

REMARKS: NEUROSCIENCE, GENDER, AND THE LAW

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Thank you very much to Jane Moriarty for inviting me to speak during today's Neuroscience, Law, and Government Symposium.

As we have seen from the earlier talks today, the burgeoning neurolaw literature focuses very heavily on the implications of advances in neuroscience for criminal responsibility, criminal procedure, capital punishment, national security, and evidence law.¹ My passion is civil and regulatory health law, and what I have been doing over the last couple of years is examining the ways in which advances in neuroscience are impacting a range of civil and regulatory health law issues.²

In my recent research, I have been exploring the legal impact of advances in the neuroscience of gender, such as whether and how stakeholders are using recent studies finding structural and functional differences between male and female brains in an attempt to influence the law. I also have been examining whether and how stakeholders are using the neuroscience of both gender-specific and gender-prevalent health conditions to influence the interpretation of civil and regulatory

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1. Videos of the *Neuroscience, Law and Government Symposium* are available at <http://www.uakron.edu/law/neurososymposium.php>.

2. See Stacey A. Tovino, *Medico-Legal Issues in Neuroimaging*, NEUROETHICS IN PRACTICE (Martha Farah & Anjan Chatterjee eds., forthcoming 2009); Stacey A. Tovino, *Neuroscience and Health Law: An Integrative Approach?*, 42 AKRON L. REV. 469 (2009); Stacey A. Tovino, *Neuroimaging Research into Disorders of Consciousness: Moral Imperative or Legal and Ethics Failure?*, VA. J.L. & TECH. (forthcoming 2009); Stacey A. Tovino, *Incidental Findings: A Common Law Approach?*, 15(4) ACCOUNTABILITY IN RESEARCH 242; Stacey A. Tovino, *The Impact of Neuroscience on Health Law*, 1(2) NEUROETHICS 101 (2008); Stacey A. Tovino, *Functional Neuroimaging Information: A Case for Neuro Exceptionalism?*, 34 FLA. ST. U. L. REV. 415 (2007); Stacey A. Tovino, *Imaging Body Structure and Mapping Brain Function: A Historical Approach*, 33 AM. J.L. & MED. 193 (2007); Stacey A. Tovino, *Functional Neuroimaging and the Law: Trends and Directions for Future Scholarship*, 7(9) AM. J. BIOETHICS-NEUROSCIENCE 44 (2007).

health law. Today, I am going to explore how stakeholders are using advances in the neuroscience of three gender-specific and gender-prevalent conditions (the postpartum mood disorders, premenstrual dysphoric disorder, and eating disorders) to secure health care benefits under group health plans and individual health insurance policies and to push for the inclusion of these conditions in mental health parity legislation. More broadly, I hope to show you how neuroscience is quickly becoming a very important tool in the arsenal of health care stakeholders and lobbyists, especially those charged with promoting women's access to mental health care.

My first example relates to the neuroscience of the postpartum mood disorders, including postpartum depression and postpartum psychosis. Many of us are familiar with the Andrea Yates case, in which a woman from Clear Lake, Texas, drowned her five children in her bathtub less than seven months after her fifth child was born.³ The *Yates* case, at least the first trial, was framed by many criminal law scholars in terms of the question of whether Andrea knew that what she was doing was wrong at the time she did it⁴ and, more importantly, the appropriateness of using this standard for purposes of determining her criminal responsibility.⁵ But for civil and regulatory mental health law scholars, medical humanists, and many clinicians, the *Yates* case is cited more frequently as an example of what can happen when postpartum mood disorders and other mental health conditions specific to women are either not recognized or not successfully treated due in part to a fragmented health care system that traditionally has been uncomfortable with both mental health conditions (because historically there has been very little physical evidence of them) and women's health conditions, which have been tainted with the legacy of Freud's hysteria.⁶

3. *Yates v. State of Texas*, 171 S.W.3d 215, 218 (Tex. Ct. App. 2005).

4. See, e.g., Steven K. Erickson, *The Myth of Mental Disorder: Transsubstantive Behavior and Taxometric Psychiatry*, 41 AKRON L.REV. 67, 75 (2008).

5. See *id.* at 82-83.

6. See, e.g., Vanora Hundley, *Beyond the Andrea Yates Verdict: Women's Mental Health and the Law*, 17(1) MIDIRS MIDWIFERY DIGEST 135, 136 (2007); Faith McLellan, *Mental Health and Justice: The Case of Andrea Yates*, 368(9551) LANCET 1951, 1951 (2006) (noting "[t]he [Yates] case also highlighted the lack of recognition of the potentially deadly consequences of postnatal disorders, and the limitations of the justice system in dealing with individuals who are mentally ill."); Evelyn G. Kohan, Letter to the Editor, *Compassion for Andrea Yates*, N.Y. TIMES, Mar. 14, 2002, at A30 (stating that "[a]s a professional who devotes energy and time educating the public about women's mental health, I find [Yates's guilty verdict] demoralizing; it reeks of the vast ignorance we have yet to overcome in law and society.").

Over the last decade, however, several groups of scientists have been using neuroimaging in an attempt to provide neuroradiological evidence of several health conditions specific to women, including the postpartum mood disorders.⁷ One small study published ten years ago, for example, found that the brains of women with postpartum psychoses looked significantly structurally different than the brains of age-matched women with non-postpartum psychoses, leading the study authors to conclude that they had found evidence of subtle, unspecified neurostructural abnormalities in ill mothers and that these abnormalities might constitute an unspecific vulnerability factor.⁸

In 2006, a second group of scientists used functional magnetic resonance imaging (fMRI) to study the brains of healthy mothers as they attended audiovisual baby stimuli postpartum.⁹ The authors found that the neural networks of healthy maternal women who were hearing babies cry were closely associated with obsessive-compulsive disorder (OCD), suggesting that even the healthy maternal brain may be “hardwired” for a period of transient OCD that at one time may have been adaptive, but now may play a role in postpartum illness.¹⁰ The

7. See *infra* text accompanying notes 8-18.

8. See M. Lanczik et al., *Ventricular Abnormality in Patients with Postpartum Psychoses*, 1 ARCH. WOMEN'S MENTAL HEALTH 45, 45-47 (1998) (using computed tomography to quantify the ventricular and cisternal cerebrospinal fluid (CSF) spaces in 14 women, 12 of whom had cycloid psychoses with postpartum onset; finding that, when compared to age-matched female patients with cycloid psychoses or bipolar affective disorders outside the puerperium, certain CSF spaces were significantly larger in the postpartum psychosis group); concluding that, “[t]his finding could reflect an unspecific brain structural vulnerability marker in some patients with psychoses of the puerperium,” *id.* at 45, and that, “[t]he results underline evidence of subtle, unspecific brain structural abnormalities in patients with postpartum cycloid, and possibly other types of postpartum psychosis. Such abnormalities might constitute an unspecific vulnerability factor.” *Id.* at 47.

9. James Swain et al., *Functional Neuroimaging and Psychology of Parent-Infant Attachment in the Early Postpartum*, 5 ANNALS OF GENERAL PSYCHIATRY S85, S85 (Feb. 28, 2006) (concluding that, “[f]urther research on families with mental health vulnerabilities, as well as conditions such as postpartum depression and substance abuse, may yield biological models for protective and vulnerability factors in human family attachments.”).

10. See Anna J. Abramson, *The Postpartum Brain*, IV(4) GREATER GOOD MAG. (Spring, 2008), available at <http://greatergood.berkeley.edu/greatergood/2008spring/Abramson154.html> (last visited January 20, 2008).

[W]hen parents in the Yale study heard their babies cry, the researchers observed activity in neural networks closely associated with obsessive-compulsive disorder (OCD), as well as in brain areas associated with social emotions such as empathy. Strikingly, it seemed that listening to their babies cry triggered a deeply anxious neural response even in parents who hadn't been diagnosed with a psychological problem The researchers offer an evolutionary hypothesis for the neural signs of anxiety they saw in these parents. They believe that, after the birth of a child, a period of high alert may have helped parents protect their babies from environmental harm in times when this was a treacherous and all-consuming task The Yale researchers hypothesize that the

scientists concluded that further research “may yield biological models for protective and vulnerability factors in human family attachments.”¹¹

In 2007, scientists used fMRI to compare the brain function of women with postpartum depression to asymptomatic postpartum female control subjects.¹² Although the scientists stated that it would be premature to conclude that postpartum depression has a unique depression phenotype, they thought that functional neuroimaging did have the potential to identify an empirically-based neural characterization of postpartum depression.¹³

In March 2008, scientists published a study that used positron emission tomography (PET) to measure brain serotonin receptor binding potential in a small sample of both healthy and depressed postpartum women.¹⁴ The study authors found that postsynaptic receptor binding in the depressed subjects was reduced 20-28 percent relative to controls and stated that they hoped their discovery of these altered neurobiological processes would increase treatment accessibility for women.¹⁵

These are just a few of the neuroimaging studies that have been designed to investigate the neuroscience of postpartum conditions. In still other studies, authors have concluded that future neuroimaging studies may someday provide a method for diagnosing postpartum

healthy maternal brain is hardwired for a period of “transient OCD.” But, . . . once mothers are endowed with this kind of neural “machinery,” there’s a danger they “could connect up OCD behaviors with irrational things not for survival.”

Id.

11. Swain, *supra* note 9, at S85.

12. Michael E. Silverman et al., *Neural Dysfunction in Postpartum Depression: An fMRI Pilot Study*, 12(11) CNS SPECTRUMS: INT’L J. NEUROPSYCHIATRIC MED. 853, 853-54(2007).

13. *Id.* at 861.

[A]lthough it may be premature to conclude that [postpartum depression] is a unique depression phenotype, these preliminary findings suggest the potential to identify an empirically based neural characterization of [postpartum depression] that will provide a necessary cornerstone for developing more targeted, biologically based diagnostic and therapeutic strategies specific to mood changes as a consequence of reproductive health.

Id.

14. Eydie Moses-Kolko et al., *Serotonin 1A Receptor Reductions in Postpartum Depression: A PET Study*, 89(3) FERTILITY & STERILITY 685, 685-87 (2008).

15. *Id.* at 685-92 (finding that age, time since delivery, and reproductive hormones did not differ between the healthy and depressed postpartum subject groups, but that postsynaptic receptor binding in the depressed subjects was reduced 20-28 percent relative to controls, with most significant reductions in anterior cingulate and mesiotemporal cortices). The authors concluded that, “[d]iscovery of altered central neurobiological processes in postpartum mood disorders has the potential to increase treatment accessibility for women with this disorder, raise the importance of postpartum depression treatment among practitioners, and decrease the stigma of postpartum depression.” *Id.* at 685.

depression¹⁶ and may even be used to predict both maternal style, such as child neglect, and offspring temperament, including depression and anxiety.¹⁷ Today's scientists continue to use neuroimaging technologies in an attempt to better understand the brain structure and function of postpartum women.¹⁸

The issue I am currently researching is whether these neuroscientific advances are impacting the law that governs access to, treatment of, and payment for women's mental health conditions. I started my research by looking at several old judicial opinions and bills involving postpartum depression. By "old," I mean older than the last ten to fifteen years, which is the period in which the majority of these structural and functional neuroimaging studies have been published. What I found is that our courts and legislatures tended to find that the postpartum mood disorders did not have a physiological or an organic basis.

The 18-year-old case of *Blake v. UnionMutual Stock Life Insurance Company*¹⁹ is illustrative. *Blake* involved a woman named Pam Blake who sued her health insurance company when it refused to classify her

16. Press Release, National Alliance for Research on Schizophrenia and Depression, Pregnancy & Postpartum Depression: New Research Directions, available at http://www.narsad.org/news/press/rg_2005/res2005-08-09.html (last visited January 20, 2008) (summarizing recent advances in postpartum depression research, including a neuroimaging study involving postpartum subjects conducted at the Medical University of South Carolina [MUSC]; stating that the findings from the MUSC research "may provide a method for diagnosing postpartum depression.").

17. Jeffrey P. Lorberbaum et al., *Feasibility of Using fMRI to Study Mothers Responding to Infant Cries*, 10(3) DEPRESSION & ANXIETY 99, 99-104 (Dec. 30, 1999).

While parenting is a universal human behavior, its neuroanatomic basis is currently unknown Future work in this area may help (1) unravel the functional neuroanatomy of the parent-infant bond and (2) examine whether markers of this bond, such as maternal brain response to infant crying, can predict maternal style (i.e., child neglect), offspring temperament, or offspring depression or anxiety.

Id. at 99.

18. Yale Program for Women's Reproductive Behavioral Health, Research in the Service of Patient Care, <http://www.med.yale.edu/psych/clinics/YBG.html> (last visited Sept. 21, 2008) (providing information about the current research projects of the Yale Program for Women's Reproductive Behavioral Health, including the "[d]iagnosis and treatment of postpartum depression through a neuro-imaging research protocol (HIC #9958).").

This study involves free antidepressant medication and free supportive therapy. Women must be within the first 3 months postpartum and breastfeeding. Women who are not experiencing any mood changes after delivery, and are within the first 3 months postpartum and are breastfeeding, are also needed for our control group. All participants can earn up to \$200.

Id.

19. 906 F.2d 1525 (11th Cir. 1990).

postpartum depression as a physical illness.²⁰ Both the United States District Court for the Southern District of Florida²¹ and the Eleventh Circuit Court of Appeals²² had to review the evidence provided about Pam's postpartum depression and decide whether she had an organic physical illness, which would require the defendant insurer to provide a robust set of health insurance benefits, or whether she had a nervous disorder, which was subject to a much less desirable benefit set.²³ Although several expert and treating psychiatrists and psychologists testified about Pam's erratic behavior and thoughts, including her specific desire to harm her baby within three days of birth, the court found that none of the experts could provide any physical, chemical, or hormonal tests or measurements that could prove that Pam had a physical illness.²⁴ The court thus held that Pam did not have a physical or organic illness.²⁵ *Blake* was published in 1990, so it is only about eighteen years old today.

In the last seven to eight years, however, we have seen a sea of change in the legal treatment of the postpartum mood disorders. We now have bills that would prohibit the denial of disability insurance for a history of postpartum depression.²⁶ We have bills that would require health care providers to educate new mothers and their families about

20. *Id.* at 1525-26.

21. *See Blake v. UnionMutual Stock Life Ins. Co.*, 1989 U.S. Dist. LEXIS 16331, *1-13 (S.D. Fla. Mar. 10, 1989).

22. *Blake*, 906 F.2d at 1525.

23. *Blake*, 1989 U.S. Dist. LEXIS 16331, at *3-4.

24. *Id.* at *8 (noting that “[n]either Pam Blake’s serotonin and neopinephrine levels nor her hormonal levels were ever measured so far as this Court is aware . . . Dr. Moreno’s testimony simply failed to prove a physical illness caused Mrs. Blake’s psychiatric hospitalization.”). The 11th Circuit adopted the reasoning of the United States District Court for the Southern District of Florida in rejecting the Blakes’ argument that Pam Blake’s postpartum treatment was covered as a sickness under the policy. *Blake*, 906 F.2d at 1527.

As to the argument that Pam Blake’s postpartum treatment was covered by the “sickness” provisions of the policy, a review of the record reveals that the district court must be affirmed on the findings of fact and reasoning under the proper *de novo* standard of review as reflected in its Memorandum Order attached hereto as an Appendix.

Id.

25. *Id.* at *12 (noting that “[b]ecause of Plaintiffs’ failure to prove an organic causation for this illness, we find that the treatment Mrs. Blake received is only more convincing proof that she suffered a mental illness within the terms of the policy.”).

26. *See, e.g.*, H.R. 634, 79th Gen. Assem., 1st Sess. (Iowa 2001). This bill prohibits an insurer from completely denying disability insurance coverage on the basis of treatment within the previous five years for depression due to pregnancy, postpartum depression, or menopause. The insurer may, however, in such circumstances, require a waiver of coverage for disability due to depression for a period of time not to exceed five years from the date of coverage. *Id.*

postpartum depression before they leave the hospital.²⁷ We have bills that would require the offering of postpartum screening during the first year of postnatal check-up visits,²⁸ bills that would provide social services to new mothers suffering from postpartum depression,²⁹ bills that would increase funding for research on postpartum conditions at the National Institutes of Health,³⁰ bills that would require States to compile and synthesize data relating to postpartum depression and psychosis,³¹ and, of course, bills that would proclaim certain days and months in certain states as Postpartum Depression Awareness Day³² and Month.³³

When I reviewed the legislative findings of many of the early and approved versions of these bills, I saw that at least part of the impetus for the new legislation was an improved understanding of the physiological bases of the postpartum mood disorders. For example, in a 2003 California bill requesting two state agencies to work together to improve women's access to mental health care, the California Assembly specifically noted that physiological factors are believed to play a role in postpartum mood and anxiety disorders.³⁴ In a 2000 New Jersey bill appropriating \$50,000 for postpartum depression education, screening, and treatment, the New Jersey Legislature found that postpartum depression is the result of physiological reactions to childbirth and that it involves several physiological disorders, including chemical

27. *See, e.g.*, Mom's Opportunity to Access Health, Education, Research, and Support for Postpartum Depression Act (MOTHERS Act), S. 1375, 110th Cong., (2007) (requiring grants that would "provide education to women who have recently given birth, and their families, concerning postpartum depression, postpartum mood and anxiety disorders, and postpartum psychosis . . . before such women leave their birthing centers . . .").

28. *See id.* (requiring grants that would "provide for the screen[ing of] new mothers for postpartum conditions during their first year of postnatal checkup visits, including the standard 6-week postnatal checkup visit").

29. *See id.* (requiring grants that would "provide for the delivery of essential services to individuals with postpartum conditions and their families.").

30. *See id.* (being "[a] bill to . . . increase research at the National Institutes of Health on postpartum depression.").

31. *See, e.g.*, H.6567, Jan. Sess. (R.I. 2001) (Rhode Island House Resolution directing the Rhode Island Department of Health to establish a panel to compile and synthesize data relating to postpartum depression and psychosis).

32. *See* S. Res. 164, 210th Leg. (N.J. 2003) (declaring June 25, 2003, as Postpartum Depression Awareness Day in the State of New Jersey).

33. *See, e.g.*, Assem. Con. Res. 51, Reg. Sess. (Cal. 2003) (proclaiming the month of May 2003 as Postpartum Mood and Anxiety Disorder Awareness Month in the State of California).

34. *Id.* (providing "WHEREAS, The medical community does not fully understand or recognize all factors contributing to postpartum mood and anxiety disorders, but it is believed that these disorders are caused by physiological factors . . .").

imbalances.³⁵ In two 2007 federal bills, Congress admitted that the exact causes of the postpartum mood disorders are complex and unknown, but Congress did make references to findings relating to steep and rapid drops in hormones after childbirth as contributing factors.³⁶

When I dug a little deeper, I found evidence that our federal and state legislators were exposed to lobbyists and stakeholders who were familiar with the neuroscience of the postpartum mood disorders and who were using this science to push their legal agendas. Just as one of many possible examples, the Postpartum Support International organization (PSI) issued a position paper that was sent to multiple state legislatures that relies on contemporary neuroscience to argue for changes in civil and criminal legislation and the treatment of women suffering from postpartum conditions.³⁷ PSI specifically argues that the neuroscience of postpartum depression and psychosis must be conveyed to legislators, policymakers, and lay juries.³⁸ Without neuroscience, PSI believes that mentally ill women will not receive equal treatment or representation under the law and in the courtroom, and that juries will not be making informed decisions, especially in infanticide cases.³⁹

We see this type of neuroscience-based argumentation not only in position papers and op-ed pieces, but also in the abstract, summary, and conclusion sections of scientific research studies and review articles. For example, a physician author of a review article published in the *American Journal of Psychiatry* recently argued that neuroscientific

35. Assem. 2775, 209th Leg. (N.J. 2000) (providing that “[t]he Legislature finds and declares that: (a) Postpartum depression is the name given to a wide range of . . . physiological reactions to childbirth . . . [and] (b) Postpartum depression is the result of a chemical imbalance triggered by a sudden dramatic drop in hormonal production after the birth of a baby . . .”).

36. See, e.g., MOTHERS Act, *supra* note 27 (providing “[t]he Congress finds as follows: . . . The causes of postpartum depression are complex and unknown at this time; however, contributing factors include: a steep and rapid drop in hormone levels after childbirth”); Melanie Blocker-Stokes Postpartum Depression Research and Care Act, H.R. 20, 110th Cong., (2007) (providing “[t]he Congress finds as follows . . . The causes of postpartum depression are complex and unknown at this time; however, theories include a steep and rapid drop in hormone levels after childbirth”).

37. Margaret G. Spinelli, *Position Paper on Infanticide Associated with Postpartum Mental Illness*, POSTPARTUM SUPPORT INT’L, <http://postpartum.net/resources/healthcare-pros/position-paper-infanticide/> (last visited January 20, 2008).

38. *Id.*

39. *Id.*

Sentences for women who commit infanticide vary remarkably because insanity laws differ from state to state and lack input from the psychiatric community . . . by emphasizing punishment rather than prevention and treatment, the U.S. fails to enlighten society about the impact of mental illness on thought and behavior. We abandon the mentally ill by leaving decisions for treatment and punishment in the hands of the judicial system.

Id.

evidence should be used to eliminate the disparate treatment of ill mothers under the law and as support for the argument that ill mothers need treatment, not punishment.⁴⁰

In addition to the postpartum mood disorders, I am also examining the changing legal understanding and treatment of other gender-specific conditions such as premenstrual dysphoric disorder and eating disorders, which we might call gender-prevalent conditions because girls and women have them more than boys and men, although their incidence in boys and men is on the rise.⁴¹ Here, neuroscience is impacting the law in at least two different ways. The first way relates to the way in which litigants and courts interpret the mental health benefits that are subject to a state or federal mental health parity legislative or regulatory mandate. Some background information regarding the mental health parity debate is necessary before proceeding.⁴²

Although insurance plans initially offered physical and mental health benefits under the same terms and conditions, many health insurance plans, including employer-based plans, began reducing their mental health benefits in the 1970s. Insurers and employers justified these benefit reductions on the grounds that mental health treatments were more expensive than treatments for physical illnesses. Patients with mental health conditions, on the other hand, worried that the stigma associated with mental illness, as well as their inability to literally prove the existence of the mental health condition through routine blood, urine, X-ray, or other diagnostic tests, caused the less comprehensive coverage. Whatever the cause, the result is what we referred to as a mental health benefit disparity. Some health insurance plans that cover 365 days of inpatient care for physical illnesses, for example, might cover only forty-five days of inpatient care for mental disorders. Plans that provide

40. See Margaret G. Spinelli, *Maternal Infanticide Associated with Mental Illness: Prevention and the Promise of Saved Lives*, 161 AM. J. PSYCHIATRY 1548 (2004) (stating that, “contemporary neuroscientific findings support the position that a woman with postpartum psychosis who commits infanticide needs treatment rather than punishment and that appropriate treatment will deter her from killing again” and that the “absence of formal DSM-IV diagnostic criteria for postpartum psychiatric disorders promotes disparate treatment under the law”; concluding that, “the psychiatric community should develop guidelines for the treatment of postpartum disorders, foster sharing of knowledge between psychiatry and the law, and do more to enlighten society about the effects of mental illness on thought and behavior so that decisions about the treatment and punishment of mentally ill persons will not be left exclusively in the hands of the judicial system.”).

41. Margarita Tartakovsky, *Eating Disorders in Men*, PSYCHCENTRAL, Oct. 7, 2008, available at <http://psychcentral.com/blog/archives/2008/10/07/eating-disorders-in-men/> (noting that “[o]ut of 3000 people with anorexia and bulimia, 25 percent were men”).

42. The background information provided in the next five paragraphs is taken from Stacey A. Tovino, *Neuroscience and Health Law: An Integrative Approach?*, 42 AKRON L. REV. 469 (2009).

unlimited outpatient visits for treatment of physical illnesses might allow only twenty outpatient visits for treatment of mental disorders. And plans that cover all or maybe 80 percent of the cost of treatment for physical illnesses might cover only 50 percent or less of the cost of treatment for a mental illness.

In the late 1980s, some patients who were denied additional mental health benefits responded by suing their insurers, arguing that their conditions were physical rather than mental in nature and thus covered under the better set of benefits. In these contract-based lawsuits, the plaintiffs' experts routinely referenced advances in the behavioral and brain sciences to support their testimony. Sometimes the patients won, sometimes they did not, but the results all depended on whether the expert witnesses could prove using physical evidence that the plaintiff had a "real" disease.

Frustrated with these piecemeal lawsuits, many patients and patient advocacy organizations began in the early 1990s to lobby Congress and state legislatures for health insurance parity, reasoning that there was no biological justification for the unequal insurance coverage of mental and physical conditions by health insurance plans. By the mid-1990s, proponents of mental health parity had achieved some success at the federal and state level, including the federal Mental Health Parity Act of 1996,⁴³ which required some, but not all, group health plans to provide equality for any annual or lifetime aggregate spending caps imposed within the plan.⁴⁴ Many states also enacted their own mental health parity laws, which vary widely in scope. At the heart of all of this mental health parity legislation is the idea that insurers need to

43. Pub.L. 104-204, Title VII, 110 Stat. 2944 (1996).

44. On October 3, 2008, President George W. Bush signed the Emergency Economic Stabilization Act of 2008 (EESA) into law. H.R. 1424, Emergency Economic Stabilization Act of 2008, Pub. L. No. 110-343, 110th Cong. (Oct. 3, 2008). Division C, Title V, Subtitle B of the EESA contains the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act of 2008 (MHPA'08). Very generally, MHPA'08 builds on the Mental Health Parity Act of 1996 by amending the Employee Retirement Income Security Act, the Public Health Service Act, and the Internal Revenue Code to require group health plans that provide both medical and surgical benefits and mental health or substance use disorder benefits to ensure that: (1) the financial requirements, such as deductibles and copayments, applicable to mental health or substance use disorder benefits are no more restrictive than the predominant financial requirements applied to substantially all medical and surgical benefits covered by the plan; (2) there are no separate cost sharing requirements that are applicable only with respect to mental health or substance use disorder benefits; (3) the treatment limitations applicable to such mental health or substance use disorder benefits are no more restrictive than the predominant treatment limitations applied to substantially all medical and surgical benefits covered by the plan; and (4) there are no separate treatment limitations that are applicable only with respect to mental health or substance use disorder benefits. *Id.*

reimburse treatments for mental illnesses in the same way they do for physical illnesses.

Some state laws define mental health benefits in terms of conditions listed in the DSM-IV⁴⁵ or the current version of the ICD,⁴⁶ both of which identify and classify mental disorders. Some jurisdictions do this even though the DSM-IV states in its introduction that a mental condition's inclusion in the manual should not imply that the condition meets legal criteria for what constitutes a mental disease, disorder, or disability, and that there is an imperfect fit between the law on the one hand and disease classification for clinical diagnostic purposes on the other.⁴⁷ The way in which neuroscience is impacting the law here is that stakeholders are using neuroscientific findings to urge the inclusion of additional conditions in these classification manuals. Once a condition is classified in the DSM-IV or the current version of the ICD, many state laws require health insurance benefit parity for that condition.⁴⁸

The gender-specific condition of premenstrual dysphoric disorder (PMDD) is illustrative. PMDD is not currently classified as a mental disorder in the main part of the DSM-IV, although Appendix B to the manual does list PMDD as a condition that should be studied further in the future.⁴⁹ Stakeholders are using the findings of recent studies investigating the neuroscience of PMDD, some of which suggest that PMDD is due, at least in part, to a surge in progesterone during the luteal phase of the menstrual cycle and related amygdala activation,⁵⁰ to support the inclusion of PMDD as a mental disorder in the DSM-IV. If PMDD is included as a mental disorder in the forthcoming DSM-V, states that specifically define mental illnesses in terms of the DSM-IV will require health insurance benefit parity for PMDD treatments.

The second way in which neuroscience is impacting the mental health parity debate is in states that are less specific and mandate equal insurance coverage if the mental condition "is caused by a biological

45. DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS, 4th ed., Text Revision (2000) [Hereinafter DSM-IV].

46. WORLD HEALTH ORGANIZATION, INTERNATIONAL STATISTICAL CLASSIFICATION OF DISEASES AND RELATED HEALTH PROBLEMS, 10th Rev. (2007) [Hereinafter ICD].

47. DSM-IV, *supra* note 45, at xxii-xxiii.

48. *See, e.g.*, CONN. GEN. STAT. § 38a-514(a) (2008) (requiring insurance providers to provide coverage for mental disorders "as defined in the most recent edition of the American Psychiatric Association's 'Diagnostic and Statistical Manual of Mental Disorders,'" excluding less serious disorders such as caffeine-related disorders).

49. DSM-IV, *supra* note 46, at 759, 771-774.

50. *See, e.g.*, Joan Arehart-Treichel, *Brain Imaging Suggests Origin of Premenstrual Dysphoric Disorder*, 42(18) PSYCHIATRIC NEWS 13 (2007).

disorder of the brain”⁵¹ New Jersey is one of these States.⁵² Nebraska goes one step further and expressly ties its current definition of serious mental illness to the state of medical science when it requires benefit parity for “any mental health condition that current medical science affirms is caused by a biological disorder of the brain.”⁵³ When a state law expressly refers to the current state of medical science in its insurance parity mandate, patients, insureds, and other stakeholders are encouraged to refer to scientific studies that support the classification of their mental health conditions as biological disorders of the brain.

Stakeholders are thus beginning to refer to scientific studies to achieve their mental health parity goals. For example, several recent neuroimaging studies have found structural and functional differences in the brains of women with both active and recovered eating disorders.⁵⁴ In some states, lobbyists have referenced these studies en route to successfully arguing that eating disorders should be included within the statutory list of mental health conditions that require equal insurance benefits.⁵⁵

In summary, I have shown how stakeholders are using advances in neuroscience to secure health care benefits under health insurance policies and health plans and to push for the application of mental health parity legislation. More broadly, though, I hoped to show how neuroscience is quickly becoming a very important tool in the arsenal of the health care lobbyist, especially those charged with promoting women’s access to mental health care. When we have conditions that are unpopular, as are mental health conditions, or conditions that to this day are debated, as are many women’s health conditions, neuroscience is quickly becoming the lobbyist’s and stakeholder’s answer.

The question becomes: How do we assess these neuroscience-based claims, especially when they are made in the civil and regulatory health care context as opposed to the criminal context? I have time for two quick points. First, what gives me cause for pause is not so much the

51. N.J. STAT. ANN. § 17B:27A-19.7 (1999).

52. *Id.*

53. NEB. REV. STAT. § 44-792(5)(b) (1999).

54. See, e.g., E.K. Lambe et al., *Cerebral Gray Matter Volume Deficits after Weight Recovery from Anorexia Nervosa*, 54(6) ARCHIVES GEN. PSYCHIATRY 537 (1997); M. Mühlau et al., *Gray Matter Decrease in the Anterior Cingulate Cortex in Anorexia Nervosa*, 164(12) AM. J. PSYCHIATRY 1850 (2007); Angela Wagner et al., *Altered Reward Processing in Women Recovered from Anorexia Nervosa*, 164(12) AM. J. PSYCHIATRY 1842 (2007).

55. See, e.g., CAL. HEALTH & SAFETY CODE § 1374.72(d)(8) and (9) (2008) (California’s mental health parity law provision that mandates equal insurance coverage for a range of severe mental illnesses, including anorexia nervosa and bulimia nervosa).

stakeholders' use of neuroscience, which I suppose is inevitable, but the appropriateness of many of the stakeholders' normative arguments. In some of these cases, stakeholders are making wonderful arguments that many of us, or at least some of us, might agree with. Take, for example, the argument that treatments for postpartum depression should be covered by health insurance companies in the same way that traditional physical conditions, such as orthopedic conditions, already are, so that we can prevent cases like Andrea Yates from happening again. In other civil and regulatory health care cases, however, I am starting to see a common argument that every type of structural and functional brain difference – even differences between men's and women's brains in terms of emotional responses to language and images – is evidence of a health condition that should be treated and reimbursed and, sometimes, a disability that requires protected status and benefits under federal and state disability discrimination and disability benefit law. We need to be very careful here. Many structural and functional differences are just that – differences. They are differences that may be individual differences, characteristic differences, or adaptation differences, but they are not necessarily evidence of an illness for which treatment is medically necessary and for which payment must be made by our commercial and public health insurance plans. I anticipate that our judges and juries will be left to determine whether many of these structural and functional differences are health conditions to which legal protections and benefits should flow, even though our non-scientifically and non-clinically trained judges and jurors are perhaps the least equipped to do so.

Second, just as in criminal law, we have a number of relevance and reliability problems when we start using neuroscience-based arguments in the civil and regulatory health care contexts. Just as one example, almost all of the postpartum studies I referenced in this talk were very small studies, most with less than fifteen ill mothers and an equal number of healthy postpartum controls. When a non-scientifically or non-clinically trained stakeholder relies on a scientific study to make a legal argument, I can almost guarantee you that there are going to be a few errors in translation.

