differences. To this end, an online course titled *The Basic Science and the Biological Basis for Sex- and Gender-Related Differences* has recently been developed (National Institutes of Health, 2006a). It includes six sections: Understanding the Importance of Sex and Gender in Biomedical Research; Legislative Process Framework; Cell Physiology; Developmental Biology; Pharmacodynamics and Pharmacokinetics; and Clinical Applications of Genomics. The course was

developed as a collaborative effort between the Office of Research on Women's Health, Office of the Director, National Institutes of Health (NIH) and the Office of Women's Health, Food and Drug Administration (FDA). ... [It] was developed for researchers, clinicians, and members of academia to gain a basic scientific understanding of the major physiological differences between the sexes, the influences these differences have on illness and health outcomes, and the implications for policy, medical research, and health care (National Institutes of Health, 2006a).

The course itself is free, and the content for this course is in the public domain to further enhance access to this information (National Institutes of Health, 2006a).

Progress in other nations:

The United States is not the only country struggling with these issues. A recent European Union research project “evaluated all European medical curricula for the extent and integration of gender-specific teaching offered” (Rieder, 2006). The study found that

across Europe no such teaching model exists, within the scope of medical education. The lack of basic reference texts in this field has spurred the production of textbooks to underpin study, such as *Principles of Gender Medicine* and our own textbook in the German language *Gender Medizin*, which aims to investigate which gender specific similarities or differences are clinically relevant, irrelevant or known, what scientific and clinical evidence is currently available and whether this influences clinical diagnosis, therapy and outcome, and finally to identify whether practical recommendations may be made and what these are (Rieder, 2006).

Another review found similar problems in the Netherlands, although efforts are now being made to address these issues (e.g., adding the question: “What will you do when the patient is a man/woman?” to medical textbooks as appropriate) (Verdonk, Mans, & Lagro-Janssen, 2005).

Where existing caregivers need training on sex differences

Even among practicing physicians, there are substantial knowledge gaps regarding sex- and gender-based differences in medical care. Given the rapid growth in medical knowledge, it is not surprising that practicing doctors also require additional training. In this section, we briefly describe some of the treatment differences practicing physicians should be aware of, as well as some of the key sex- and gender-related differences in patient communication. Finally, we discuss the emergence of gender-specific guidelines for the treatment of various diseases.

Knowledge gaps related to sex- and gender-based treatment:

Several studies have found that physicians may lack important knowledge about sex and gender differences in medical care. For example, “the ability of clinicians to accurately diagnose many conditions in women is compromised by large gaps in the biomedical knowledge base, owing to a longstanding cultural focus on a male norm for health and disease” (Carlson, 2000). Reaching these physicians is difficult, however. Some areas where providers may need more sex- and gender-based training include:

- “Most cardiologists are unaware of race and gender disparities in treatment” (Redberg, 2005). Women also present with different symptoms than men, and providers may not be aware of these differences (Gold & Krumholz, 2006).
- Nursing home staff may need more information on the different needs of men and women with Alzheimer’s disease (Buchanan et al., 2004).
- Providers need more information on “stroke symptoms, risk factors and available therapies and interventions (acute and preventive) for women” (Bushnell et al., 2006).
- Women with diabetes “are more likely to encounter difficulties engaging in effective self-care activities than are men” (McCollum, Hansen, Lu, & Sullivan, 2005). Providers may not be aware of these differences.

Knowledge gaps related to patient gender and the discussion of symptoms:

Physicians may also require training about the differences in communication styles between male and female patients. Some research indicates that physicians may be “more likely to interpret men’s symptoms as organic and women’s as psychosocial” (Hamberg, Risberg, Johansson, & Westman, 2002). Likewise, a study of medical students found that “male patients are taken more seriously” (Hamberg et al., 2002).

Part of the explanation for this finding is that male and female patients present their symptoms differently. For example, in a linguistic analysis of chest pain, Vodopiutz, Poller et al. (2002) found:

Male patients presented themselves as interested in the cause of the chest pain, observing and describing their pain concretely, whereas female patients presented themselves as prevalently pain enduring and describing their pain diffusely. ... Male language behavior seems to match the physicians’ expectations better than the female language behavior. Clear descriptions of symptoms with exact chronological data appear to be considered more relevant, whereas female self-presentation as pain enduring combined with less concrete pain descriptions seems to make it more difficult for physicians to reconstruct pain development.

Another study on chest pain found that “women reportedly use stronger words, such as ‘terrifying,’ ‘tiring,’ and ‘intolerable,’ to describe their symptoms and appear to be exaggerating, whereas men seem more stoic and, when complaining, are believed to be sick” (Wegmann et al., 2003). In response to such findings, there has been some call for additional training for physicians on these differences:

Training in gender-specific language attitudes and preferences to obtain satisfying results when taking the clinical history might be suitable for educating physicians and healthcare professionals in general and especially those working in emergency rooms. ... When taking the clinical history of patients with chest pain, especially female patients, pain description should be supported by enhancing the patient’s ability to describe the kind and course of the symptoms. If patients play down their symptoms, the physician should encourage them to take their disease seriously. If patients describe their pain only diffusely, the physician should encourage them to a more concrete description by making them aware that in this setting, the patients rather than the physicians are experts in describing their pain (Vodopiutz et al., 2002).

Gender-specific guidelines or practices:

One way to reach physicians with relevant sex- and gender-based information is through the development and dissemination of evidence-based clinical guidelines. The creation of gender-specific guidelines is emerging as a part of a new medical emphasis on evidence-based medicine. One barrier to the creation of such guidelines is the perception that they are not needed and will not uncover anything new. For example, the landmark Women’s Health Initiative (National Institutes of Health, 2007) was critical to informing clinicians and women about the costs and benefits of hormone therapy. The study was originally perceived by some as unnecessary because it was assumed that such therapy was universally beneficial, an assumption that was

contradicted by study results. Thus, the experience of the Women's Health Initiative speaks to why such guidelines are critical to ensuring quality care.

At present there appear to be more guidelines for women's health than for gender-specific medicine. Two recent examples of gender-specific guidelines include the gender-specific practice guidelines for coronary artery bypass surgery (Society of Thoracic Surgeons (STS), 2004), and the Evidence-Based Guidelines for Cardiovascular Disease Treatment in Women (Mosca et al., 2004). Many more such guidelines are needed, however. For example:

Antipsychotic prescription guidelines do not differentiate between male and female patients, yet human studies have shown that the pharmacokinetics and the pharmacodynamics of drugs differ between the two sexes. Women's bodies, on average, contain 25% more adipose tissue than those of men, and most antipsychotic drugs are lipophilic—i.e., accumulate in lipid stores (Seeman, 2004).

Other factors

Finally, we look at what factors may matter more to women than to men (or the reverse). Several such differences have been detected as they relate to primary care. Women's preferences also appear to change somewhat over the lifespan.

Satisfaction with care:

Women appear to value different components of care than men. While both sexes place a high value on time spent with doctor,

aside from this item in common, women and men appear to find different aspects of visit content to be important to their overall satisfaction. For women, satisfaction with the doctor's ability to answer questions clearly, with how well the doctor knew what happened at other visits, and with nursing care are significant predictors of overall visit satisfaction. These items might be construed as reflecting, respectively, the technical content of communication, continuity of care, and the multidisciplinary nature (i.e., the importance of nonphysician providers) of the care process. For men, satisfaction with the personal interest shown in them and their medical problems significantly predicts overall satisfaction. This item might be construed as reflecting the affective content of communication (Weisman et al., 2000).

These effects may be more pronounced for lower-income and less-educated women, who place "an even higher value on specific aspects of primary care such as comprehensiveness of services, coordination of specialty care, and cultural similarity of provider, than did higher income and more educated women" (O'Malley & Forrest, 2002).

Women's preferences for care also may vary throughout the lifespan:

Younger women (ages 18 to 34) often reported extreme role overload (due to parenting as well as working or schooling) and therefore wanted health care providers who could see them promptly when they needed care, did not keep them waiting, provided services efficiently, and were willing to provide information or prescriptions by telephone. Older women (ages 55 and over) frequently had done considerable shopping around to find providers with whom they were comfortable, and they thought that women had to select

physicians carefully. Midlife women (ages 35 to 54) were the most vocal about the need for providers who are sensitive to women's specific health care needs and for services that are not merely replications of male-modeled care. Midlife women also were most likely to identify organizational or system issues related to health care quality, rather than focus solely on provider issues (Scholle et al., 2000).

Conclusions

The intention of this research question was to examine where interventions to improve women's health and sex- and gender-based care can be most effective. Options considered were improvements to clinical care, increases in the number of women leaders in medicine, changes to various curriculums related to medical training, and other changes such as enhanced doctor-patient communications or improved continuity of care. Unfortunately, we found that hard data to address the effectiveness of these various efforts are lacking.

We have reported elsewhere in this report that clinical care interventions to create women's health centers appear to be effective in improving women's preventive care. Likewise, there is anecdotal evidence that increasing the number of women leaders in healthcare improves care for women, and substantial evidence that male and female doctors communicate and interact with patients in different ways. While limited efforts are being made to increase the amount of gender-specific information in various curriculums, we found no data to demonstrate the effectiveness of this approach in improving overall care. Finally, we found evidence that women have different care preferences than men, but again no data to suggest whether attention to these areas will substantially improve care for women.

This is not to say that these interventions are without merit. Indeed, it appears that all or almost all of these kinds of interventions will be critical to the success of any effort to fully realize the goal of sex- and gender-based medical care. However, efforts to provide this kind of care are still, for the most part, limited in scope, and large-scale efficacy results are not yet available.

Increasingly, however, there is a demand for such work, and this is a demand that we echo. Some of the more recent calls to action include the following:

- “Gender-specific matters have increasing relevance for day-to-day practice and research findings have the potential to bring about policy changes. It is, therefore, vital that clinical research, medical education practical applications of research findings and public health take a gender-based approach. Gender-specific medicine has a major responsibility to meet societal needs and to contribute to societal values of health research” (Rieder, 2006).
- “We are urging the systematic development of evidence-based recommendations in all the subspecialties of medicine, which will provide guidelines for optimal gender-specific care to patients. We have finished developing the first of such recommendations for the diabetic patient. But as important as it will be to put these guidelines into practice, that is only half the task: we must also develop effective instruments for documenting patient outcome so that we can test whether or not such care actually improves or prolongs the sick patient's life” (Legato, 2006c).

- “The past 15 years have produced enormous advances in our understanding of the unique features of biological sex. Nevertheless, important and different tasks remain. One of these is to address the difficulties inherent in including premenopausal women in prospective, randomized trials characterizing the impact of new drugs and new interventions. A second compelling mandate is to expand our knowledge of men using the same concentration on the unique features of male biology as we have used in studying women. The inclusion of men in our scientific investigations is a natural evolution of our development of the discipline of gender-specific medicine and will yield the same rich harvest as has our work in women’s health” (Legato, 2006c).

Much of the burden of achieving the goal of gender-specific medicine will fall to physicians. To truly provide comprehensive gender-based care, physicians will need both “interdisciplinary training at an early clinical level” (Henrich et al., 2003) and the regular experience of treating both men and women “to keep up to date with ... rapidly changing information” (McNeil & Hayes, 2003). To accomplish this mission will undoubtedly require changes in clinical care; increasing parity in terms of women and minority medical leadership; better training for the entire medical community on sex- and gender-based differences; and attention to other aspects of care, such as communication and expectations that may differ in important ways between male and female patients.

Thus, to truly implement a system of gender-based care in the United States will require interventions at multiple levels. These include approaches to reach providers as well as systems-level approaches and patient education efforts.

Research Question 7: Targeting Boys and Men

7. *How can programs targeting boys and men be created to recruit and retain them in the healthcare system? Are programs such as patient advocate or patient navigator more needed or more effective for men at getting them into the system and to needed care?*

For our final research question, we consider the plight of men in the healthcare system. As has been previously noted in this report and elsewhere, a somewhat unexpected consequence of the women's health movement was that it has enabled a new and unique focus on men's health (Legato, 2006c). U.S. men's health has been described as in a "crisis" state because: 1) women live longer; 2) men have higher death rates on the top 10 causes of death; 3) men are more likely to be killed on the job; 4) women are more likely to visit a doctor; 5) addictions kill mostly men; 6) men face numerous barriers to the receipt of healthcare; and 7) men of color are worse off than white men (Community Voices, 2003).

Whether men's care is in crisis or not, this brief review certainly documents that men face a different set of needs than women in terms of access to care, use of care, and factors motivating them to receive care. In this final research question, we look at men's use of the healthcare system, barriers that interfere with men's care-seeking (including traditional masculinity), approaches to encouraging men to receive care, and example model programs for men's healthcare.

Men's use of healthcare

Men are less likely than women to use the healthcare system, and this is especially true for the use of preventive services. When men do present for healthcare, they are more likely to be experiencing critical health problems. As a result, the emergency room is a more common care site for men than for women. Men are also more affected by access barriers such as wait times, as was discussed in our response to question 2.

Men are less likely to use healthcare services:

Men do not use the healthcare system as often as women: "There is a growing body of research in the United States (U.S.) to suggest that men are less likely than women to seek help from health professionals for problems as diverse as depression, substance abuse, physical disabilities, and stressful life events" (Galdas, Cheater, & Marshall, 2005). This finding holds for comparisons between men and women at all income levels, and for comparisons within disadvantaged ethnic groups:

According to the U.S. Department of Health and Human Services, National Center for Health Statistics, among both the poor and the rich, men are more likely than women to have had no recent contact with a health care provider. In addition, African American men are less likely than African American women to visit physicians, even when income is held constant. Even when health services are provided pro bono, men use them less than women (Mansfield, Addis, & Courtenay, 2005).

American men are “underrepresented as seekers of routine care,” including making fewer annual care visits, having longer intervals between care visits, being more reluctant to seek care, and using less medicine (Alt, 2002). Access to care rates are even worse among young men: “Men ages 15-24 have lower physician visit rates than any other gender and age group and ... African American patients ages 15-24 have the lowest rates of any race-age group” (Rich & Ro, 2002).

Young men are especially unlikely to “receive reproductive health services such as counseling by a medical professional and testing for HIV or for other sexually transmitted diseases (STDs), even though they are likely to receive other health care services” (Ninger, 2000). In addition, “routine primary care clinics are ill-equipped to deal with the health issues of young men” (Rich & Ro, 2002).

How men access care:

When men do access care, it is through different channels than women. The more limited use of preventive care means that men more often receive care for critical issues. For example, a British study reported that “boys up until the age of about 16 years are taken to the family doctor by their parents but once their parents stop taking them, it is commonplace for men to avoid primary care unless they experience considerable pain or an illness has become too serious to ignore” (Banks, 2004). Thus, the emergency room is a more frequent source of care, especially for young, minority men (Rich & Ro, 2002).

Men are more reluctant than women to refer themselves to mental-health treatment. Additionally, men are more likely to receive mental-health treatment “through coercive means ... [especially] younger African American males who are often referred through social and legal systems” (Ro & Takeuchi, 2003). Disturbingly, “the police are involved in more than one-third of emergency room admissions and this police involvement has been found to correspond to higher rates of involuntary psychiatric hospitalization for men of color” (Ro & Takeuchi, 2003).

Barriers to men’s care-seeking

Numerous barriers interfere with men’s care-seeking. These include men’s perception that care is unnecessary, financial barriers, emotional barriers (e.g., fear, denial, and shame), poor communication, and racism.

Men don’t see themselves as needing care:

As noted, U.S. men are less likely to use preventive health services than women, despite their “similar levels of health insurance coverage” (Williams, 2005). A driving force behind this difference is a male desire to “project strength and to suppress vulnerability and need” (Williams, 2005). Likewise, men are taught to have high tolerance for pain, thus making it less likely they will feel justified in seeking medical care (Community Voices, 2003). For example, a Denver study of minority men found that “one-fifth of the respondents (20%) did not feel they needed to go to the doctor” (Whitley, Samuels, Wright, & Everhart, 2005).

Galdas, Cheater et al (2005) nicely summarize several other studies on why men ignore or downplay illness symptoms:

A UK study found that “men consistently ignored health symptoms and avoided seeking help from the health services.” For example, from the questionnaire men agreed that “minor illness can be fought off if you don’t give in to it” (64%); “I often ignore symptoms hoping they will go away” (52%); and “I have to be really ill before I go and see the doctor” (75%). Similar themes have been found in a qualitative semistructured interview study of 21 men who had discovered a testicular lump. The findings revealed significant delays in men between discovery (of a testicular lump) and treatment, attributed by the authors to men’s “wait and see” attitude. For the men in the study, seeking help was not an obvious solution. Akin to the findings of Sharpe and Arnold (1998), Sanden et al. (2000) noted subjects regarded physical problems initially as something that would cure themselves, like a cold, and seeking expert advice was regarded strange “for men in general”. Richardson and Rabiee (2001) reported comparable findings in a qualitative study employing a semi-structured interview schedule with small groups of young men aged 15-19 years. Based on the findings of three focus group interviews, the researchers concluded that: participants consistently equated health to physical fitness and help-seeking behaviour was dictated by “social norms”. These demanded that a problem should be both physically and sufficiently severe to justify needing help.

Economic barriers:

Economic barriers are another reason why men may not seek healthcare, especially minority men. Whitley et al. (2005) reported these findings from their study of minority men:

- “Of note, 30% of respondents aged 18–24 years cited lack of money as the reason they did not go to the doctor.”
- “Economic barriers were identified as the predominant reason African-American men do not access healthcare. Specifically, the lack of a good job, lack of health insurance, and lack of co-payments were identified. Without financial resources, the African-American men stated that they were unlikely to seek healthcare unless absolutely necessary.”
- Among Hispanic men, “time involved to access healthcare was identified as a significant barrier as it relates to lost work time and lost wages.”

An additional economic barrier is lack of transportation, as minority men are more “likely to depend upon public transportation than White men” (Ro et al., 2004).

Fear, denial, and shame:

Men may also suffer disproportionately from fear, denial, and shame related to their health, and may be especially concerned about the perception that they are seeking care unnecessarily. A study of minority men found that men “often do not seek medical care until it is too late. The main reasons cited for this procrastination were fear and denial” (Whitley et al., 2005). This was true among African American men, who said they delayed care due to fear “until the symptoms cannot be ignored and the situation is an emergency,” as well as among Hispanic men, who said shame is a “strong deterrent to seeking healthcare” (Whitley et al., 2005). Likewise, a study of black male adolescents seeking sexual health services found that “barriers included a fear of stigma and a loss of social status, shame, and embarrassment” (Lindberg, Lewis-Spruill, & Crownover, 2006). Stigma is especially a barrier to mental healthcare, “even when [men] perceive a need for help” (Ro & Takeuchi, 2003).

Men may be especially adept at blocking “the feedback loop by ignoring and denying problems”:

The masculine pattern of independence and autonomy promotes denial of any need for help and possibly causes men to ignore symptoms of minor illness, stress, grief, and pain or, at least, to suffer in silence. For example, approximately 67% of men seeking general health care but denying any problems are diagnosed as ill by their physicians (Croze & Nicholas, 1992).

Poor communication:

Because men do not use preventive services as often as women, they may be less familiar with the healthcare system and encounter greater communication barriers:

- “The lower prevalence of self-examination in men may reflect a more general deficit in health knowledge and perceived susceptibility, but it may also reflect gender biases in the attitudes and practices of health professionals. Less than 10% of men report being taught testicular self-examination compared with almost 65% of women who report receiving instruction in breast self-examination. This finding is supported by results from a survey of U.S. primary care doctors which found that while 86% routinely teach breast self-examination to women only 29% taught testicular self-examination to men” (Evans et al., 2005).
- “Men’s health is often construed [by healthcare professionals] as in the hands of women, with men being perceived as childlike, passive and ignorant about health matters. ... Men only attend when they are in a state of ill-health. Women’s greater contact with health services may facilitate higher levels of health-related knowledge” (Evans et al., 2005).

Racism/disrespect:

Racism is an access barrier for many men. For example, one study found that black men perceived racism as a concern and believed they were subject to “quality of care concerns and disparities in treatment due to economic factors” (Whitley et al., 2005). Additionally:

Health care providers are not immune to general societal and racial stereotypes of people of color in general. Providers who hold these unconscious preconceptions may interact with patients based upon preconceived notions and further alienate them. For non-English speaking men of color, the lack of appropriate interpreter staff represents a significant barrier to care. Beyond this, provider ignorance about the challenges of assimilation faced by new immigrants and misconceptions about particular cultural or religious practices may limit the value of medical advice and care (Rich & Ro, 2002).

The lack of trained interpreters is especially a problem for many minority foreign born persons, but especially the less educated and those seeking care that is more specialized.

Measuring men’s care barriers:

We found one attempt to quantify some of the access barriers men face. The Barriers to Help Seeking Scale (BHSS) is designed to evaluate “barriers to men’s help seeking” (Mansfield et al., 2005). The scale was found to have a factor structure, and differences in these factors explain much of the difference in men’s perceived barriers to help-seeking:

The Need for Control and Self-Reliance subscale reflects concerns with self-reliance and autonomy. High scores on this subscale suggest that a man believes that seeking help for the problem in question would threaten his autonomy or ability to function independently. The Minimizing Problem and Resignation subscale concerns a cluster of barriers that keep people from seeking help because they do not believe that the problem they are experiencing is serious enough. ... The Concrete Barriers and Distrust of Caregivers subscale reflects the fact that concrete barriers, such as finances, lack of insurance, lack of transportation, lack of knowledge about the sorts of help available, and lack of trust in care providers, can prevent people from seeking help. ... The Privacy subscale has to do with concerns about emotional and physical vulnerability. ... Finally, the Emotional Control subscale is defined by barriers that revolve around concerns with keeping one's emotions under control and out of public view (Mansfield et al., 2005).

The model itself has not yet been empirically tested to determine whether these identified factors do indeed reduce actual access to care (as opposed to perceived access), but it provides a useful starting point for such a study.

Masculinity and healthcare

One specific barrier to care that is worth more extended discussion is “masculinity.”

There is a mounting research literature pointing towards “traditional masculinity” and/or “masculinity beliefs” as a significant variable influencing the help-seeking behaviour and health risk appraisal of men when they become ill. Indeed, theories prevalent among international men's health discourse contend that men are not permitted to be expressive in their illness behaviour, or are “unable” because of the construction of traditional masculinity, or an effort to conform to a socially prescribed male role where weakness and need for help are not believed to be masculine. Nurses need to be aware that, as a result of this “male socialization”, men may react differently to health care services and health promotion messages, both in comparison with women and between men of differing age, social and ethnic groups (Galdas et al., 2005).

Here, we examine how masculinity might contribute to risk-taking and delayed care-seeking.

Risk-taking:

Masculinity is associated with risk-taking, which may negatively impact health: “Many men take risks with their health because risk-taking is one way men are brought up to prove their maleness to each other and themselves” (Banks, 2004). Additionally, “the social pressure to be fearless may also lead to risk-taking behaviors such as drinking and unsafe sexual exploits. ... [There is a] relationship between unhealthy behaviors and constructions of manhood” (Rich & Ro, 2002).

Delay of care-seeking:

Men may delay seeking care because care-seeking interferes with their vision of maleness:

The idea of manhood significantly influences how men access health care. Men may view seeking health care as a display of weakness or failure. Men who are acculturated not to display emotions of fear may avoid any setting in which they may have to face fearful prospects like disease or medication (Rich & Ro, 2002).

Among Hispanic men, this reluctance is related to *machismo* (Whitley et al., 2005).

Additionally, traditional masculinity may cause men to downplay pain. For example, men have been found to “normalize” chest pain from a heart attack, “leading to significant delays in seeking help for their condition” (Galdas et al., 2005). This also relates to our earlier discussion about fear and shame. Men are reluctant to appear too “worried” about their health, so they may endure pain and wait to see if it will resolve itself before seeking treatment.

Approaches to getting men in for care

Overcoming these barriers and getting men in for care remains a challenge. Our review uncovered several possible approaches to this problem. These included using women to encourage men to receive care, encouraging the development of a medical specialty for men’s preventive health (based on the model of annual well-women gynecological exams), and creating healthcare settings that are more appropriate for men.

Women as gatekeepers to men’s care:

Women are key access points to men’s healthcare (Alt, 2002). As health decision-makers (women “make nearly three-quarters of all health care decisions—whether on health care for a family member or themselves” (Ignagni, 2001)), women are strong influencers on men’s healthcare. For example, men are “were 2.7 times more likely than women to be influenced by a member of the opposite sex to visit a physician” (Norcross, Ramirez, & Palinkas, 1996). This difference may be part of the reason that men enjoy health benefits from marriage; wives positively influence husband’s care decisions (Norcross et al., 1996). This makes women a natural point of intervention to affect men’s care:

Anyone wishing to change the health behaviors of the American public in general and American men in particular, especially with respect to utilization of primary care services, would do well to target American women, first and foremost, as the most likely group to respond to such interventions with enthusiasm and interest, and to effect such changes in their families. This recommendation is consistent with those of previous studies seeking to identify members of social networks who are potentially instrumental in health promotion and disease prevention interventions that seek to change health-related behavior. In this context, it is our belief that women play a potentially critical role in encouraging men to seek primary care and other health services. ... Similarly, enlisting the support of women is seen as a potentially cost-effective means of encouraging men to utilize primary care services (Norcross et al., 1996).

A related approach is to encourage men to care for themselves because of their devotion to their families. One study found that men “cited family obligations as the primary reason for paying attention to their health” (Whitley et al., 2005). Women may be an especially effective way to reach men for care in settings where men and women receive care in the same locations, as women can schedule men’s appointments along with their own.

However, there is a risk in using women as a primary access point to reach men; it devalues men’s experiences and neglects the needs of unattached men (including many minority men), and might inadvertently reinforce an obligatory caretaker role for women, where women are

expected to put others' needs first. Thus, a case can be made that it is more important to teach men how to meet their own care needs instead of relying on women as a means to care for men.

Men's preventive health emphasis:

Another approach to improving men's care is to create a natural home for men's preventive care in the same way that gynecological care provides a natural home for such care for women. Alt (2002) argues that women's annual well-woman exams include general health topics, and that men should be similarly encouraged to have an annual well-male exam. Such an exam would have a "larger agenda as a prevention-oriented, abbreviated, comprehensive medical history and physical exam" (Alt, 2002).

One argument for a medical home for such an exam is the field of andrology: "Andrology is a discipline of basic science and clinical medicine that focuses on the normal physiology and disease states of the male reproductive system" (Ranking, 2005). As Ranking (2005) argues:

The time is certainly ripe to consider expanding andrology in the U.S. to encompass a wider range of men's health issues outside of reproductive health. Having a formal recognized sub-specialty will forward these efforts in providing a single clinical face for men's health, providing for a standardized men's health curriculum in medical schools, and a standard set of practice guidelines for health professionals. In that way, it would be clear to men seeking services where to turn for comprehensive primary care.

Creating more appropriate settings for men:

Another approach to getting men in for care is to create healthcare settings that are more appropriate for men: "Provision of health promotion that resonates with the mechanistic ways men perceive their bodies might also make a difference" (Banks, 2004). For instance, "the best-selling Haynes' Man Manual (UK, Ireland, Germany Finland), produced in the format of a car repair manual is a good example" (Banks, 2004). Other approaches include the following:

Healthcare services, especially primary care services, should be provided in a way that is consciously "male-friendly", e.g. opening hours outside working hours, male-interest magazines available in waiting areas, information displays aimed at men. Men would also be more likely to use services that are quick and convenient which should be provided by: offering more primary care services in nontraditional settings, e.g. the National Health Care walk-in clinics in the United Kingdom are already proving to be more attractive for male patients than GP surgeries; developing the potential of high street pharmacies, which are underused by men, to provide information, advice, and guidance for self-treatment specifically targeted at men; installing outreach services in places where men already meet and feel comfortable, e.g. pubs, social clubs, sports venues and, most particularly, workplaces; encouraging confidential and anonymous sources of health advice, e.g. helplines, websites, which might act as a "stepping stone" towards men's use of primary care; guiding healthcare professionals away from stereotypical notions that disadvantage men and discourage men from using services (e.g. "men are better able to cope with pain"; "men should be brave in the face of distressing news about their health"; "men bring illness and injury on themselves by their behaviour") (Banks, 2004).

A demand for such male-specific settings was noted in one recent study of adolescents (Lindberg et al., 2006). In addition to providing settings that are more appropriate for males, another approach is to go to men where they “live and gather” with “appropriate mechanisms to insure contact with health professionals when health problems (e.g., hypertension) are identified” (Viera et al., 2006).

Model programs

We found several examples of model programs for men’s health. While not as numerous as CoEs, CCOEs, or women’s health centers, these approaches are becoming more frequent. Their aim is to create an environment that is more appropriate for men’s care and more appealing to male clients. Like early women’s health centers, these efforts are more focused on creating appropriate settings for men’s care than on delivering gender-specific medicine per se.

WK Kellogg Foundation:

Several men’s health programs have been sponsored by the WK Kellogg Foundation through the Community Voices project. Among them: Grady Health System, Atlanta, project for teen boys; Baltimore City Health Department’s Men’s Health Center, offering free services to uninsured males of all ages; Boston Public Health Commission, serving young men of color and recently incarcerated men; Northwest Mississippi Regional Medical Center, offering comprehensive men’s care; Camillus House Men’s Behavioral Health Initiative Miami, providing services to minority men; and Denver Health, which launched a men’s care initiative (Community Voices, 2003).

These projects are aimed at improving men’s health status. For example, Denver Health aims “to increase access and affordability to healthcare services, to reduce health disparities, to improve seamlessness of care to men, and to influence public policy for men’s health” (Whitley et al., 2005).

New Generation Health Center:

Another effort to reach men is the New Generation Health Center, which opened a clinic for young men’s sexual health in 2000. The clinic had previously served mostly women. It used trained male peer educators as part of its efforts to reach men (Raine, Marcell, Rocca, & Harper, 2003). To prepare for this change, the clinic surveyed employees, offered male services training, and changed the atmosphere to be more suitable for males (Raine et al., 2003).

The clinic was successful in attracting patients. Sexual partners were a key avenue for males to learn about the clinic, and many young men actually came in with a partner (Raine et al., 2003). One of the clinic’s conclusions about this effort was that “‘in-reach’ efforts targeting female clients may be a cost-effective way to bring male clients to family planning clinics” (Raine et al., 2003). This finding highlights the potential of women to encourage men to access care services.

Nuestros Hombres:

A final example of a men’s health clinic targets Hispanics:

Nuestros Hombres, launched in February 2001, is a collaborative project led by Texas-based Bienestar Familiar and the Cancer and Chronic Disease Consortium. The project’s

aim is to increase health education, disease prevention, and access to basic health services for Hispanic men. Health education goals are accomplished through bilingual public service announcements, newsletters, and a pool of volunteers sharing their health care experiences. *Promotoras*, bilingual health education and community outreach workers, also contribute to education efforts. ... *Nuestros Hombres* emerged out of a need to address health concerns of Hispanic men, a group that experiences the lowest rates of health insurance and regular access to primary care of any major ethnic-gender grouping in the U.S. The project works to change the attitude that Hispanic males should just “take it like a man” when it comes to tackling health issues. *Nuestros Hombres* is committed to providing non-threatening environments where Hispanic men can talk openly about issues affecting them and their families. It is the hope of *Nuestros Hombres* that changes in the health decisions and attitudes of Hispanic men will teach Hispanic boys to have a higher regard for health issues and, ultimately, make health a priority (Rich & Ro, 2002).

Conclusions

The focus of this research question was determining how men can be recruited and retained in the healthcare system, including whether men have special needs in terms of access to care that must be addressed. From this review, it does appear that men face additional barriers to care, perhaps the most important of which is a generalized male reluctance to seek preventive or routine care. This reluctance puts men at risk because it means that they are more likely to delay care until their need for it is critical, by which time multiple opportunities for prevention and early intervention may have already been missed.

This assessment is mostly based on anecdotal evidence, however, as we did not uncover any studies that systematically identified access patterns for men and women and where they differ. The most comprehensive review on this topic we found suggested that while

many studies note the relative under use of health services and symptom reporting by men in comparison with women, conversely, many also find an increase in help seeking in men compared with women, or indeed, no significant difference in help-seeking behaviour between genders. The evidence suggests that occupational and socioeconomic status, among others, as more important variables than gender alone. Such inconsistency in the research literature is unsurprising given the widespread differences in study design and samples investigated (Galdas et al., 2005).

We found several examples of programs to encourage men to receive more preventive care, and several of these examples use approaches we identified as having potential. These include creating settings that are more appropriate for male patients and utilizing women as an avenue to reach men. We also uncovered a promising model, the Barriers to Help Seeking Scale, which detailed a potential five-factor solution to potential barriers to access for men. This model, however, remains to be empirically tested.

In short, while there are suggestions that certain approaches may be more appropriate for men than for women, there is a shortage of evidence to definitively answer this question:

The dearth of studies integrating masculinity and men’s perceptions into the investigation of help-seeking behaviour represents a significant gap in the literature. To date, no research has explicitly investigated whether men’s perceptions of masculinity influence

their decision-making processes with regard to seeking help when they experience ill health. In sum, there is little empirical evidence supporting effective interventions to tackle male reluctance to seek help (Galdas et al., 2005).

Thus, there is still a great deal of research which needs to be conducted on men's unique healthcare needs. As we will discuss next, such needs may best be addressed in the context of gender-specific medicine.

Conclusions and Recommendations

In this final portion of the report, we present our conclusions and recommendations. To begin, however, we present a brief summary of our main findings:

- Biology and physiology are primary sources of medical differences between men and women. In addition, the fact of being male or female leads to different socialization, expectations, and lifestyles; thus, gender also influences health.
- Because women have fewer resources in terms of time, money, and insurance coverage in their own names, they face unique access barriers to the healthcare system compared with men. However, women are more likely to seek preventive care than men, perhaps because they have been socialized to seek care before a health crisis occurs.
- Women appear to receive worse quality care than men do. This appears to be especially true for acute conditions. However, women, as more frequent users of preventive care, may actually receive better preventive care than men.
- Despite significant gains in recent decades, women remain relatively understudied as medical research subjects. As a result, medical treatments may not be as appropriate for women as they are for men, and women are more subject to adverse drug reactions than are men.
- There are a variety of approaches being implemented to engage and retain the underserved in systems of healthcare. Data are lacking, however, on the cost-effectiveness of such programs, and on whether there are gender-differences in the effectiveness of these programs.
- Systems-level changes to the U.S. healthcare system likely would result in substantial improvements to quality of care, as well as a reduction in disparities and potentially a reduction in overall costs; implementing gender-based approaches to care seems to require systems-level changes. Other large efforts within the healthcare system (e.g., the effort to create patient-centered care) may be good models or natural allies for such efforts to promote gender-based care.
- Women are financially disadvantaged compared with men and also have greater family responsibilities. This makes healthcare costs, including out-of-pocket costs, a greater burden for women than for men.
- There are very few currently existing gender-based approaches to medicine. There are a substantial number of programs that are designed to serve women, and a smaller (yet growing) number of programs designed to serve men.
- Gender-based healthcare practices—i.e., medical care that effectively addresses differences in men’s and women’s healthcare needs—are still in their infancy. As such, almost no data exist on the overall effectiveness of such approaches. There also are substantial data collection problems in studying the effectiveness of gender-based care, as there is no historical precedent to collect such data.
- The women’s health movement is beginning to produce results concerning effectiveness, and these are quite promising. Women who attend women’s clinics rate their overall satisfaction as quite high. In addition, studies are showing that these women are receiving better-quality care, especially better preventive care on traditional women’s issues. CoEs

clearly are leaders in this kind of woman-specific care, and the CoE model, as a women's healthcare model, has been successful.

- There is anecdotal evidence that increasing the number of women leaders in healthcare improves care for women, and substantial evidence that male and female doctors communicate and interact with patients in different ways.
- Men face some barriers to care that are less common among women, perhaps the most important of which is a general male reluctance to seek preventive or routine care.
- There are several examples of programs that encourage men to receive more preventive care, and many of these use approaches such as creating settings that are more appropriate for male patients and utilizing women as an avenue to reach men (although we note several drawbacks of relying on women as a means to reach men).

In consideration of these main findings, we offer the following conclusions and recommendations.

CoEs have been successful.

We begin by noting that the CoE model implemented by OWH more than a decade ago has been successful. As we have shown in this report, CoEs have helped to raise the profile of women's health issues and have helped to establish this discipline. Women attending CoEs are receiving high-quality care, and the CoEs themselves have been remarkably successful at leveraging funds to build and support this model.

To build on this success, it is time for OWH to move to incorporate a broader sex- and gender-based approach to care that will include men as well as women. In doing this, we do not believe OWH should neglect or abandon the existing CoE or CCOE sites, which, although they have been successful, are unlikely to continue without ongoing Federal leadership and funding. Because of historical and persistent deficits in women's care, it appears that specific interventions for women are still needed.

Although additional research is warranted, studies to date suggest that the CoEs and CCOEs are an excellent base from which OWH can build as it moves toward new models of care. We are not suggesting that such a process should be noncompetitive; rather, that instead of starting anew, OWH might consider a process to competitively leverage existing resources at current or former sites to create new models of care. In addition to using this existing resource base, new sites also could be funded as necessary or appropriate.

Neither men nor women are receiving optimal care from the U.S. healthcare system, with both genders experiencing significant and well-documented disadvantages in healthcare.

While there may sometimes appear to be a tension between the fields of men's and women's health, this is not the case. The U.S. healthcare system does not do an adequate job meeting the needs of either sex, and steps need to be taken to ensure that both sexes receive appropriate care. Both of these fields have undertaken the important job of elevating the needs of each sex. Fortunately, this does not need to be a zero-sum game with men and women competing for optimal care. Instead, improvements in care can benefit both genders.

In the case of women's health, this field continues to draw needed attention to the historical deficit of research on women's health needs. While these deficits are shrinking, women remain understudied. Women also face unique healthcare needs related to their lower income, additional caretaking responsibilities, and role overload. At the same time, the field of men's health has highlighted men's greater reluctance to seek care, especially preventive care, and additional risk factors faced by men (e.g., as derived from their greater propensity to take risks).

Both men and women would benefit from a move toward a gender-based system of care in the United States.

The findings from both women's and men's health studies have shown that both genders would benefit from a gender-based approach to medicine. While the two sexes have much in common, there are enough medical differences between men and women (e.g., regarding how and when diseases occur, optimal treatment approaches, responses to care, and socialization related to seeking health treatment and interacting with doctors), that medical treatment cannot be gender-neutral.

Any gender-based approach to care must continue to have a research emphasis on the needs of women to correct for past deficiencies. Our findings suggest additional benefits of supporting systematic studies of such gender differences, as many findings will have applications to both sexes. Gender-based approaches should consider a broad set of issues related to access to care and quality of care, including factors such as insurance coverage, willingness to seek care, doctor-patient interactions, and optimal medical procedures.

For optimal gains, the movement to gender-based care should be coordinated with efforts underway to reduce racial/ethnic and socioeconomic disparities in care, and those to provide culturally appropriate, patient-centered care. Because the goal of all these efforts is to improve the quality of care to all patients and to reduce disparities in care, coordination of efforts in data collection, setting and evaluation of standards of care, and interventions to improve care and care outcomes will facilitate more rapid gains and make it easier for health plans, clinics, and providers to implement change.

Despite the promise of a gender-based approach, significant research gaps remain.

Even as researchers are increasingly calling for the consideration of gender as an important variable in all health research, the influence of sex and gender on healthcare remains substantially understudied. In our review, we found that many basic issues related to the influence of sex and gender are under-explored. As a result, their influence on men's and women's health and healthcare are unknown at this point.

Thus, we recognize that there is still a considerable need for primary research in this area, even though research to date is promising enough to inform the implementation of some clinical interventions and the development of others. Moreover the CoEs offer excellent opportunities for evaluation work to assess the effectiveness of new and established efforts to improve women's healthcare and outcomes.

All health trends need to be considered from a gender perspective.

In addition to a gender-based approach to medical research and practice, many of the generic trends in healthcare also need to be considered from a gender-based approach. For example, the movement toward consumer-driven healthcare places additional burdens on patients that are not being considered from a gender-perspective. This perspective needs to be kept in mind, however, as there may well be important differences between men and women in how they respond and react to these trends.

Another example is the trend toward increased use of technology in healthcare. This includes personal/portable health records, personal Web portals within healthcare Web sites, and the use of technology to send reminders to improve care. For all of these issues, there may be gender-based differences in access to, comfort with, and use of this technology, and these issues are not currently being considered from a gender perspective.

This type of thinking about possible gender-differences needs to be incorporated throughout the healthcare system to broaden and fully realize the IOM's goal of making sex and gender "a basic human variable" to be considered in all aspects of healthcare (Institute of Medicine, 2001).

Progress toward this goal will require new and continued efforts on multiple fronts.

Multiple areas for effective movement have been identified. Optimal gains can be achieved by pursuing multiple areas to advance and encourage the development and application of gender-based care:

- Scientific evidence is the foundation of gender-based care, and significant knowledge gaps in how men and women access treatment and respond to care will continue to need to be studied.
- Data collection and reporting at all levels of medicine need to include gender as a reporting variable to facilitate sex- and gender-based data analysis.
- Directing educational efforts toward both new and currently practicing healthcare professionals will facilitate more rapid dissemination of findings and advances in gender-based models of care. More diverse medical leadership will help to facilitate this progress.
- Encouraging systems-level changes in the U.S. healthcare system will facilitate the realization of gender-based care and also improve overall care and reduce inefficiencies. A systems approach with a focus on structural changes will make it easier for all people to access routine healthcare.
- A public health education component—so that all people know what kind of care they need, how to access care, and how to get medical advice—is an important part of this effort, as is framing preventive care as neutral and necessary for all people.

Leadership areas for OWH

The gender-based medicine objective fits within a larger effort aimed at creating evidence-based medical care and one aimed at delivering patient-centered care. However, gender differences in healthcare needs extend beyond a simple disparities model. Unlike racial/ethnic and socioeconomic disparities in care, gender differences in healthcare needs, and in quality of care, are related to both social and biological factors that affect men's and women's health, healthcare utilization, and outcomes of care. Therefore, achieving optimal gender-based care will require a multiple-facet effort, and would benefit from working with the many stakeholders pursuing related interests. Possible stakeholders include patients (including subcategories by gender or insurance type or status), clinicians, clinics, healthcare plans, scientists, funders, and others working on issues related to health promotion.

In light of this context, and informed by our systematic review of the literature, we make the following recommendations to OWH to continue in its leadership role:

- The research to date suggests that gender-based medicine is proven enough to warrant a targeted clinical boost. Our recommendation is that OWH consider working with existing CoEs and CCOEs to create a new model of care at these sites that is gender-based for both men and women. Such an approach will maximize resources by building on existing models. Initially, we do not believe such an effort should be overly prescriptive to allow for maximum creativity and innovation in implementing new approaches.
- Another important need that OWH can help to address is that for additional data on the clinical effectiveness and implementation of gender-based medicine. In concert with other Federal agencies working on these issues, OWH should help to establish reporting guidelines and systems that aid in the collection of data. At minimum, OWH should work with others in the healthcare field to emphasize the importance of considering sex as a key variable in all research studies (both in the medical and social sciences), and for data on sex to be broadly collected and available for analysis. Grantees could be encouraged to report on possible sex differences, where appropriate. In addition, OWH could take a leadership role in encouraging other agencies to work with their grantees to report on possible sex or gender differences.
- To advance gender-based models of care, OWH could partner with other Federal agencies to fund and develop instruments and efficacy studies that would document whether new guidelines improve care as anticipated.
- OWH could use its influence to highlight and publicize all aspects of healthcare where gender might be an important variable to be considered. This includes not only research, practice, and data collection, but also larger trends within the healthcare sector that may differentially impact the sexes.
- Quality-of-care improvements will only benefit the segments of the population that access care. Additional efforts would be required to bring the most disadvantaged segments of the population into the healthcare system. The patient-navigator approach appears to be promising in this regard, and significant efforts to study patient-navigators already have been undertaken by other agencies. We recommend that OWH work with these agencies to encourage the study of sex and gender differences in the application of these programs.

- Other nations are engaged in similar efforts to improve gender-based care, and OWH can and should learn from these efforts to the extent possible. Additionally, there may be international cost-savings opportunities to pool data (e.g., related to the effectiveness of gender-based approaches). Moreover, helping to sponsor or host an international conference on gender-based care could bring together key stakeholders and add attention and legitimacy to this work.
- Likewise, it might also be desirable for OWH to bring together various stakeholders promoting gender-based care. Such stakeholders have made substantial investments in promoting such care; coordination of their efforts at intervention and dissemination could facilitate change by bringing additional resources and experience to the table.
- Finally, we recommend continued efforts to educate health professionals and the public about critical sex- and gender-based differences in care. CoE and CCOE sites could be excellent intervention sites to educate practicing health professionals on best practices related to integrated, gender-based medicine. Successful models of how to educate practicing doctors will be critical to ensuring that the findings from this movement toward gender-based medicine benefit the entire population and not just patients who attend a specifically “gender-based” clinic. Ideally, research and practice in all areas of medicine would be evaluated to determine if gender-based care is needed to achieve optimal quality of care and outcomes for both men and women.

Limitations:

Like all studies, ours has limitations, and we briefly discuss them here. First, while we have made substantial efforts to be comprehensive in our searching, it is possible that we have overlooked significant efforts to advance gender-based medicine, and that such work is progressing at a more advanced level in a healthcare setting somewhere. While this is certainly possible (especially on a smaller scale), it is unlikely that significant efforts on a larger scale are ongoing. Not only does the pattern of our findings suggest that this is an emerging trend, but our personal conversations with some of the leaders in this field support this viewpoint (Legato, 2006b). Thus, we remain confident that the study of gender-based medicine, while promising, is still emerging.

Likewise, it is possible that we have failed to uncover significant efforts in terms of either women’s or men’s healthcare. This is much more likely, and in fact is almost inevitable. Whether the inclusion of any such possible oversights would have changed our conclusions is, of course, an open question. However, the relative consistency of the results we found, especially as regards to the current model of women’s healthcare most often found around the world (i.e., a woman-only clinic focused primarily on gynecological care), suggests to us that any such omissions likely would not have impacted our conclusions in a significant way.

Finally, it is possible that we have overlooked significant healthcare trends that will meaningfully impact gender-based care. Again, despite our efforts to be comprehensive both in our search process and in including numerous reviewers, it remains probable that some materials have been overlooked. This is both because of the extensiveness of the healthcare field and the relevance of gender-related questions to almost all aspects of healthcare. In some ways, however,

this limitation is illustrative of one of our main conclusions: To be most effective, gender-based care will need to take a broad approach to be well-integrated in all aspects of healthcare.

Thus, despite these limitations, we believe this review provides a sufficient evidence base for OWH to move forward with efforts to create gender-based systems and models of healthcare.

In conclusion, based on our review of the literature, we are calling for additional evidence-based approaches to medicine, including an effort to look at whether and how care should differ for men and women. OWH is well-positioned to take a leadership role in this area.

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