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# Gender-Specific Research on Mental Illness in the Emergency Department: Current Knowledge and Future Directions

**Megan L. Ranney, MD, MPH**, **Natalie Locci**, **Erica J. Adams, MD**, **Marian Betz, MD, MPH**, **David B. Burmeister, DO**, **Ted Corbin, MD, MPP**, **Preeti Dalawari, MD, MSPH**, **Jeanne L. Jacoby, MD**, **Judith Linden, MD**, **Jonathan Purtle, DrPH, MSc**, **Carol North, MD, MPE**, and **Debra E. Houry, MD, MPH**

Injury Prevention Center, Department of Emergency Medicine, Brown University, (MLR) Providence, RI; Alpert Medical School, Brown University, (MLR, NL) Providence, RI; Injury and Public Health Program and Research; Department of Emergency Medicine, Drexel University College of Medicine, (EJA, TC, JP) Philadelphia, PA; Department of Emergency Medicine, University of Colorado School of Medicine, (MB) Aurora, CO; Department of Emergency Medicine, Lehigh Valley Health Network/ USF Morsani College of Medicine, (DBB, JLJ) Allentown, PA; Department of Surgery, Division of Emergency Medicine; Saint Louis University School of Medicine, (PD) St. Louis, MO; Department Emergency Medicine Boston Medical Center/Boston University School of Medicine, (JL) Boston, MA; Department of Psychiatry and Department of Emergency Medicine, The University of Texas Southwestern Medical Center, (CN) Dallas, TX; Emory Center for Injury Control, Department of Emergency Medicine, Emory University, (DLH) Atlanta, GA

## Abstract

Mental illness is a growing, and largely unaddressed, problem for the population and for emergency department (ED) patients in particular. Extensive literature outlines sex and gender differences in mental illness' epidemiology and risk and protective factors. Few studies, however, examined sex and gender differences in screening, diagnosis, and management of mental illness in the ED setting. Our consensus group used the nominal group technique to outline major gaps in knowledge and research priorities for these areas, including the influence of violence and other risk factors on the course of mental illness for ED patients. Our consensus group urges the pursuit of this research in general, and conscious use of a gender lens when conducting, analyzing, and authoring future ED-based investigations of mental illness.

Author Contact Information: Megan L. Ranney, MD, MPH, Department of Emergency Medicine, Rhode Island Hospital/Alpert Medical School, Brown University, 593 Eddy St, Claverick 2, Providence, RI 02903, Office: 401-444-2557; Fax: 401-444-2249, mranney@lifespan.org.

**Consensus Conference Breakout Group Participants:** Gillian Beauchamp, Steven Bernstein, Edwin Boudreaux, Kerry Broderick, David Burmeister, Esther Choo, Roger Fillingim, Andy Fischer, Fiona Gallahue, Kate Hawk, Debra Houry, Jeanne Jacoby, Anita Kurt, David Lee, Judy Linden, Melanie Lippmann, Natalie Locci, Sam Mclean, Carol North, Summer Paradise, Megan Ranney, Karin Rhodes, Alex Rosenau, Tyler Rubin, Sandra Schneider, and Susan Watts.

## INTRODUCTION

This article summarizes the consensus recommendations of the breakout group on emergency department (ED) sex- and gender-specific mental health research from the *Academic Emergency Medicine* consensus conference in May 2014. Consensus was reached using an iterative process through the four-part nominal group technique as already described.[1] In addition to the 11 writing members, we actively engaged three expert discussants and 29 breakout group members in refining this consensus document (complete list available in the note). A multi-disciplinary group of participants prioritized the final iteration of themes and questions using electronic voting during the breakout group. Descriptive statistics were calculated to tabulate the final list of questions presented below.

Mental illness is a growing, and largely unaddressed problem for the population and for ED patients in particular. Internationally, mental illness has been hailed as one of the great unanswered issues of our decade.[2,3] In the United States, the increase in psychiatric visits to the ED has outpaced those for other diagnoses.[4,5] The 24/7 availability of EDs, the closing of psychiatric beds and facilities, and new insurance-related care hurdles may be contributing to the exponential increase in ED mental health visits (38% increase in mental health visits, vs. an 8% increase in total ED visits, from 1992 to 2001), with the fastest growing group being those older than 70 years.[6] Gender differences in this growth of mental health-related ED visits are not evident, with both sexes significantly increasing their use of the ED over this 10 year timeframe.[4]

Although extensive literature outlines sex and gender differences in psychiatric disorders' epidemiology and risk and protective factors, few studies have examined gender differences in the manifestation and management of mental illness. A literature review of all clinical trials on depression in 2007 showed that although 89% reported recruiting male and female participants, fewer than 1% reported an intention to analyze results by gender.[7] Even fewer studies have been conducted examining gender-specific attributes of psychopathology in the ED setting. Psychiatric illnesses are an increasingly common reason for ED visits, a growing source of health care costs, and have been linked to multiple chronic conditions. It is therefore imperative to conduct further research on ways to maximize gender-specific diagnosis, treatment, and referral of mental illness in the ED setting.

With this background in mind, we have summarized existing literature, much of which is drawn from outside of the emergency medicine (EM) literature, and present critical future research questions determined by group consensus. Of note, research on optimal ED-based mental health screening, diagnosis, and management, as well as the sex- and gender-specific influence of known relevant risk factors for psychiatric disorders, is in general lacking. Our consensus group urges the pursuit of this research, and conscious use of a gender lens when conducting, analyzing, and authoring future ED-based mental health investigations.

### Recommendation 1: Elucidate Gender-specific Factors Regarding ED-Based Screening for Mental Illness

**Background—**Sex differences in the prevalence of specific psychiatric disorders (unipolar and bipolar depression, anxiety, schizophrenia, and suicide), age of onset (in schizophrenia),

symptom presentation, and screening are well established. For instance, unipolar, depressive, and anxiety disorders are known to occur twice as often in women as in men, and present differentially in the two sexes.[8] Women are also more likely to develop post-traumatic stress disorder (PTSD).[8–11] Alcohol use disorder and antisocial personality disorder, on the other hand, are diagnosed more commonly in men.[8] In addition, although men have four times the suicide rate of women (18.4 vs. 4.8 per 100,000),[12] and comprise the majority of completed suicides (79%),[13] women more frequently engage in suicidal ideation, repeated deliberate self-harm, and repeated suicide attempts; and they attempt suicide in a less lethal manner (ex. self-poisoning).[7,14–17]

Postulated reasons for these gender differences in the epidemiology of mental illness include genetic factors, hormonal factors, and the influence of mediators such as socio-economic and societal factors.[18] The onset of many mental health disorders coincides with the onset of puberty,[19–23] supporting the theory that estrogen is at least partly responsible for the gender difference in rates of major depression and other psychiatric illness.[24] Psychosocial factors may also influence gender differences in mental illness. For instance, some literature suggests that having young children offers a protective measure against suicide for women, but not necessarily for men;[17] whereas marriage is considered a protective factor for men, but not for women.[25,26] Some studies also suggest that there are sex-based differences in rates of identification and diagnosis of psychiatric disorders; for instance, primary care doctors are more likely to diagnose major depressive disorder in depressed women than in depressed men.[27]

While these gender-related mental illness findings have potentially important implications in the ED, many other important questions about gender differences related to presentation, screening, diagnosis, and referral in the ED remain unanswered.

**Current State of Knowledge—**Psychiatric disorders are common in both adult and adolescent ED patients. Research using validated measures to screen adults presenting to the ED with non-psychiatric complaints reveals depressive symptoms in 32% to 34%, mania in 4%, passive suicidal ideation in 7% to 12%, and active suicidal ideation in about 2%.[28–30] Although overall rates of psychiatric illness are higher among ED patients than in the general population, sex distributions are similar.[4]

Sex differences in ED-based screening for mental illness have been reported in the literature. For instance, one recent study demonstrates that in sites without universal screening protocols, assessments of self-harm are documented for only 3.5% to 31% of ED visits; young males are more likely than females to have screening documented.[31,32]

Given the many high-risk health behaviors that emergency providers are being asked to screen for, finding a time-efficient way to screen for suicide and other psychiatric disorders is challenging, and the utility of universal screening is not yet well-established. Patient and physician gender may influence screening practices: for instance, one study suggests that clinicians are more likely to diagnose major depressive disorder in female patients when patient volumes were high and time with the patient was limited, and more likely to

diagnose bipolar disorder when patient volumes were low.[33] Audiotapes of patient interviews reveal that depressive symptoms are rarely addressed by emergency physicians.[34]

There is evidence to support a sex-specific mental health screening process. For example, patients with a history of intimate partner violence and childhood and adult sexual abuse may deserve more intensive screening, as they are at higher risk of major depressive disorder and suicide attempts than those without such a history.[35,36] Although sexually abused men also carry an increased risk of psychiatric disorders,[37] women are more likely to be victims of intimate partner and sexual violence, and questions about abuse should likely be incorporated into any mental health screen in women.[38] Similarly, screening for peripartum depressive symptoms in women may increase the yield of a screening tool, but would not be relevant for male patients.[39,40]

Self-administered electronic screens have been shown to be effective for many health behaviors, and may be useful in this setting;[41,42] yet there may be gender differentials in acceptability of ED-based electronic screening and referral.[43]

### Future Research Questions of High Priority to the Field

1. Are there gender differences in the chief complaint and self-reported symptoms of ED patients diagnosed with psychiatric illness?
2. To what extent do ED providers differentially screen for and diagnose mental illness among female versus male ED patients?
3. What factors influence potential gender differences in psychiatric screening (e.g., provider screening, ED crowding, use of electronic screening methods)?
4. If universal screening for mental illness were feasible in the ED, would gender-specific screening tools increase sensitivity/specificity?

## Recommendation 2: Explore the Appropriateness of Gender-specific Risk Stratification and Referral Strategies for Mental Illness

**Background—**Women have a consistently higher prevalence rate, burden of illness, and likelihood of seeking outpatient treatment for psychiatric disorders, including anxiety, depression, and PTSD; women are, however, less likely than men to receive formal mental health care services, and more likely to receive pharmacologic prescriptions from primary care providers.[9,25,44,45] Some of the observed gender differences in access to mental health care may be related to gender-related structural issues, such as women's autonomy, child-rearing responsibilities, and health literacy; others may be related to gender-based stereotypes regarding diagnosis and treatment of psychiatric illness.[44]

**Current State of Knowledge—**There is a lack of clarity about how to connect the gender disparities in mental illness severity and treatment with ED-based decisions about patient disposition. As mental illness has complex determinants, the factors that serve as population-based risk factors may be different from those that indicate risk for an individual. Therefore, making case decisions based on these population-based factors may not be appropriate.

For instance, lethal means restriction (one of only two approaches to suicide prevention with a strong empirical basis[46]) focuses predominantly on limiting firearm access, as approximately half of all suicides are by firearm.[13] Firearms are the leading method for suicide by men (56%), while poisoning or medication overdose is the most common method among women (37%).[13] These differences largely account for sex differences in suicide rates, as firearm suicide attempts have a case fatality ratio of 85%, compared to only 2% for poisoning or overdose.[47] Yet, we also know that the presence of a firearm in the house can affect the choice of suicide plan among individuals with suicidal thoughts, especially women.[48] It is therefore unclear whether, for example, male and female patients with suicidal ideation should be differentially queried regarding firearm access.

Once patients are identified as having psychiatric disorders, gender disparities in the frequency of hospitalization and psychotropic prescription have been reported. Two studies reported that despite greater usage of outpatient treatment, depressed women have three times the odds of psychiatric hospitalization compared with men.[49,50] Yet a larger, national sample reports that the odds of being hospitalized after ED evaluation for depressive symptoms are actually lower in women than in men.[51] Similar studies have been completed with other psychiatric disorders. The reasons underlying these conflicting findings are unclear, and deserve further inquiry. Of note, we identified little gender-specific literature on how to best risk-stratify ED patients, once they are identified as having psychiatric disorders.

Despite national data suggesting that gender influences rates of treatment compliance and recidivism, gender was not an independent risk factor in three recent studies on ED recidivism after a psychiatric visit.[52–54] Few studies document outcome after ED discharge, although cognitive behavioral therapy follow-up has been shown to preferentially improve depressive symptoms and reduce suicide attempts in women.[55,56]

We identified no ED-based research into sex- and gender-specific methods of increasing linkages to care and reducing costs post-discharge. Nor are we aware of sex- and gender-specific research into the incorporation of mental health care into treatment of co-occurring chronic illnesses. Further study of risk stratification for admission, ED recidivism rates, and methods of linkage to treatment by sex are needed.

### Future Research Questions of High Priority to the Field

1. In patients presenting to the ED with psychiatric symptoms, are there gender-specific factors that should influence risk stratification and hospitalization decisions in general, and for suicide risk in particular?
2. Among patients with suicidal ideation and access to lethal means, would a gender-specific approach to lethal means restriction be feasible and effective?
3. Among ED patients with psychiatric symptoms, which (if any) gender-specific factors influence likelihood of outpatient follow-up and ED recidivism?

4. Among ED patients with psychiatric symptoms, what (if any) gender-specific tailoring of inED interventions would increase compliance with recommended treatment regimens?

5. Among ED patients with psychiatric illness, what (if any) gender differences exist in the cost of treatment?

## Recommendation 3: Develop an Evidence Base to Inform Emergency Physicians' Gender-specific Pharmacotherapy Decision About Mental Illness

**Background—**Much of the data regarding treatment options, especially as it relates to sex differences, comes from the psychiatric literature. For example, estrogen supplementation post-menopause, alone and in combination with selective serotonin reuptake inhibitors, effectively treats depression in women.[57] No studies examine whether, or for whom, antidepressants should be prescribed in the ED setting. Similarly, although two recent literature reviews identified corticosteroids and propranolol as the most promising agents for PTSD treatment,[58,59] further research is needed into whether steroids or propranolol are worthwhile adjuncts to ED care for PTSD prevention for women or men.

There are few data available regarding gender and sex differences in treatment options for bipolar disorder and psychosis. Some studies suggest that women respond better to treatment and may require lower doses of medication before menopause.[60] Use of a transdermal estradiol patch has similarly been shown to improve symptoms in acutely psychotic schizophrenic premenopausal women.[61] A brief report by Weiss et al. found significantly higher mean concentrations of olanzapine in female patients on stable medication dosages compared to men. The authors speculate that these increased levels may account for the higher side effect profile in women on second-generation anti-psychotics.[61]

**Current State of Knowledge—**Sex-specific analysis of appropriateness and efficacy of pharmacotherapy in the ED remains undefined. There is a lack of ED-specific research on pharmacologic therapy for psychiatric disorders. Very few studies of medication dosing for acute psychosis in the ED exist. To our knowledge, most do not examine sex-specific treatment effects even when women are included in the data set.[62–66] In 2006, the American College of Emergency Physicians published a policy on treatment of the acutely agitated patient and a review of the literature, but sex differences were not addressed.[67] The sole study that we identified examining antipsychotics in severely agitated patients showed that oral haloperidol, risperidone, and olanzapine were all equally effective, but that men responded better to treatment than did women both during the initial 2 hour period, as well as over the 5-day course.[68] This lack of sex-specific analysis hampers emergency physicians' ability to appropriately and safely treat patients for acute psychosis and during ED psychiatric holds.

### Future Research Questions of High Priority to the Field

1. For acutely agitated ED patients requiring pharmacologic treatment, are there gender-specific aspects to drug dosing, efficacy, and safety?

2. For ED patients with other acute psychiatric symptoms and extended ED stays, are there gender-specific dosing, efficacy, and safety issues, both for the initiation of pharmacotherapy and maintenance thereof?

## Recommendation 4: Explore the Role of Gender in the Clinical Course and ED Treatment of Mental Illness after Violence and Disaster

**Background—**Although a number of co-morbidities, ranging from chest pain to cancer, are thought to interact with mental illness in sex-specific ways, violence exposure is one of the strongest sex-specific determinants of mental illness.[69] Any form of victimization – whether intimate partner violence (IPV), sexual abuse, peer violence, or community violence exposure – predicts depressive and anxiety disorders and PTSD more strongly for females than for males.[70,71] Additionally, female gender consistently predicts higher likelihood of PTSD after disasters and other sources of trauma.[72,73] Further discussion of PTSD after other forms of trauma is in the companion manuscript by Vaca et al.[74]

Studies show that co-treatment of IPV, PTSD, and depressive disorders improve women's psychiatric outcomes in outpatient settings.[75] and that cognitive behavioral therapy prevents PTSD after both sexual and non-sexual assault for women.[76] Despite the fact that the ED is the primary site for evaluation and treatment of violent and post-disaster injuries, little sex- and gender-specific research exists regarding ED screening and interventions after these traumatic episodes.

### Current State of Knowledge

**IPV:** Intimate partner violence is common among females, and is known to be a strong predictor of depression and suicidal ideation among female ED patients.[77,78] Despite estimates of 29% to 37% lifetime IPV prevalence among male ED patients,[77,79] males are less likely to report IPV victimization than females.[78[80]] The interactions between IPV, mental health, and other behavioral health issues such as substance abuse are well established for females,[80–87] but have rarely been prospectively assessed among men seeking ED care.[82,88,89] Correspondingly, little is known about gender-specific ED IPV screening or intervention strategies, particularly for IPV-related mental health issues.

**Sexual Assault:** Despite the fact that EDs are often the primary source of care for males sustaining sexual assault injuries, little ED-based research has been conducted on male sexual assault and its sequelae.[90,91] Males who present in the ED for sexual assault often have more severe injuries than women,[91,92] yet are less likely to report the assault, and less likely to use mental health services when they are offered.[90]

Although sexual assault response centers respond to the needs of male sexual assault victims, best practices for working with males have not been established. To our knowledge, screening guidelines and recommendations for addressing potential mental health issues among males presenting in the ED with sexual assault injuries do not exist.

**Peer Violence:** Comparatively little research has been conducted about the mental health needs of females sustaining violent injuries other than IPV and sexual assault, despite

females accounting for 42% of all non-sexual-assault-related violent injuries treated in an ED, and 31% of non-fatal violent injuries occurring in school settings.[93] The majority of adolescent and adult women seeking care after peer violence injuries have psychiatric issues, including substance use and abuse.[94,95] Females' mental health after violent injuries may differ from that of males.[70,71,96]

To date, evaluations of hospital-based violence intervention programs (HVIPs) have almost exclusively focused on males.[97.98] A review of eight HVIP outcome evaluations reveals that participants have been overwhelmingly male (a pooled study population 905 males vs. 175 females) and that none of these studies stratified results by sex.

**PTSD:** Women have been found to have different peri-traumatic stress reactions after motor vehicle accidents (i.e., present with different acute symptoms that indicate risk of developing PTSD) than men,[99] and higher rates of PTSD after all types of disaster.[72,73] Women may also engage in different help-seeking behaviors than men after violent injury.[100] Gender-focused research on the predictive power of peritraumatic stress reactions and on the potential ED role in preventing or addressing PTSD and acute stress reaction symptoms is lacking.[101]

### Future Research Questions of High Priority to the Field

1. Among patients presenting to the ED with an acute violent injury, how do sex and gender influence both acute and longitudinal trajectories of psychiatric symptoms?
2. Among patients presenting to the ED with an acute violent (peer, partner, or sexual assault) injury, would sex- and gender-informed treatment reduce the incidence of psychiatric sequelae of violence?
3. Among all patients, which gender- and sex-specific emergency-service-initiated violence screening and interventions are acceptable and effective in reducing long-term psychiatric symptoms?
4. Among patients in a disaster setting, would gender-specific emergency-service-initiated interventions be more effective than standard care in preventing psychiatric sequelae of disaster?

## CONCLUSIONS

The consensus process confirmed the importance of these research questions. In the consensus process, several important methodologic issues were discussed. First, with the widespread use of electronic health records and publicly available national datasets, baseline studies of gender differences in patients with psychiatric diagnoses in regards to chief complaints, disposition, pharmacological and behavioral interventions, as well as economic costs should be performed. Second, we must study ED-based interventions and conduct sex- and gender-specific analyses of specific outcomes such as recidivism rates, decreased post-traumatic stress disorder, and substance use. Third, inclusion of patient preference for and acceptance of sex- and gender-specific screening, intervention, and treatment strategies should be explored. Finally, as federal funding is limited, researchers should be creative in

their pursuits of funding to other agencies and foundations, and should incorporate these research questions into existing federally funded studies.

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