
Impact of Misdiagnosis in Women's Health Conditions

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Introduction

Misdiagnosis remains a cause of preventable harm in healthcare. Misdiagnosis and delayed diagnosis affect millions of patients annually and are associated with increased morbidity, mortality, and healthcare costs (Newman-Toker & Pronovost, 2009). Evidence indicates that women experience diagnostic errors at higher rates than men across multiple clinical conditions, making diagnostic errors in women's health a critical and ongoing issue (Hunter et al., 2024).

Sex-based biological differences, gendered symptom presentation, and structural biases within healthcare systems contribute to these disparities, particularly when women's symptoms are misinterpreted or minimized, leading to diagnostic delay (Hoffmann & Tarzian, 2001). Focusing on mismedicine in women, this paper argues that these errors exemplify misdiagnosis at both the clinician and system levels and identifies strategies to reduce harm.

What Is Diagnostic Error as Misdiagnosis?

Diagnostic error refers to a failure to establish or communicate an accurate and timely explanation of a patient's health problem, including missed, incorrect, and delayed diagnoses that result in patient harm (Institute of Medicine, 2015). It often arises from cognitive bias, incomplete clinical assessment, and healthcare system limitations (Newman-Toker & Pronovost, 2009).

Gender bias is an important contributor to these errors and disproportionately affects women (Gauci et al, 2022; Institute of Medicine, 2015). Research shows that women's symptoms are more likely to be interpreted as vague, emotional, or stress-related, particularly when objective findings are limited (Hoffmann & Tarzian, 2001). Population-based analyses demonstrate consistent sex differences in diagnostic patterns, even for conditions that affect men and women at similar rates (Hunter et al., 2024). Women experience greater delays in diagnostic testing and referral, postponing treatment initiation and worsening outcomes (Hunter et al., 2024; Institute of Medicine, 2015). Systematic limitations reinforce disparities in how diagnostic evidence is generated and applied, resulting in diagnostic frameworks that inadequately account for sex- and gender-related differences (Institute of Medicine, 2015; Hunter et al., 2024). Consequently, clinicians may fail to recognize conditions in women whose symptoms do not align with traditional diagnostic models.

Delayed diagnosis allows disease progression, reduces treatment effectiveness, and increases the likelihood of complications (Institute of Medicine, 2015). From a system perspective, misdiagnosis contributes to repeated healthcare encounters, unnecessary testing, and avoidable costs, reflecting a failure to adequately account for sex and gender in diagnostic decision-making (Institute of Medicine, 2015).

Conditions Most Affected

The consequences of diagnostic error are visible across multiple high-burden conditions affecting women. For example, cardiovascular disease is the leading cause of death among women in the United States, yet women remain at higher risk of diagnostic delay and misdiagnosis (Gauci et al., 2022). Despite this, women experience higher rates of delayed or missed diagnosis of coronary heart disease, in part because they are less likely to receive timely diagnostic testing and more likely to have symptoms misclassified as non-cardiac (DeVon et al., 2007). Sex-related differences in symptom presentation contribute to this pattern, as women more commonly report milder or atypical symptoms such as back pain, fatigue, and nausea rather than classic chest pain (Al Hamid et al., 2024). These symptoms are frequently attributed to non-cardiac causes, like gastrointestinal or anxiety-related causes, which delays diagnosis and increases the risk of adverse outcomes (Gauci et al., 2022). This pattern reflects mismedicine driven by male-centred diagnostic frameworks that fail to account for known differences in disease presentation (Gauci et al., 2022; Al Hamid et al., 2024).

Endometriosis represents a prominent example of diagnostic delay in women's health. Despite affecting a significant proportion of reproductive-aged women, diagnosis is often delayed by several years after symptom onset (De Corte et al., 2025). Symptoms such as chronic pelvic pain and gastrointestinal distress are frequently normalized or misattributed to conditions like irritable bowel syndrome, resulting in repeated misdiagnoses (Hudson, 2021). Recent literature highlights that limited provider awareness, lack of non-invasive diagnostic tools, and inconsistent referral pathways contribute to diagnostic delay (Griffiths et al., 2024). These delays can worsen pain, reduce quality of life, and affect psychological well-being (Institute of Medicine, 2015). Diagnostic delay in endometriosis exemplifies mismedicine rooted in the systemic dismissal of women's pain and reliance on sex-biased heuristics rather than standardized diagnostic pathways. Implementing structured clinical algorithms and appropriate imaging protocols has been shown to reduce misdiagnosis and improve outcomes across sexes (Griffiths et al., 2024).

Diagnostic error in women's mental health is particularly evident in ADHD, which has historically been viewed as a predominantly male disorder (Attoe & Climie, 2023). A recent systematic review found that women with ADHD are frequently underdiagnosed or misdiagnosed due to differences in symptom presentation (Attoe & Climie, 2023). Women are more likely to present with inattentive symptoms rather than hyperactivity, which are less likely to prompt referral and assessment (Attoe & Climie, 2023; Young et al., 2020). Thus, many women receive alternative diagnoses, such as anxiety or depression, before ADHD is correctly identified, contributing to academic, occupational, and psychosocial impairment. The literature highlights the need for sex-sensitive diagnostic criteria and improved awareness of gender-specific symptom expression.

Contributing Factors and Consequences

Diagnostic mismedicine in women's health arises from several overlapping factors. One of the most persistent contributors is gender bias in how pain is perceived and interpreted. Studies show that women's pain is more likely to be underestimated, attributed to emotional causes, or

managed conservatively compared to men's (Hoffmann & Tarzian, 2001). This bias delays diagnostic escalation, allowing underlying conditions to remain unrecognized.

Gaps in sex-specific medical knowledge further compound this problem. Despite longstanding recognition of biological and clinical differences between women and men, women remain underrepresented in clinical trials and research (Attoe & Climie, 2023). Hence, many diagnostic criteria and reference standards are derived from male-dominant data, limiting their relevance for women (Regitz-Zagrosek, 2012; Arnegard et al., 2024). These knowledge gaps hinder clinicians from identifying disease presentations that fall outside traditional norms.

System-level factors also play a significant role in amplifying individual bias. Time constraints, fragmented medical records, and poor continuity of care encourage shortcuts, increasing the likelihood of diagnostic errors (Institute of Medicine, 2015). Diagnostic safety research emphasizes that these conditions create predictable patterns of vulnerability, making diagnostic uncertainty less likely to be revisited even when symptoms persist (Singh et al., 2024).

Consequences of diagnostic error extend beyond delayed treatment. Clinically, patients experience disease progression, complications, and avoidable hospitalizations (Newman-Toker & Pronovost, 2009). Psychologically, repeated error ruins trust and increases anxiety, depression, and healthcare avoidance (Institute of Medicine, 2015). Legally and ethically, delayed diagnosis exposes clinicians and institutions to malpractice claims, particularly when diagnostic delay results in preventable harm and disease progression (Newman-Toker & Pronovost, 2009). From a systems perspective, misdiagnosis increases healthcare costs through repeat visits, unnecessary testing, and downstream interventions that could have been avoided with timely and accurate diagnosis (Institute of Medicine, 2015).

Prevention and Current Solutions

Reducing diagnostic mismedicine in women's health requires structural change. Although clinician education remains important, misdiagnosis continues because it is built into how healthcare systems are organized, taught, and assessed. Without addressing these structural factors, improvements at the individual level are not sustainable.

At the clinical level, sex- and gender-informed diagnostic approaches could demonstrate clear benefits. Teaching clinicians to recognize sex-specific symptom patterns, particularly in cardiovascular, neurologic, and pain-related conditions, improves diagnostic accuracy and shortens time to diagnosis (Institute of Medicine, 2015; Hunter et al., 2024). This training is most effective when reinforced throughout a clinician's career, as outdated heuristics persist long after formal education ends (Institute of Medicine, 2015).

Cognitive debiasing strategies improve reliable diagnostic decision-making. Tools like structured diagnostic checklists, reflective pauses, and prompts to broaden differential diagnoses reduce overreliance on intuition, particularly in high-pressure settings like emergency departments and

primary care clinics. Clinical decision-support systems incorporating sex-specific data help flag atypical presentations and prompt reconsideration of premature conclusions. However, these systems must be designed to support, rather than replace, clinical reasoning. Poorly calibrated tools risk reinforcing existing biases if they rely on historically skewed datasets.

At the system level, improving continuity of care, ensuring follow-up for unresolved symptoms, and creating clear escalation pathways for persistent pain or recurrent presentations directly address the conditions that foster diagnostic error. Diagnostic safety research shows that errors are more likely when responsibility is diffuse, and follow-up is fragmented (Hunter et al., 2024; Newman-Toker & Pronovost, 2009). Healthcare organizations can respond by tracking diagnostic delay by sex and condition, treating repeated delays as indicators of quality concern, and embedding diagnostic safety into ongoing performance improvement efforts.

Patient engagement remains an underused but important protective factor (Institute of Medicine, 2015). Encouraging patients to report persistent or worsening symptoms, then clearly documenting and seriously considering these reports, prevents early diagnostic uncertainty from evolving into prolonged neglect. Preventing harm requires acknowledging that diagnostic failure is often systemic, predictable, and therefore preventable.

Conclusion

Diagnostic error in women's health is a recurring pattern shaped by bias, outdated diagnostic frameworks, and healthcare systems that struggle to manage uncertainty. Across conditions ranging from ADHD to heart disease and acute surgical emergencies, women experience delayed recognition that leads to preventable harm. Addressing this problem requires healthcare systems to treat diagnostic delay as a measurable quality concern, incorporating sex-specific evidence into routine practice, and recognizing patient-reported symptoms as essential clinical information. When diagnostic accuracy is valued as highly as treatment delivery, healthcare is better positioned to reduce misdiagnosis and improve outcomes for women. Addressing misdiagnosis in this way is an important step towards building a healthcare system that is more responsive, equitable, and accountable.

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