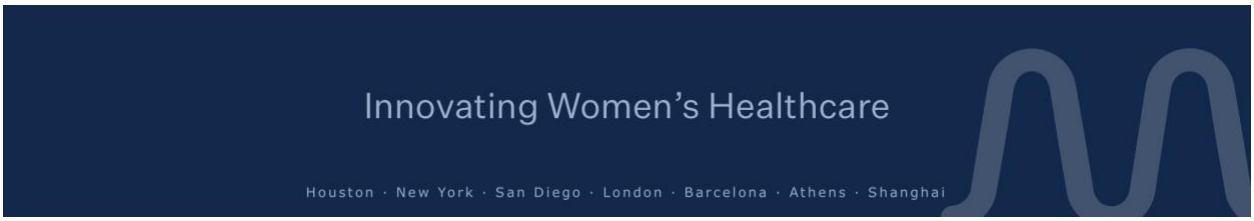

Challenges for Women in Healthcare

White Paper

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Summary

Rising health care costs and quality of care concerns require a re-evaluation of various aspects of health care delivery, especially for women. Often multiple challenges and disparities exist for women:

- Healthcare costs for women across various conditions are often higher than for men, leading to risks of economic burden.
- Women often lack access to quality care and often lack the ability to choose which care is best for them.
- COVID-19 has also presented certain challenges regarding timely care.
- Women suffer from systemic gender bias in today's healthcare system, which results in inaccurate and untimely diagnoses.
- Women experienced higher rates of mental health issues and deal with the stigma associated with finding care
- Women also have healthcare needs that are specific only to women or have conditions that affect women more than men.

One significant result of these differences is the variation of health care utilization between genders and the resulting costs.

Economic Burden of Disease in Women

To properly manage healthcare costs for women, employers and payers need to understand how women populations contribute to spending and where suboptimal quality of care drives trends. Women tend to use significantly more services and spend more healthcare dollars than men.[1]

- Per person spending for women is estimated to be between 21 to 32 percent more than men.[2,3]
- The direct costs of cardiovascular disease, which affects 43 million U.S. women, are estimated to be $162 billion a year.[4]
- Women have other costly diseases as well:
    - Diabetes is estimated to cost over $58 billion
    - Depression is estimated to cost over $20 billion
    - Osteoporosis, which affects 8 million women, has a total cost of $14 billion
    - Breast cancer has a cost of $9.1 billion

The above costs are for women of all ages, but disease prevalence and costs differ between younger and older women.

The most common medical conditions among younger women (18–39 yrs.) include mental health disorders, asthma, and Chronic Obstructive Pulmonary Disease (COPD), bronchitis and upper respiratory infections (URI), and normal pregnancy and deliveries.[5] Approximately 38.7 percent of younger women receive health care services for at least one of above conditions, which accounts for 33.7 percent of this group's total medical expenditure. The largest proportion of expenditures related to inpatient care was for pregnancy and deliveries (70.3 percent). For ambulatory care, bronchitis and URI were the major spend area (71.4 percent) with the remainder split between emergency department visits and pharmacy medicines. As women age, incidence and costs shift to other diseases and health concerns. The greatest disparity in healthcare costs between men and women can be found in an older population, specifically middle-aged women (45 to 64 years of age). At this point, acute disease is replaced with chronic conditions and menopausal symptoms. With the onset of menopause, changes in risk can be appreciated for breast cancer, osteoporosis, and cardiovascular disease (CVD). Evidence suggests that there are broad gaps in the quality of care received by postmenopausal women. After the age of 45, most women either do not receive any information about menopause from their physicians or they are unsatisfied with the menopause counseling that they do receive. Considering the incidence of chronic illness and costs attributed to these conditions in addition to menopausal symptoms, these gaps need to be addressed. In addition to gaps in quality of care, women often lack access to the care of their choice.

Lack of Access and Choice

Women in many areas of the country lack access and choice in healthcare in their communities. Nearly 65 million Americans live in medical provider deserts, which means there is one primary care provider for every 3,000 or more people in any given area.[6] Nearly 27 million women reported not having a primary care provider in 2020.[7] In communities where it's possible to access a health provider, there may be limited choices with regard to preferences based on gender, religion, culture, etc. Nineteen percent of women veterans have delayed healthcare or unmet needs, with that rate jumping to 36% among women veterans 18-34 years old.[8] Women veterans grossly underutilize the Veterans Health Administration (VA) which is a compounding problem above and beyond regular barriers to access care.

In some areas, there is often little anonymity, so barriers to healthcare access include social stigmas and privacy concerns. Woman may face barriers to discussing and obtaining contraception or testing for sexually transmitted infections (STI) by providers whom they may know socially which can reduce their access to the quality care to meet essential needs.[9] Even with good access, other factors prevent women from getting healthcare in a timely fashion.

Delays in Care

Women are statistically more likely to delay healthcare than are men; the COVID-19 pandemic has exacerbated this fact. Caregiving responsibilities have fallen on women in even larger numbers during the pandemic. Two out of every three caregivers in the United States are women and women who are caregivers have a greater risk for poor physical and mental health.[10] During the pandemic, women have been more likely to delay or go without healthcare than men. In addition, women who had health and economic challenges before the pandemic have only experienced worsening health conditions. It is likely these gaps will translate into higher rates of women experiencing severe health issues as time goes on, incurring greater cost.[11] Even if women don't delay care, they often deal with untimely and inaccurate diagnoses because of an inherent systemic gender bias in today's healthcare system.

Systemic Gender Bias and Misdiagnosis of Conditions

Delayed or missed diagnoses are common for women across many health conditions. Women present with different symptoms than men for many health conditions and the lack of women specific clinical research contributes to women receiving delayed or missed diagnoses.[12] Prior to 1993, women were not included in clinical outcomes studies, so medical models and algorithms have been historically male-centric in design. In 1993, Congress wrote the NIH inclusion policy into Federal law through a section in the NIH Revitalization Act of 1993 (Public Law 103-43) titled Women and Minorities as Subjects in Clinical Research.[13] As a result, women's clinical outcomes research is behind and this affects current approaches to healthcare that would otherwise lead to timely and accurate diagnoses. Artificial Intelligence (AI) and computer algorithms that assist with diagnoses were built on male clinical data resulting in clinical decision support tools being less accurate for women. For example: Endometriosis is prevalent in 1 out of every 10 women of reproductive age, but it takes an average of 6 to 10 years for an accurate diagnosis, after initial symptoms appear.[14] On average, women consult 3 or 4 different physicians before receiving a diagnosis of endometriosis, but some consult up to 10 physicians.[15] This delay in clinical outcomes research has had an effect on understanding women specific conditions.

There are other medical conditions that are commonly delayed or missed diagnosed for women. Women have a 50% higher chance of getting an incorrect initial diagnosis, after having a heart attack.[12] Women are about 30% more likely than men to have symptoms of a stroke misdiagnosed and be erroneously sent home from the hospital. Even if they are diagnosed, women are less likely to receive the appropriate treatment than men. Many autoimmune diseases are more common in women. Women make up 90% of all Lupus diagnoses in the U.S.[16] It takes a person with an autoimmune disease an average of 4.6 years and five doctors before getting a correct diagnosis. Women's pain is taken less seriously than men, regardless of cause. A report found that women are not only less likely to receive aggressive treatment when diagnosed with pain, but they're also more likely to have their pain dismissed as "emotional" or "not real."[17] Pain has an important mental health component that is often misunderstood or not addressed. Other mental health concerns affect women disproportionately.

Mental Health and Stigma

In addition to delaying care because of the pandemic, over 51% of women say that worry and stress related to the pandemic has affected their mental health. The reluctance of patients seeking treatment for mental health disproportionately affects women, in part, because women are more likely to suffer more from common mental health conditions than do men. Premenstrual syndrome (PMS) is common and is a result of hormonal fluctuations but can be greatly intensified when it becomes premenstrual dysmorphic disorder (PMDD), which can lead to women being twice as likely to be diagnosed with depression and anxiety.[18]

There is still stigma about receiving mental health services but more so in rural areas. Availability of behavioral healthcare is a challenge as 66% of all Mental Health Care Health Professional Shortage Areas are in rural or partially rural areas.[19] In 2017, nearly 47 million U.S. adults were treated for a mental illness, nearly 20% of the adult population, but the percentage of women being treated for mental illness was almost 50% greater than men.[19] Due to the lack of mental health providers in rural communities, the use of telehealth to deliver mental health services is on the rise but could be utilized more to fill these gaps.

Mental health for women service members is also a concern. Women service members were diagnosed with anxiety at a rate of 1.4 times greater than male counterparts, and women were 1.9 times more likely than men to be diagnosed with depression.[20] Women are more likely to experience post-traumatic stress disorder (PTSD), and they wait much longer than men after symptoms arise to seek diagnosis and treatment. Sexual violence is the primary source of PTSD worldwide and women wait an average of four years after the onset of PTSD symptoms before asking for help and women have a higher rate of developing PTSD after a traumatic event.[21] Men seek assistance on average, only one year after PTSD symptoms arise.[22] Aside from mental health, many other health conditions affect women much more than men.

Conditions Affecting Women Differently

Cardiovascular disease (CVD) is the leading cause of death in women, accounting for one in every four deaths, a rate higher than men.[18,23] Women often have a higher incidence of angina (chest pain), have more inconclusive findings on imaging, and often have symptoms incorrectly attributed to non-cardiovascular disease conditions. Women often have a poorer prognosis when compared to men. Symptoms of acute coronary syndrome (ACS) differ from men leading to delays and misdiagnosis. Women with ACS are treated less aggressively with catheter-based interventions resulting in unfavorable clinical outcomes with higher mortality and decreased quality of life. Younger women with acute myocardial infarction (MI) are understudied and have greater risk of morbidity and mortality when compared to younger men with acute MI. Women with a diagnosis of heart failure (HF) exhibit a worse quality of life and often experience depression more than men. Despite updated guidelines, men are a third more likely to be enrolled in cardiac rehabilitation programs than women. Overall female specific risk factors contribute to CVD differently than men and they are not well understood. Pre-term delivery (PTD), hypertensive pregnancy disorders, gestational diabetes myelitis (DM), and menopausal transition are all women specific conditions that greatly lead to increased risk for CVD later in life and if properly identified during reproductive life, strategies could be used to improve the primary prevention of CVD.

Auto-immune diseases present in women at a rate of greater than two to one when compared to men.[24] One major auto-immune disease affecting women more is systemic lupus erythematosus (SLE). Prevalence for SLE is often difficult to estimate because of small study populations in addition to poor case definitions and varying study methods.[25] However, a large meta-analysis reports prevalence around 73 per 100,000 for both genders.[26] In women, rates vary from 164 per 100,000 in white women up to 406 per 100,000 in African American women and other women of color. This represents a significant disparity in how certain diseases affect women differently.

Women are twice as likely as men to have asthma, which is attributed to gender and hormonal differences.[27] Interestingly, prior to puberty, boys actually have a 1.5 times higher rate than girls but this trend reverses after puberty.[28] This holds true until women reach menopause at which time asthma rates begin to decline. This appears to be a factor attributed to the roll of testosterone in mechanisms that control airway inflammation.

Urinary tract infections (UTI) are the most common type of bacterial infection in women. Women are 30 times more likely to develop a UTI than men.[29, 30] One in three women will have at least one UTI by the age of 24 years.[31] Nearly

50 percent of women will experience at least one UTI during their lifetime. Usually for most non-pregnant women, UTI's are considered benign. However, in pregnant women, UTI elevates the risk of pyelonephritis (infection of the kidney), increases the risk of premature delivery, and increases fetal mortality.

There are differences between men and women regarding bone density. Women tend to have an earlier onset of bone loss and lose bone and bone density at a faster rate and both are correlated with lifestyle choices like smoking and age related weight loss.[32] Estrogen deficiency plays a significant role in the development of osteoporosis for both genders but this becomes more significant for women in earlier menopausal ages when compared to men. The average age of onset for osteopenia (bone loss) for women rapidly increases at the age of 60 which greatly contributes to the risk of osteoporosis, tripling by the age of 70 years old.

Sexually transmitted infections (STI) can cause long-term health problems, particularly in women. Some of the health complications that arise from STI's include pelvic inflammatory disease, infertility, tubal or ectopic pregnancy, cervical cancer, and perinatal or congenital infections.[33] One STI that is very concerning is the human papillomavirus (HPV), which is the leading cause of more than 95% of cervical cancer.[34] Cervical cancer is the fourth most common type of cancer globally. There are viable treatments for STI's with vaccines, topical microbicides, and other antibiotics and antifungal drugs. What is important is the early and rapid diagnosis of STI's, as this improves outcomes and can curb long term complications.

The current opioid epidemic has significant effects on women. Although more men die from opioid overdoses, women's death from overdose has increased 260%, while non-death overdoses has increased 642% since 1999.[35] Women are more likely to have chronic pain, be prescribed opioid pain medication, and use prescription opioids for longer time periods than men.[10] There are differences between men and women when considering the characteristics of addiction and women need different strategies for treatment that can affect secondary outcomes. Women often have co-occurring mental health disorders that complicate effective treatments. Anxiety disorders, depression disorders, and PTSD lead to heightened distress intolerance or the perceived inability to cope with distressing emotional symptoms. In addition to conditions that affect women disproportionately, women also have specific health conditions that exclusively affect them alone.

Conditions Exclusively Affecting Women

Breast cancer is the most common cancer among women after skin cancer.[36] It accounts for 30 percent of all new female cancer diagnoses each year. The overall risk of a woman developing breast cancer at some point in life is 13 percent and is heavily dependent on genetics and family history. Breast cancer is most likely to occur in middle-aged and older women, with a median age of diagnosis at 62 years of age. Breast cancer is the second leading cause of death from cancer in women after lung cancer. Recent trends demonstrate a slight increase in incidence (.5%) but deaths from breast cancer have remained steady in women under the age of 50. In women over 50, deaths have declined by 1% because of increased early screening, awareness, and better treatments and therapies. However, regular screening for breast cancer could be improved. Only 66.7 percent of women over the age of 40 have had mammography within the past 2 years.[37] Women should get regular breast cancer screening and mammography to improve early detection and improve outcomes.

Gynecologic cancer is any cancer that starts in a woman's reproductive organs. There are five main types of gynecologic cancer to include cervical, ovarian, uterine, vaginal, and vulvar cancers. Although often grouped together, each gynecologic cancer has distinct risk factors, signs and symptoms, prognosis, and disease burden.[38] Patient survival rates vary by cancer type and are dependent on the stage at which cancer is diagnosed. Gynecologic cancers account for 12 percent of all new cancer diagnoses in women. Ovarian cancer rates are highest in women 55 to 64 years old, while cervical cancer affects mostly younger women between 35 and 44 years of age.[39]

Multiple studies suggest disparities exist in the quality of care in the diagnosis and treatment of gynecological cancer, attributed to race and socioeconomic status. Cervical cancer is the only gynecologic cancer that can be prevented through regular screening (pap smears). Although regular screening intervals are important for early detection of gynecologic cancers, there is one protective measure against a variety of gynecologic cancers, the human papillomavirus (HPV) vaccine. In recent years the incidence of cervical cancer has decreased over 50% because of the HPV vaccine and regular gynecologic cancer screening.

Menopause, or menopausal transition, usually occurs in women between the ages of 45 and 55 and lasts on average 7 years.[40] It is not a disease or disorder but a condition that all women experience at some point and is a result of the body’s changes in the production of estrogen and progesterone. The duration can depend on many factors including lifestyle and surgical procedures like hysterectomy or oophorectomy (removal of the ovaries). Menopause can

affect other areas of women's health and wellness. Risks increase for developing heart disease, osteoporosis, and urinary issues as a result of prolapse (urinary bladder falling out of position).[41] During menopause, the vaginal microbiome (the community of microorganisms found in the lining of the vagina) is predisposed to imbalances that can lead to bacterial vaginosis (BV), UTI's, yeast infections, and other issues that come up later in life.[42] Testing of the vaginal microbiome is a key component of diagnosing some of these conditions. Hormone replacement therapy (HRT) used to be a routine treatment for the general symptoms of menopause but is no longer the standard of care for all women. Individualized treatment plans based on age and symptoms are recommended.

Pregnancy, although usually successful without incident, are not all benign. There are approximately 6 million pregnancies each year in the United States.[41] Of these, roughly 8 percent involve complications that if left untreated can harm the mother and the baby.[42] Although the overall birth rate and number of pregnancies have been declining since the late 1990's, the rate of severe complications continues to increase disproportionately.[43]

Many complications relate to health problems that exist prior to pregnancy but others occur unexpectedly and studies show that two thirds of these complications can be preventable. Women may experience many conditions or problems during pregnancy. Some complications include anemia (low count of red blood cells), UTI's, mental health conditions like depression, hypertension, diabetes, obesity and weight gain, infections, STI's, and hyperemesis gravidarum (extreme morning sickness).[41,42] Many complications can lead to preterm birth. In 2020, 1 of every 10 infants born in the U.S. was born too early. There are significant racial and ethnic differences in the incidence of preterm birth. When babies are born too early, significantly higher rates of death and disability occur, leading to breathing problems, feeding difficulties, cerebral palsy, developmental delay, and vision and hearing problems.[44] Studies of preterm labor and the vaginal microbiome have resulted in key findings that demonstrate that the vaginal microbiome is a key mediator of reproductive tract health and pathophysiology and prevention of bacterial vaginosis.[45,46] The dominance of Lactobacillus is highly related to good reproductive health and an excess of other microbiota have been linked to infections, miscarriages, and preterm labor. Testing the vaginal microbiome can help prevent preterm labor by balancing irregular microbiota.

The most severe complications, referred to as severe maternal morbidity (SMM) affect more than 50,000 women in the US each year and are on the rise.[47] This increase is attributed to a combination of factors but generally are a result of increases in maternal age, pre-existing chronic conditions, obesity, and cesarean deliveries. The consequences of SMM include higher utilization of health services, higher direct medical costs, extended inpatient hospitalizations and long-term rehabilitation. Identifying points of favorable

diagnostics and interventions can provide an opportunity to improve quality outcomes for pregnancy and maternal care.

An imbalance in the vaginal microbiome results in increased risks of BV. One in three women between the ages of 14-49 in the U.S. will get BV each year. The onset of BV can have severe outcomes, such as pelvic inflammatory disease, endometritis, and increased risk for and transmission of genital infections.[46] BV affects 10-15 percent of women of reproductive age and is associated with pregnancy complications, including pelvic inflammatory disease, premature rupture of membranes, intrauterine growth restriction, intrauterine fetal demise, chorioamnionitis (infection in amneiotic fluid), endometritis (inflammaton in the lining of the uterus), preterm labor, postpartum infection, ectopic pregnancy and tubal factor infertility.[48] BV complications in pregnant women in the U.S. amount to approximately $1 billion annually.[46] The imbalances that are associated with BV are detectable and vaginal microbiome testing can identify microbial patterns associated with BV to improve women's health before pregnancy, reduce preterm labor and improve outcomes during menopause.

FemTec's Solutions for Women's Healthcare Challenges

Femtec's suite of products and programs specifically target the challenges women face in today's healthcare environment. On demand Telehealth services will improve access to convenient, quality care. This will empower women with choice, giving way to timely, 'women focused' care on an individual basis. Femtec provides direct access to qualified mental health providers and therapies without the stigma often associated with mental health. Femtec is addressing healthcare needs that are specific to women in addition to conditions that affect women more than men. FemTec provides tests to accelerate early diagnosis and detection of conditions, all conveniently from home. These efforts will improve access to quality care, improve outcomes, improve quality of life, and reduce costs.

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