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BRIGHAM AND WOMEN'S HOSPITAL

Department of **PSYCHIATRY UPDATE**

CONTENTS

- Page 2**
Center for Brain/Mind Medicine Provides Advanced Interdisciplinary Care
- Page 4**
Removing Treatment Barriers with Medical Psychiatry
- Page 5**
Integrating Psychiatry into Palliative Care
- Page 6**
Tailoring Therapies for Women's Mental Health
- Page 7**
Addiction Psychiatry Program Provides Specialized Care for Patients with Medical Illnesses

Defining Brain-based Medical Psychiatry

The Brigham and Women's Hospital (BWH) Department of Psychiatry has a long tradition of focusing on the psychiatric aspects of medical illness, emphasizing a multidisciplinary team approach, and integrating clinical care, research, and training.

Integrated Subspecialty Care

That core strength in managing medical psychiatric care is expanding and evolving to encompass brain-based neuropsychology and more deeply integrated subspecialty medical care. Under the leadership of David Silbersweig, MD, Chair, Department of Psychiatry, and Chair, Institute for the Neurosciences, the new direction embraces a transformation in the field of psychiatry to elucidate underlying mechanisms of brain/mind disorders and enhance evidence-based treatments.

The efforts of BWH faculty to illuminate the pathophysiology that may underlie both medical and psychiatric presentations and their interactions are advancing across the spectrum of neuropsychiatry, medical psychiatry, cancer psychiatry and women's psychiatry, as described in this newsletter.

Leading Research

"There is so much new knowledge coming out about the interactions of brain function with the functioning of the rest of the body," says Laura Miller, MD, Vice Chair, Academic Clinical Services. "Researchers are using powerful tools, such as functional imaging of the brain, to better understand these interactions. We can integrate that understanding into the care of our patients."

The Department addresses the need to fight a common challenge in mental health: Co-morbid medical problems and psychiatric problems are often underdiagnosed and undertreated when psychiatric care is less integrated or even absent.

"When psychiatric disorders come in conjunction with medical illnesses, they often interact with each other in complex ways," Dr. Miller says. "In those situations, it is important to develop a comprehensive understanding that transcends the fragmented specialization of modern medicine and to integrate all the different things that are actually integrated in the real life of the patient." Dr. Silbersweig says, "The new model combines the sophistication and compassion of psychiatry with the deep knowledge and study of how the brain works."

BWH has built a special expertise in cases that are difficult, because of their complexity, or their refractory nature, or the need for interdisciplinary expertise that can make complex diagnoses and provide the latest treatment options.



David Silbersweig, MD,
Chair, Department of Psychiatry,
Chair, Institute for the Neurosciences



Laura Miller, MD,
Director, Women's Mental Health Division,
and Vice Chair, Academic Clinical Services

Center for Brain/Mind Medicine Provides Advanced Interdisciplinary Care

The new Center for Brain/Mind Medicine at Brigham and Women's Hospital (BWH) represents a major integration of clinical care, translational research, and educational resources aimed at the advancement of care for patients with brain/mind disorders.

For patients with complex clinical problems that may not be fully understood within the traditional boundaries of neurology and psychiatry, Center faculty provide a highly integrated, multifaceted approach to the evaluation and treatment of neuropsychiatric and neurobehavioral disorders.

Forging a Joint Neurology-Psychiatry Approach

"Many of the patients who come to us have seen a number of psychiatrists, neurologists, and other physicians who were unable to provide a clear explanation of their condition from the vantage point of their individual specialties," says David Silbersweig, MD, Chair, Department of Psychiatry, and Chair, Institute for the Neurosciences.

“It's an exciting time, as we go beyond the traditional stereotypes of psychiatry and neurology, and offer novel approaches and therapeutics.”

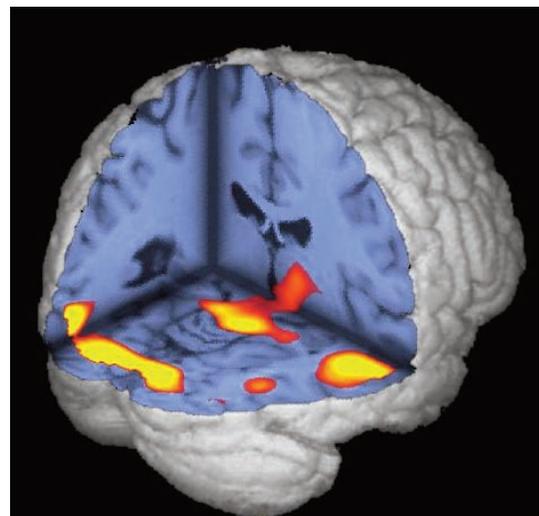
multiple sclerosis, movement disorders, epilepsy, tumor, stroke, and head trauma who are experiencing alterations in cognitive, emotional, perceptual, or behavioral functioning as a direct result of their illness and/or as a response to its impact on their lives. It also allows for a comprehensive, expert evaluation of possible neurologic contributions to atypical psychiatric presentations.

Multidisciplinary Treatment for Complicated Syndromes

"Most brain-related disorders generate a complicated array of symptoms and signs. To adequately understand and address these problems requires a variety of perspectives," says Center Director Kirk Daffner, MD. "Neuropsychiatrists, behavioral neurologists, neuropsychologists, social workers, geriatric specialists, and other clinicians at the Center work together to sort out complex diagnostic cases and develop multi-modal therapies."

— Kirk Daffner, MD, Director, Center for Brain/Mind

"Patients are evaluated by an experienced team of clinicians who are open to considering different ideas about underlying problems and ways to intervene that aim to optimize function," Dr. Daffner adds. "Our providers offer expertise in all critical areas of our field, including memory, executive and attentional functioning, language, and emotional/affective processing."



Visual, memory, and arousal brain regions activated in PTSD patients experiencing flashbacks.

Research and Development of Multi-modal Therapies

"We are seeing rapid developments in understanding how cognitive and neuropsychiatric symptoms reflect deficits in specific brain circuits and how they might be modified," says Dr. Daffner. "It's an exciting time, as we go beyond the traditional stereotypes of psychiatry and neurology, and offer novel approaches and therapeutics."

The Center is bolstered by a critical mass of leading physicians and scientists who combine neurocognitive, neuroimaging, neurogenetic, and neurobiomarker techniques to develop personalized medical approaches. In the Memory Disorders Unit, faculty are actively involved in research on degenerative disorders such as Alzheimer's disease and its prodrome, studying underlying mechanisms in order to establish new biomarkers and targeted therapeutics. Patients have opportunities, within the context of these studies, to participate in cutting-edge clinical trials of potential disease-modifying therapies.

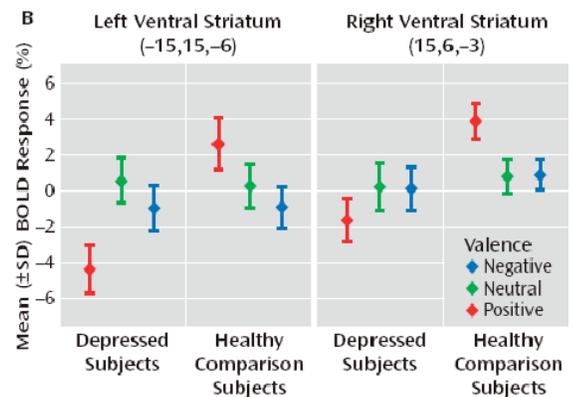
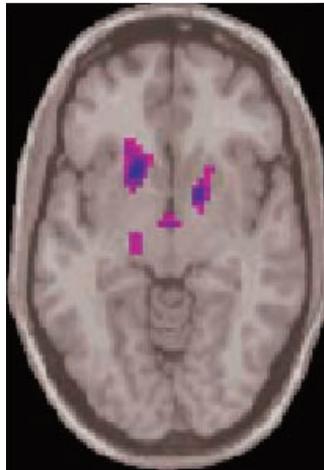
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Structural and functional neuroimaging techniques are aiding a wide range of studies.

- **The Functional Neuroimaging Laboratory**, directed by Emily Stern, MD, and Dr. Silbersweig, combines advanced imaging designs and analyses with translational neuroscience and genetics, probing frontal-limbic modulation, and laying a foundation for novel diagnostics and therapeutics.

- **The Psychiatry Neuroimaging Laboratory** (<http://PNL.bwh.harvard.edu>), led by Martha Shenton, PhD, Director, uses several neuroimaging techniques to explore brain abnormalities in neuropsychiatric disorders. More recently her group has used magnetic resonance diffusion tensor imaging, which reveals details of white matter fiber tracts, and other advanced imaging technologies to study cognitive and structural brain regions in psychopathological populations. Their longstanding and continuing studies of schizophrenia have helped pinpoint key brain regions and connections in the pathophysiology of this disorder. With Boston University School of Medicine colleague Robert Stern, PhD, Shenton and her team are imaging National Football League players to learn if sub-concussive blows predispose players to chronic traumatic encephalopathy. In another new project, Shenton's lab is the neuroimaging core for a 10-site clinical consortium study focused on traumatic brain injury and post-traumatic stress disorder.

- **The Harvard Aging Brain Laboratory**, directed by Reisa Sperling, MD, Director, Clinical Research, Memory Disorders Unit, employs a novel combination of sensitive imaging techniques, neuropsychological measures and molecular biomarkers to study whether the presence of amyloid pathology in asymptomatic older individuals is associated with



People with depression not only have a heightened negative emotional response, they also have decreased interest in and pleasure from activities. A localized deficit in ventral striatal regions in patients versus control subjects viewing positive emotional stimuli is shown in the functional MRI statistical image (above left). The graph (above right) shows the diminished response to positive emotional stimuli in these regions, which have been associated with motivation and reward, and correlated in this study to clinical measures of anhedonia in patients. Such work from the Functional Neuroimaging Laboratory provides a foundation to develop more targeted therapeutics. (*Am. J. Psychiatry*)

alterations in brain structure and function. They recently reported that cognitively normal older individuals with high amyloid burden on PET scans also show alterations in memory network function on fMRI, similar to the abnormalities reported in patients with Alzheimer's disease. They have also found evidence that individuals with high cognitive reserve may be able to maintain cognitive performance in the setting of higher amyloid burden. "This work, along with other groups, suggests that we may one day be able to detect evidence of early brain Alzheimer's pathology and ultimately start therapeutic intervention before any clinical symptoms are apparent," Sperling says, "but additional studies to determine the prognostic value of these biomarkers at an individual subject level are clearly needed before they are useful clinically."

(For more information on investigational trials, contact Arthur Barsky, MD, at (617) 732-5236 or abarsky@partners.org)

Other research investigates successful cognitive aging, neuroplasticity and neuromodulation, circuits underlying

volitional behavior and executive control, disturbances in affective processing, and the relation between affective and cognitive dysfunction.

Interdisciplinary Training

The Center offers comprehensive training, including dual residency training in psychiatry and neurology, a fellowship program in neuropsychiatry and behavioral neurology leading to subspecialty certification, and a fellowship

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David Silbersweig, MD,
Chair, Department of Psychiatry,
Chair, Institute for the Neurosciences



Kirk Daffner, MD,
Director, Center for Brain/Mind Medicine



Jane Epstein, MD,
Director of Neuropsychiatry Education
and Training

Removing Treatment Barriers with Medical Psychiatry

The Division of Medical Psychiatry at Brigham and Women's Hospital (BWH) is one of the largest inpatient consultation-liaison psychiatry groups in the country – providing more than 12,000 visits a year – and collaborates with colleagues of varying disciplines to focus on psychiatric issues in the medically ill.

Psychiatrists in the Division offer care to the medical/surgical patients with common co-occurring conditions of depression, anxiety, and delirium. They also function as liaison staff with several specialty services including Cardiac, Lung, and Renal Transplantation, Epilepsy, Burn/Trauma, OB/GYN, and Oncology.

Role of Medical Psychiatry

David Gitlin, MD, Director, Medical Psychiatry Division, notes that, in general, providers in the Division see three categories of patients.

First, they see those who have no previous history of psychiatric illness but whose medical issue has produced depression or other psychiatric complications. Second, they see those patients with a history of severe psychiatric illness who require acute medical or surgical care. Lastly, they see patients with disorders that are not well understood and have a neuropsychiatric component.

As examples of the third group, Dr. Gitlin, who is the current president of the Academy of Psychosomatic Medicine, lists fibromyalgia, irritable bowel syndrome, and chronic fatigue syndrome as disorders in which stress and emotional disruption may play a significant role in development and progression of the disease.

Arthur Barsky, III, MD, Vice Chairman for Research, is a pioneer in the understanding and treatment of unexplained

medical symptoms and somatoform disorders, which may include about one third of the symptoms that patients bring to their doctors. Dr. Barsky's theory of amplification, in which disturbances in the brain may amplify pain and symptoms experienced by patients, led him to develop a cognitive behavioral therapy intervention. He is leading a trial testing two such interventions for symptoms of rheumatoid arthritis. Other BWH physicians have been making considerable progress in combining cognitive behavior therapy and antidepressant medications.

Consultation Improves Patient Outcomes

"The core Psychiatric Consultation-Liaison Service is expanding its mission to develop specialized clinical care and research in collaboration with medical subspecialties such as cardiology, gastroenterology, and rheumatology," notes Dr. Gitlin.

Evidence shows that patients with co-occurring medical and psychiatric disorders often have high rates of medical utilization and worse outcomes, and that an effective Psychiatric Consultation service can help control medical length-of-stay, improve nursing and medical staff satisfaction, and improve quality of patient care.

Psychiatric Care in the ER

To address these issues directly, Grace Chang, MD, MPH (Director of Health Services and Addictions Research and Director of Partners Psychiatry and Mental Health), and her colleagues including Dr. Gitlin, are studying factors affecting length of stay for psychiatric patients seen in the ER. They are analyzing data from 1,092 patient cases from the five Partners HealthCare hospitals emergency departments

(Partners HealthCare is an integrated health system founded by BWH and Massachusetts General Hospital). The collaborative effort aims to develop practical steps to improve the ER experience for psychiatric patients by making their visits more efficient.

Training is another central mission of the Division. It runs a leading psychosomatic medicine fellowship program with five fellows per year, in addition to in-depth residency training experiences for Harvard psychiatry residents, and rotations for students at Harvard Medical School.

The Medical Psychiatry Division is also strongly integrated into the Emergency Medicine services, providing advanced consultation on care of emergency patients with primary or co-occurring acute psychiatric problems.

"The care of psychiatric patients in Emergency Rooms has become a health care crisis in the United States", says Dr. Gitlin. The overall lack of access to psychiatric services nationwide has resulted in prolonged lengths of stay in ERs for this population, typically two to three times that of other medical patients, resulting in a phenomenon known as 'psychiatric boarding'.



David Gitlin, MD,
Director, Medical Psychiatry Division



Arthur Barsky, MD
Vice Chair, Psychiatric Research

Integrating Psychiatry into Palliative Care

Within Brigham and Women’s Hospital (BWH) academic psychiatry, the Department of Psychosocial Oncology and Palliative Care at Dana-Farber/Brigham and Women’s Cancer Center offers distinctive, clinical care, research and training focused on enhancing quality of life and reducing suffering for patients with cancer and life-threatening illnesses. The interdisciplinary patient care teams include psychiatrists, psychologists, social workers, geriatricians, internists, oncologists, pharmacologists, nurses, chaplains, palliative medicine fellows, and other professionals.

“Patients come here with very high expectations for cancer care, and trying to find the right balance between optimism and realism is a real challenge,” Susan Block, MD, Chief, Department of Psychosocial Oncology and Palliative Care, Dana-Farber/Brigham and Women’s Cancer Center.

“**Psychiatrists have a major role to play in training and educating oncology and palliative care providers**”

— Susan Block, MD, Chief, Psychosocial Oncology and Palliative Care



Pedestrian bridges connect the world-class team of physicians, researchers, and other specialists from adjoining Brigham and Women’s Hospital and Dana-Farber Cancer Institute.

Collaborative Medical and Psychiatric Care

Dr. Block highlights the need for all clinicians who deal with patients with advanced illness to be given a psychiatric framework for that care, and to be part of an ongoing conversation with patients about end-of-life issues.

“Psychiatric care must be integrated into the clinical care model across the disease continuum,” she says. “Cancer is a challenging diagnosis, and people need all their physical, emotional, and spiritual resources beginning at diagnosis and throughout the cancer experience. Psychiatrists have a major role to play in training and educating oncology and palliative care providers: making psychiatric differential diagnoses; treating depression,

delirium, and anxiety; teaching communication; addressing bereavement issues; managing patients with personality disorders; and supporting and assisting the staff as part of the patient care team.”

Research Supports Integrated Care

Dr. Block points to research on these issues by Holly Prigerson, MD, and her colleagues in the Department. A major study, *Associations Between End-of-Life Discussions, Patient Mental Health, Medical Care Near Death, and Caregiver Bereavement Adjustment*, in the *Journal of the American Medical Association*, showed that early conversations about end-of-life issues were associated with:

- better quality-of-life at end-of-life,
- less use of intensive care unit beds,
- less non-beneficial aggressive care,
- and better mental health bereavement outcomes among surviving family members.

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Integrating Psychiatry and Palliative Care		
Psychiatry	Psychiatry and Palliative Care	Palliative Care
<ul style="list-style-type: none"> • Anxiety • Depression • Substance abuse • Personality disorder 	<ul style="list-style-type: none"> • Delirium • Psychological Support • Communication • Mind Body Therapies • Bereavement 	<ul style="list-style-type: none"> • Symptom Management • Advance Care Planning • End-of-life Decision-making • Coordination of Community Resources



Susan Block, MD, Chief, Department of Psychosocial Oncology and Palliative Care, Dana-Farber/Brigham and Women’s Cancer Center

Tailoring Therapies for Women’s Mental Health

Specialists of the Women’s Mental Health Division at Brigham and Women’s Hospital have examined the fundamental differences between men and women, including reproductive cycle events, biological sex differences, and cultural and gender roles, and focus on how psychiatric disorders and their treatments differ by gender.

Led by Laura Miller, MD, Director, Women’s Mental Health, the Division is comprised of a specialized, multidisciplinary team that integrates the disciplines of psychiatry, psychiatric nursing, psychology, and social work to deliver advanced psychiatric care for women.

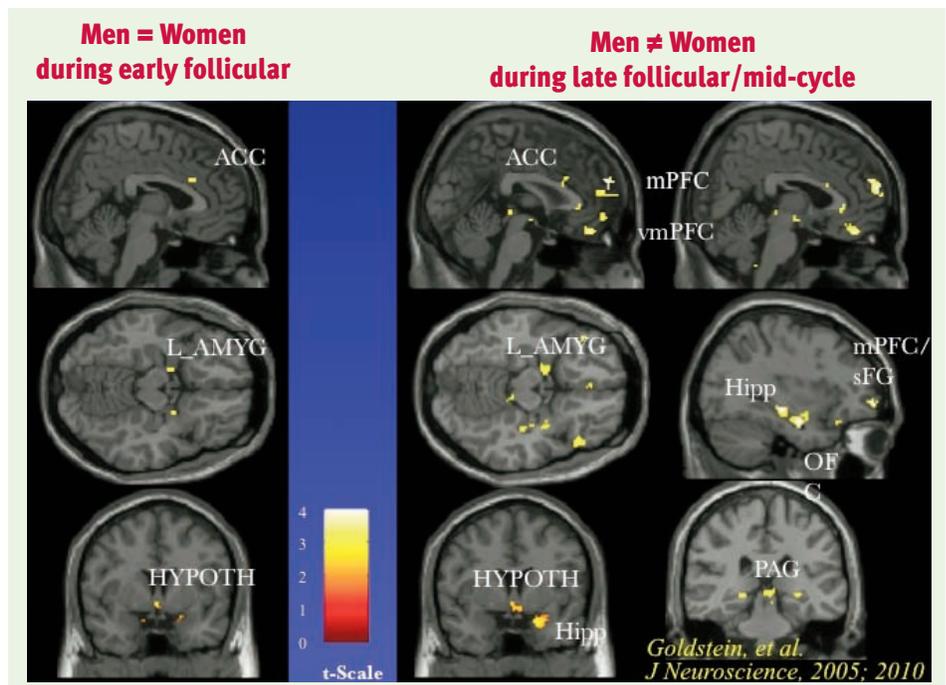
Tailored therapeutic approaches may include:

- Adjustment of medication type and dosage across the menstrual cycle;
- Pharmacotherapy for the neuronal effects of hormonal flux;
- Interpersonal psychotherapy for role transitions in motherhood to effectively treat postpartum depression;
- Multifaceted strategies designed to realistically reduce vulnerabilities and symptoms and increase resilience across points of reproductive change.

Brigham and Women’s Hospital has developed “co-location” models of women’s mental health care. Mental health services are embedded with other women’s health services, coordinating care and making access easier for the patient, at two BWH practices (in primary care of women and, in perinatal care, as well as in the general psychiatry outpatient service.)

Research Findings in Women’s Mental Health

The Division’s research discoveries have formed the basis for current approaches to treatment. Jill Goldstein, PhD, Director of Research on Women’s Mental Health and Gender Neurobiology in the



Department of Psychiatry and Director of Research for the Connors Center for Women’s Health and Gender Biology in the Division of Women’s Health, leads the research program entitled *Clinical Neuroscience of Sex Differences in the Brain*.

The program consists of an interdisciplinary team of investigators, integrating structural and functional brain imaging studies, psychophysiology, neuroendocrine studies of hormones and brain function, genetics, and collaborative efforts with animal investigators studying genes, hormones, inflammation, and the brain.

The research team conducts population-level clinical neuroscience studies, including unique longitudinal cohorts, across the lifespan to investigate gender differences in psychiatric disorders, such as depression and psychoses, and the co-morbidity of psychiatric disorders with general medical disorders, such as cardiovascular disease.

Findings of one study, *Sex Differences in Stress Response Circuitry Activation Dependent on Female Hormonal Cycle*, recently appeared in *The Journal of Neuroscience*. In this fMRI study, Dr. Goldstein and her team showed that significant sex differences in brain activity in stress response circuitry were dependent on women’s menstrual cycle phase (see images above). In other results, they showed:

- sex differences in stress response circuitry are hormonally regulated via the impact of subcortical brain activity on the cortical control of arousal, and that;
- women have been endowed with a natural hormonal capacity to regulate the stress response that differs from men. The sex differences in stress response circuitry in healthy individuals have important implications for understanding sex differences in the disruption of this circuitry in patients with depression

and psychoses, studies that are ongoing in Dr. Goldstein's laboratory.

Other Research Endeavors

- Emily Stern, MD, Director of the Functional Neuroimaging Laboratory in the Department of Psychiatry, and Co-director, Functional and Molecular Imaging in the Department of Radiology, also is conducting numerous functional and structural imaging studies of disorders specific to women, such as premenstrual dysmorphic disorder, and of neural sex differences in conditions that have a higher incidence in women, such as anxiety disorders and depression. The ultimate goal of this neuroimaging laboratory is to use findings to contribute to the development of sex-specific treatments or prevention strategies;
- Grace Chang, MD, MPH, Director of Addictions and Services Research, studies the impact of alcohol use during pregnancy on the mother's as well as the offspring's health outcomes and has focused on the identification and intervention of alcohol use during pregnancy.

"Since any amount of drinking is risky for women who are pregnant or trying to become pregnant, the 'Drinking and Reproductive Health Toolkit' (disseminated by the American College of Obstetricians and Gynecologists), was developed to give women's health care providers strategies to reduce alcohol exposure to the developing fetus," says Dr. Chang. Her research also contributed to the CDC report, *Reducing alcohol-exposed pregnancies, a report of the National Task Force on Fetal Alcohol Syndrome and Fetal Alcohol Effects*.



Laura Miller, MD,
Director, Women's Mental Health Division,
and Vice Chair, Academic Clinical Services

Addiction Psychiatry Program Provides Specialized Care for Patients with Medical Illnesses

The Addiction Psychiatry Program is committed to improving the lives of patients and their families affected by addictive disorders. The multidisciplinary team provides the full spectrum of services and draws upon the expertise of addiction psychiatrists, as well as specially trained nurse practitioners and social workers.

Psychiatric Assessment and Management

The Program provides assessment, management, and referral recommendations for substance use and psychiatric disorders in patients also suffering from medical illnesses, including those in the inpatient units, intensive care units and the emergency departments.

tionately represented in medical settings, we provide not only medically managed detoxification as well as comprehensive inpatient consultations to our medical and surgical colleagues, but also bedside counseling to maximize the hospitalization as a potential 'teaching moment'."

This approach, sometimes referred to as SBIRT (screening, brief intervention, and referral to treatment), captures two historically underserved groups:

- patients seeking medical care who do not yet meet criteria for a substance use disorder, but are nonetheless at increased risk of illness and injury from their substance use, and;

“Throughout the whole spectrum of services, the Program provides personalized care to each patient struggling with addictive disorders with compassion and respect, and remains flexible about how to achieve treatment goals.”

— Joji Suzuki, MD, Director, Addiction Recovery Program

At our nearby Faulkner Hospital campus, we offer a medically managed (level IV) inpatient detoxification program to manage severe and unstable substance withdrawal with 24-hour nursing care and physician monitoring. We offer both partial hospitalization and day/evening intensive outpatient programs with a focus on co-occurring disorders. Numerous recovery groups as well as family counseling are offered through the ambulatory program as well.

- patients who meet criteria for a substance use disorder but who are not interested in engaging in specialty treatment.

Clinicians in the program have the expertise to engage these patients effectively. Evidence shows that even brief interventions lasting 10 to 30 minutes may impact drinking outcomes six to 12 months after the intervention. In another important

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"One of the unique qualities of our services is the focus on medically ill patients," says Joji Suzuki, MD, Director, Addiction Recovery Program. "Because patients with alcohol or drug problems are dispropor-



Joji Suzuki, MD,
Director, Addiction Recovery Program

Center for Brain/Mind Medicine Provides Advanced Interdisciplinary Care... continued from page 3

program in neuropsychology. “We are very excited by the opportunity to train a new generation of leading clinicians and researchers in the integrated, mul-

tifaceted approach to disorders of mind and brain,” comments Jane Epstein, MD, Director of Neuropsychiatry Education and Training.

Integrating Psychiatry into Palliative Care... continued from page 5

These important findings are being integrated into clinical care. One pilot project is encouraging oncologists to have early conversations with patients about their prognoses and values and goals about care to enhance patient understanding and choice.

“Dr. Prigerson’s research showed that patients can engage in these conversations without taking away their hope. We are translating our research findings into our care of patients. Conversations about end-of-life issues should be woven throughout the trajectory of an advanced illness,” Dr. Block says. “It takes time for

patients to integrate and come to terms with difficult realities about their illness, and a gradual process appears to be better tolerated by patients.”

Among the specialized programs for oncology patients, the Department of Psychosocial Oncology and Palliative Care hosts programs for young adults with cancer. “Evidence shows that young adults aged 18 to 30 or 40 have not been as involved in cancer care as children and older adults,” says Dr. Block. “Care and research are needed to improve the outcomes of these patients who are often struggling with the challenges of becom-

ing independent of their parents, negotiating intimate relationships, and finding their place in the world of work.”

Training in the Department occurs at the interface of the Dana-Farber/Brigham and Women’s Cancer Center partnership, as part of the Department of Psychiatry’s rich academic clinical environment. The Department faculty has also trained more than 700 faculty colleagues at the annual Harvard Medical School two-week *Program in Palliative Care, Education, and Practice*, in Boston.

Addiction Psychiatry Program Provides Specialized Care for Patients with Medical Illnesses... continued from page 7

consideration, SBIRT is estimated to save \$3.81 for every \$1 spent by reducing future re-injuries or re-admissions to costly emergency and inpatient care.

Dr. Suzuki says, “Throughout the whole spectrum of services, the Program provides personalized care to each patient strug-

gling with addictive disorders with compassion and respect, and remain flexible about how to achieve treatment goals.”

Research also is being conducted to bring new, evidence-based biological and cognitive behavioral treatments to clinical practice.



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