Comorbid Somatic Illnesses in Patients With Severe Mental Disorders: Clinical, Policy, and Research Challenges

W. Wolfgang Fleischhacker, M.D.; Marcelo Cetkovich-Bakmas, M.D.; Marc De Hert, M.D., Ph.D.; Charles H. Hennekens, M.D., Dr.P.H.; Martin Lambert, M.D.; Stefan Leucht, M.D.; Mario Maj, M.D.; Roger S. McIntyre, M.D.; Dieter Naber, M.D.; John W. Newcomer, M.D.; Mark Olfson, M.D.; Urban Ösby, M.D., Ph.D.; Norman Sartorius, M.D., Ph.D.; and Jeffrey A. Lieberman, M.D.

Background: An increasing body of evidence suggests that, in comparison to the general population, patients with severe mental illnesses such as schizophrenia or bipolar disorder have worse physical health and a far shorter life expectancy in developed countries, due primarily to premature cardiovascular disease.

Participants: This article is based on presentations and discussion on somatic comorbidity in psychiatric illnesses by a group of 37 international experts during 2 meetings held in 2006.

Consensus Process: At the preparatory meeting in Paris, France, the group determined key topics for presentations and group discussions. During the meeting in Vienna, Austria, on day 1, each set of presentations was followed by discussions in small groups with the meeting participants. On day 2, conclusions reached by each discussion group were presented and used as a platform for a consensus view adopted by the meeting participants. The presentations and discussions were collated into a draft that was revised and approved by each of the bylined authors.

Evidence: General health care needs are commonly neglected in patients with severe mental illness, with suboptimal integration of general somatic and psychiatric care services, current lack of consensus as to which health care professionals should be responsible for the prevention and management of comorbid somatic illnesses in patients with severe mental disorders, and, at least in some countries, a paucity of funding for general somatic care for patients with severe mental disorders, especially those in long-term psychiatric treatment.

Conclusions: The somatic health of patients with severe medical illnesses is too often neglected, thus contributing to an egregious health disparity. The reintegration of psychiatry and medicine, with an ultimate goal of providing optimal services to this vulnerable patient population, represents the most important challenge for psychiatry today, requiring urgent and comprehensive action from the profession toward achieving an optimal solution.

(J Clin Psychiatry 2008;69:514–519)

Received July 24, 2007; accepted Feb. 20, 2008. *From the Department of Biological Psychiatry, Medical University Innsbruck, Innsbruck, Austria (Dr. Fleischhacker); the Department of Psychiatry, Institute of Cognitive Neurology (INECO), and the Department of Psychiatry, Institute of Neurosciences, Favaloro Foundation, Buenos Aires, Argentina (Dr. Cetkovich-Bakmas); University Psychiatric Center, Katholieke Universiteit Leuven, Leuven, Belgium (Dr. De Hert); the Department of Clinical Science and Medical Education, Florida Atlantic University, Boca Raton (Dr. Hennekens); the Department for Psychiatry and Psychotherapy, University Medical Center Hamburg-Eppendorf, Hamburg, Germany (Drs. Lambert and Naber); the Department of Psychiatry and Psychotherapy, Technische Universität München, Munich, Germany (Dr. Leucht); the Department of Psychiatry, University of Naples, Naples, Italy (Dr. Maj); Mood Disorders Psychopharmacology Unit, University Health Network, Toronto, Ontario, Canada (Dr. McIntyre); the Departments of Psychiatry, Psychology, and Medicine and the Center for Clinical Studies, Washington University School of Medicine, St. Louis, Mo. (Dr. Newcomer); the Department of Psychiatry, Columbia University, New York, N.Y. (Dr. Olfson); the Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden (Dr. Ösby); Association for Improvement of Mental Health Programmes, Geneva, Switzerland (Dr. Sartorius); and the Department of Psychiatry, College of Physicians and Surgeons, Columbia University, New York, N.Y. (Dr. Lieberman).*

The article is based on presentations and discussion on somatic comorbidity in psychiatric illness by a group of 37 international experts during 2 meetings held on September 14, 2006, in Paris, France, and on October 9 and 10, 2006, in Vienna, Austria. This project and editorial support were funded by an independent educational grant from Pfizer, Inc., New York, N.Y.

Acknowledgments and financial disclosure are listed at the end of the article.

Corresponding author and reprints: W. Wolfgang Fleischhacker, M.D.; Department of Biological Psychiatry, Medical University Innsbruck, Anichstrasse 35, A-6020 Innsbruck, Austria (e-mail: wolfgang.fleischhacker@i-med.ac.at).

An increasing body of evidence suggests that, in comparison to the general population, patients with severe mental illnesses such as schizophrenia or bipolar disorder have worse physical health and a far shorter life expectancy in developed countries, due primarily to premature cardiovascular disease.[1–4] Currently, the evidence is particularly strong for schizophrenia and affective disorders. Compared to the general population in the United States (current average life expectancy is

approximately 78 years; for males, approximately 75 years; for females, approximately 80 years[5]), life expectancy for public sector patients with major mental disorders like schizophrenia and affective disorders is at least 30% shorter.[1] The number of excess deaths is 1.6 to 3.0 times higher, with 38% of excess deaths associated with suicide and homicide, and the other 62% due to natural causes.[3] The excess mortality reported among the persistently mentally ill population has been a consistent finding across heterogeneous studies. For example, in the recently published systematic review on mortality in schizophrenia, Saha et al.[6] pooled data from 37 studies performed in 25 different countries. The median all-person, all-cause standardized mortality ratio (SMR; compares mortality in people with schizophrenia vs. the general population) was 2.58 (95% CI = 1.18 to 5.76). In addition, the results show a statistically significant increase in all-cause mortality in recent decades (the median SMRs for the 1970s, 1980s, and 1990s were 1.84, 2.98, and 3.20, respectively; p = .03). Currently, most of the available research originates from developed countries, while specific evidence from developing countries is sparse. For example, 74% of SMR data sets used in the Saha et al. analysis[6] were from developed countries; however, no statistically significant differences were found between the median all-cause SMRs for the least developed countries, emerging economies, and developed countries (2.02, 2.19, and 2.79, respectively), suggesting that excess mortality in people with schizophrenia could be a global phenomenon.

Although severe mental disorders have a chronic course associated with a high risk for development of comorbid somatic illnesses, general health care needs in this population are commonly neglected.[7] Key problems include the stigmatization of mental illness leading to the discrimination of the mentally ill in all walks of life, including the provision of health care, suboptimal integration of general somatic and psychiatric care services,[8] current lack of consensus as to which health care professionals should be responsible for the prevention and management of comorbid somatic illnesses in patients with severe mental disorders, and, at least in some countries, a paucity of funding of general somatic care for patients with severe mental disorders, especially those in long-term psychiatric treatment. In addition to simply being standard health care policy, parity in access to general medical health care, prevention, and physical health promotion represents a basic human right of patients with severe mental disorders.[9]

Because the evidence for an increased risk of comorbid somatic illnesses, and in particular cardiovascular disease (CVD), is currently most extensive for patients with schizophrenia compared to those suffering from other severe mental disorders, this article will primarily focus on these data.

PARTICIPANTS AND CONSENSUS PROCESS

This article is based on presentations and discussion on somatic comorbidity in psychiatric illness by a group of 37 international experts during meetings held in 2006. At the preparatory meeting in Paris, France, the group determined key topics for presentations and group discussions. During the meeting in Vienna, Austria, on day 1, each set of presentations was followed by discussions in small groups with the meeting participants. On day 2, conclusions reached by each discussion group were presented and used as a platform for a consensus view adopted by the meeting participants. The presentations and discussion were collated into a draft that was revised and approved by each of the bylined authors.

CARDIOVASCULAR DISORDERS IN PATIENTS WITH SCHIZOPHRENIA

In patients with schizophrenia, CVD is the leading cause of premature mortality.[1] When compared to the general population in the U.S.,[5] adults with schizophrenia are about twice as likely to die of CVD.[3,10] Some data even suggest that more than two thirds of adults with schizophrenia, compared with approximately one half in the general population, die of CVD.[10] The prevalence of important risk factors for CVD, such as diabetes and obesity, is about 1.5 to 3.5 times higher in adults with schizophrenia than in the general population.[10–12] While the prevalence of obesity is well documented, in particular in patients with schizophrenia treated with antipsychotic drugs,[13] it appears that diabetes, which is frequently associated with obesity, is commonly underdiagnosed in this patient population.[2] In addition, compared to the general population, patients with schizophrenia also have higher rates of other major risk factors for CVD, such as cigarette smoking (75% vs. 25% in the general population), dyslipidemia, insulin resistance, hypertension, a sedentary lifestyle, and a diet high in fat and low in fiber.[10,11,14] It has been estimated that the metabolic syndrome, a constellation of risk factors associated with a significant increase in CVD in the general population, may affect up to 50% of patients with schizophrenia.[2,15] Although the majority of these risk factors are modifiable, patients with severe mental disorders benefited little from the recent favorable trends in CVD treatment[16] or reduced mortality due to somatic illnesses in the general population.[17,18] The data also suggest that recognized cardiovascular risk factors (e.g., smoking, exercise, body mass index, blood pressure, serum total and high-density lipoprotein cholesterol) may not account for the entire hazard associated with somatic comorbidity and excess mortality in patients with schizophrenia, suggesting a possible multifactorial cause involving shared vulnerability, with important contributions due to socioeconomic factors and reduced

access to appropriate care, and speculation about as yet unidentified genetic factors.[19,20] In addition, use of specific antipsychotic medications can result in either favorable or unfavorable changes in risk factors such as overweight/obesity, dyslipidemia, hyperglycemia, and hypertension.[11,18,21–23]

It is well recognized that other psychiatric disorders, such as major depressive disorder, also represent a risk factor for CVD,[24,25] while the presence of anxiety and depression predicts major adverse cardiac events (such as cardiac death, myocardial infarction, cardiac arrest, or non-elective revascularization) risk in patients with stable coronary artery disease.[26] Treatment with antidepressants or cognitive-behavioral therapy might reduce cardiovascular morbidity and mortality in depressed patients with a cardiovascular disease.[27] Nevertheless, little is known about the possible relationship between schizophrenia and the development, course, and treatment outcome of comorbid CVD.

OTHER SOMATIC COMORBIDITY IN PATIENTS WITH SCHIZOPHRENIA

Patients with schizophrenia also suffer from a variety of comorbid somatic illnesses other than CVD. They are significantly more likely to have 1 or more of the following physical diseases (adjusted odds ratios and 95% CIs): hypothyroidism: 2.62 (2.09 to 3.28); chronic obstructive pulmonary disease: 1.88 (1.51 to 2.32); hepatitis C: 7.54 (3.55 to 15.99); and fluid/electrolyte disorders: 4.21 (3.25 to 5.44).[28] Another systematic review of somatic illnesses in schizophrenia[29] found strong evidence that schizophrenia is associated with an increased risk for human immunodeficiency virus (HIV) infection, tuberculosis, hepatitis B and C, and osteoporosis, as well as obesity, CVD, and a range of other disorders. Comorbidity of schizophrenia with life-threatening viral illnesses such as HIV infection, hepatitis C, or both is associated with a worse prognosis for both conditions and represents an important public health problem.[30]

DISPARITY IN HEALTH CARE PROVISION AND UTILIZATION IN PATIENTS WITH SCHIZOPHRENIA

Patients with schizophrenia have limited access to general somatic health care and receive less somatic health care than patients without mental illness.[31,32] Even when somatic health care is provided, it tends to be of a lower quality than that for patients without serious mental disorders.[10,32] Taken together, this deficiency in health service delivery and treatment provision contributes to the underrecognition of diabetes, CVD, and other illnesses among patients with schizophrenia.[10,32] However, lack of adequate somatic health care represents only one part of the broader picture: 32% of 191 countries in the world surveyed by the World Health Organization do not have a specified budget for mental health, while 21% of the countries spend less than 1% of their total health budget on mental health.[33] The primary method of financing mental health care in most countries was tax-based (60.2%), but many low-income countries depended on out-of-pocket expenditure (16.4%). Federal allocation for mental health care in most countries was low compared to the burden of these disorders, with large disparities among countries and regions.[33] In addition to obstacles imposed by silo-budgeting, with a disproportionate emphasis on "somatic" versus "mental" health care provision, internal dissentions among mental health care professionals arguing for a clear distinction between biological versus psychosocial treatments have also contributed to the current situation of neglect and lack of a holistic approach to the needs of patients with severe mental disorders.

In addition to the interplay of economic, cultural, and geographical factors substantially limiting access and provision of health care, the lack of integrated medical services providing both general somatic and mental health care, inadequate funding for somatic health care specific to this population, high rates of uninsured individuals, and patient-related factors (e.g., social isolation, cognitive impairment, suspiciousness, increased threshold for pain), as well as stigma, serious self-neglect, and a lifestyle detrimental to general somatic health, all play a significant role in suboptimal health care provision to this vulnerable population.

PLAN OF ACTION

Available evidence regarding the extent and consequences of comorbid somatic illnesses in patients with serious mental disorders and associated disparity in health care provision poses an array of key clinical practice, policy, and research challenges to the psychiatric and general medical communities, policy makers, and affected patients and their caregivers. As a prerequisite for the efforts detailed below, combating stigma, discrimination, and negative attitudes associated with severe mental disorders, and in particular schizophrenia, will help in achieving parity in health care access and provision.

An alarming trend toward the demedicalization of psychiatry is present in some parts of the world. For example, in some South American countries, mental health care providers without medical training (e.g., psychoanalytically oriented psychotherapists) continue to be the first point of contact for patients with schizophrenia (M.C.-B., personal observation). In the United States, where some encouraging trends are seen, such as a recently developed platform for the comprehensive assessment and treatment of somatic illnesses in patients with serious mental

illness,[8] there are also expanding efforts to allow the prescription of psychotropic medications by psychologists with cursory medical training.[34]

Due to differences between regions and countries (e.g., in the level of economic development, budgeting of heath care, tradition, cultural influences, education of psychiatrists, and general health and mental health care systems, as well as possible differences in the pattern of comorbidity), the majority of actions should be adapted to the local (and in some situations regional) needs and circumstances.

The proposed actions that need to be taken across all countries can be clustered into 5 broad groups of activities:

1. Taking Responsibility for the Patient

The organization of mental health and general somatic care services should take into account the severe and persistent nature of severe mental disorders such as schizophrenia and their substantial somatic health risks. Unless there is a clear provision of specific general somatic health care services for patients with severe mental disorders, whoever is the primary treating physician (i.e., either a generalist or a specialist) should assume responsibility for the mental *and* somatic health of their patients. Best practice medical management guidelines and standards developed for the general population should be applied to patients with severe mental illnesses such as schizophrenia.

2. Implementing Systematic Education

Training initiatives are needed to increase general medical education in psychiatric training and increase psychiatric education in general medical training. To achieve these goals, diagnosis and management of comorbid somatic illnesses in patients with severe mental disorders should be included in an updated and harmonized core residency curriculum available at international and local levels (for example, World Psychiatric Organization Core Curriculum in Psychiatry for Medical Students and Core Training Curriculum for Psychiatry,[35,36] Charter on Training of Medical Specialists in the European Community[37]) and also reflected in textbooks for medical students and residency education.

For practicing psychiatrists, symposia and workshops addressing somatic comorbidity, as well as implementation of available guidelines for assessment and treatment of such patients, should become obligatory and a regular part of educational programs at national or international congresses and continuing medical education activities.

Especially in geographic areas where primary mental health care providers lack a medical background, appropriate in-service education and integration of psychiatric and general-care services should be prompted, and the psychiatric community should take a proactive role in ensuring that access to adequate medical care is provided to patients with severe mental disorders.

Patients and caregivers should receive systematic education concerning relevant medical issues, including the importance of modifiable CVD risk factors. They should also be encouraged, when clinically appropriate, to assume responsibility or to help their affected relatives or friends assume responsibility for somatic health aspects of their care. Special emphasis should be placed on educational efforts aimed at implementing achievable reductions of risk factors for CVD and other somatic illnesses frequently seen in patients with schizophrenia.

3. Improving Parity in Health Care Access and Provision

The somatic health of patients with severe medical illnesses is too often neglected, thus contributing to an egregious health disparity. As compared to the general population, these patients represent a particularly vulnerable population, with a significantly higher illness burden as a result of somatic morbidity and mortality. These increased somatic health care needs are all too often coupled with a marked and ubiquitous disparity in access and provision of general somatic health care. Therefore, psychiatrists need to address current disparity and work at the local level with policy makers and budget holders on improving the current situation.

Parity in both somatic and mental health care provision is not simply a matter of best practices and optimal standards of care, but also represents a basic human right[9] and should be put on the agenda of national health and mental health care authorities in developed and developing countries. Access to general somatic health care and appropriate insurance coverage should be provided for patients with severe mental disorders including schizophrenia, as well as support of provision and access to general somatic health care within psychiatric institutions and systems of mental health care. This can be achieved through choice and implementation of models of integrated somatic and mental health care to fit the local situation, one example of which is the program recently developed in the United States.[8]

4. Forging Collaborations With Other Medical Specialists

The psychiatric community must forge stronger collaborations with other medical specialists including cardiologists, diabetologists, endocrinologists, general practitioners, and other health care professionals. These collaborations should seek to develop comprehensive educational efforts aimed at improving the knowledge and skills of mental and medical health care providers (psychiatrists and physicians, as well as other professionals included in the provision of mental health care and everyday work with patients with serious mental disorders,

such as nurses, psychologists, social workers, and case managers) in managing general somatic problems in patients with severe mental illnesses.

5. Studying Different Aspects of Somatic Comorbidity in Patients With Schizophrenia and Other Severe Mental Disorders

Many aspects of medical comorbidity in patients with schizophrenia and other severe mental disorders need further study. For example, the detection and course of communicable diseases, such as tuberculosis, in this population have not received sufficient attention. Other priorities include studying comorbid somatic illnesses in patients in countries in the developing world, the possible relationship between comorbid somatic illnesses and adverse events of psychotropic drugs used to treat schizophrenia, differences in comorbidity between treated and untreated patients, evaluation of health outcomes associated with emerging integrated models of care, and quality of life of patients with severe mental disorders and comorbid somatic illnesses. The pathophysiology of comorbid somatic illnesses, particularly those to which psychotropic medications may contribute, needs to be fully elucidated and understood. In addition, more studies utilizing "real life" outcomes and performed in community settings are clearly needed.

CONCLUSION

With all of the available evidence demonstrating the seriousness of the situation, the psychiatric profession is beyond the point of simply raising awareness. Looking inward would be the first step for our profession toward understanding the complex professional, financial, cultural, geographical, and social barriers to integrated care of patients with serious mental disorders. In that context, the reintegration of psychiatry and medicine, with an ultimate goal of providing optimal services to this vulnerable patient population, represents the most important challenge for psychiatry today, requiring urgent and comprehensive action of the whole profession toward an optimal solution.

Acknowledgment: The authors thank Drs. Bitter (Budapest, Hungary), Chue (Edmonton, Canada), Degleris (Piraeus, Greece), Deuschle (Mannheim, Germany), Diaz (Mexico City, Mexico), Elkis (Sao Paolo, Brazil), Gheorghe (Bucharest, Romania), Hwang (Seoul, Korea), Isaac (London, U.K.), Kopponen (Kuopio, Finland), Larsen (Odense, Denmark), Llorca (Clermond Ferrand, France), Malhi (Sydney, Australia), Meyer (San Diego, Calif.), Monteleone (Naples, Italy), Okasha (Cairo, Egypt), Oosthuizen (Cape Town, South Africa), Papageorgiou (Athens, Greece), Sampaio Correia (Lisbon, Portugal), Si (Beijing, China), Tang (Hong Kong, China), Üçok (Istanbul, Turkey), and Vita (Brescia, Italy) for constructive discussions and valuable feedback during the meeting. The authors also acknowledge the efforts of Milana Zivkov, M.D., M.Sc., Kingston-upon-Thames, U.K., for assistance (funded by Pfizer) in preparing the first draft of this manuscript based on the content of discussions among all the authors at an initial meeting, revising the paper based on author feedback, and styling the paper for journal submission.

Financial disclosure: **Dr. Fleischhacker** has received grant/research support from Janssen-Cilag, Servier, Eli Lilly, and Bristol-Myers Squibb/Otsuka; is a consultant for Janssen, Servier, AstraZeneca, and Bristol-Myers Squibb/Otsuka; has received honoraria for educational programs from Pfizer and AstraZeneca; has received speaking fees and/or advisory board honoraria from AstraZeneca, Pfizer, Janssen-Cilag, Bristol-Myers Squibb/Otsuka, Eli Lilly, Lundbeck, and Wyeth; and is a stock shareholder of MedAvante. **Dr. Cetkovich-Bakmas** has received speaking fees from Eli Lilly, GlaxoSmithKline, and Abbott. **Dr. De Hert** has received grant/research support, speaking fees, travel grants, educational grants, and funds for a member of staff from Bristol-Myers Squibb, AstraZeneca, Janssen, Pfizer, Lundbeck, Eli Lilly, and sanofi-aventis. **Dr. Hennekens** is funded by the Department of Biomedical Sciences and Center of Excellence at Florida Atlantic University; is principal or co-principal investigator on 2 investigator-initiated research grants funded to Florida Atlantic University by Bayer; serves as an independent scientist in an advisory role to investigators and sponsors, including as chair or member; was a consultant or on Data and Safety Monitoring Boards for Actelion, Amgen, AstraZeneca, Bayer, Biovail, Bristol-Myers Squibb, Chattem, Dainippon Sumitomo, Chatters, Delaco, Dechert, U.S. Food and Drug Administration, GlaxoSmithKline, Keryx, McNeil, Merck, National Association for Continuing Education, National Institutes of Health, Novartis, Pfizer, PriMed, Reliant, sanofi-aventis, Solvay, TAP, United BioSource Corporation, UpToDate, and Wyeth; is a member of the speakers bureaus for the International Atherosclerosis Society, AstraZeneca, Bristol-Myers Squibb, Pfizer, and Reliant; receives royalties for authorship or editorship of 3 textbooks; has an investment management relationship with SunTrust Bank, who has sole discretionary investment authority; and receives royalties as coinventor on patents concerning inflammatory markers and cardiovascular disease. **Dr. Lambert** has received grant/research support, reimbursement for attending symposia, and fees for speaking and organizing education from Pfizer. **Dr. Leucht** has received grant/research support from Eli Lilly and sanofi-aventis and has received speaking and consultancy funding from sanofi-aventis, Bristol-Myers Squibb, Eli Lilly, Janssen/Johnson & Johnson, Lundbeck, and Pfizer. **Dr. McIntyre** has received grant/research support from Wyeth, GlaxoSmithKline, Merck, Servier, and AstraZeneca and is a consultant and speaker for AstraZeneca, Bristol-Myers Squibb, Eli Lilly, Janssen, Organon, Wyeth, Lundbeck, GlaxoSmithKline, Oryx, Biovail, Pfizer, and Prestwick. **Dr. Naber** has received grant/research support and speaking fees from or is a member of the advisory boards for AstraZeneca, Bristol-Myers Squibb, Eli Lilly, Janssen-Cilag, Lundbeck, Organon, Pfizer, sanofi-aventis, Servier, and Wyatt. **Dr. Newcomer** has no significant financial conflict of interest, in compliance with the Washington University School of Medicine Conflict of Interest Policy. He has received grant/research support from the National Institute of Mental Health, the National Alliance for Research on Schizophrenia and Depression, the Sidney R. Baer Jr. Foundation, Janssen, Bristol-Myers Squibb, Wyeth, and Pfizer; has been a consultant to AstraZeneca, Bristol-Myers Squibb, GlaxoSmithKline, Janssen, Pfizer, Organon, Solvay, Wyeth, Dainippon Sumitomo, Forest, Sanofi, Tikvah, Vanda, Supernus, and Vivus; has been a consultant to litigation; and has received royalties from Compact Clinicals for a metabolic screening form. **Dr. Olfson** has received grant/research support from Eli Lilly, Bristol-Myers Squibb, and AstraZeneca; has been a consultant for Eli Lilly, Bristol-Myers Squibb, Pfizer, and McNeil; and has been a member of the speakers bureaus for Janssen and Bristol-Myers Squibb. **Dr. Ösby** has received grant/research support from Bristol-Myers Squibb and Janssen-Cilag; has been a consultant for AstraZeneca, Bristol-Myers Squibb, Eli Lilly, and Pfizer; has been reimbursed by Bristol-Myers Squibb, Eli Lilly, and Pfizer for attending conferences; has received fees for speaking from Bristol-Myers Squibb, Eli Lilly, Organon, and Pfizer; and has received fees for organizing education from AstraZeneca. **Dr. Sartorius** is a consultant for Eli Lilly, Wyeth, Janssen, Servier, and Lundbeck; received a fee for participating in symposia organized by Eli Lilly, Janssen, and Pfizer; and is a member of the speakers/advisory boards for Eli Lilly, Janssen, Lundbeck, Servier, Wyeth, and Pfizer. **Dr. Lieberman** has received grant/research support from Acadia, Bristol-Myers Squibb, GlaxoSmithKline, Janssen, Organon, and Pfizer. **Dr. Maj** reports no financial or other relationship relevant to the article.

REFERENCES

1. Colton CW, Manderscheid RW. Congruencies in increased mortality rates, years of potential life lost, and causes of death among public mental health clients in eight states. Prev Chronic Dis 2006 Apr;3(2):A42
2. Hennekens CH. Increasing global burden of cardiovascular disease in general populations and patients with schizophrenia. J Clin Psychiatry 2007;68(suppl 4):4–7
3. Harris EC, Barraclough B. Excess mortality of mental disorder. Br J Psychiatry 1998 Jul;173:11–53
4. Ösby U, Correia N, Brandt L, et al. Time trends in schizophrenia mortality in Stockholm county, Sweden: cohort study. BMJ 2000;321:483–484
5. Miniño AM, Heron MP, Murphy SL, et al. Deaths: final data for 2004. Natl Vital Stat Rep 2007 Aug;55(19):1–119
6. Saha S, Chant D, McGrath J. A systematic review of mortality in schizophrenia: is the differential mortality gap worsening over time? Arch Gen Psychiatry 2007;64:1123–1131
7. Druss BG, Bradford WD, Rosenheck RA, et al. Quality of medical care and excess mortality in older patients with mental disorders. Arch Gen Psychiatry 2001;58:565–572
8. Parks J, Svendsen D, Singer P, et al, eds. Morbidity and Mortality in People With Serious Mental Illness: Technical Report. National Association of State Mental Health Program Directors (NASMHPD) Medical Directors Council. October 2006. Available at: http://www.nasmhpd.org/publications.cfm#techpap. Accessibility verified February 26, 2008
9. United Nations: Universal Declaration of Human Rights. 1948. Available at: http://www.un.org/Overview/rights.html. Accessibility verified February 26, 2008
10. Hennekens CH, Hennekens AR, Hollar D, et al. Schizophrenia and increased risks of cardiovascular disease. Am Heart J 2005;150: 1115–1121
11. American Diabetes Association; American Psychiatric Association; American Association of Clinical Endocrinologists; North American Association for the Study of Obesity. Consensus Development Conference on Antipsychotic Drugs and Obesity and Diabetes. Diabetes Care 2004 Feb;27(2):596–601
12. Suvisaari J, Perälä J, Saarni SI, et al. Type 2 diabetes among persons with schizophrenia and other psychotic disorders in a general population survey [published online ahead of print November 7, 2007]. Eur Arch Psychiatry Clin Neurosci. doi: 10.1007/s00406-007-0762-y
13. Allison DB, Mentore JL, Heo M, et al. Antipsychotic-induced weight gain: a comprehensive research synthesis. Am J Psychiatry 1999;156: 1686–1696
14. Brown S, Birtwistle J, Roe L, et al. The unhealthy lifestyle of people with schizophrenia. Psychol Med 1999;29:697–701
15. De Hert MA, van Winkel R, Van Eyck D, et al. Prevalence of the metabolic syndrome in patients with schizophrenia treated with antipsychotic medication. Schizophr Res 2006;83:87–93
16. Redelmeier DA, Tan SH, Booth GL. The treatment of unrelated disorders in patients with chronic medical diseases. N Engl J Med 1998;338: 1516–1520
17. Lawrence DM, Holman CD, Jablensky AV, et al. Death rate from ischaemic heart disease in Western Australian psychiatric patients 1980–1998. Br J Psychiatry 2003;182:31–36
18. Newcomer JW, Hennekens CH. Severe mental illness and risk of cardiovascular disease. JAMA 2007;298:1794–1796
19. Joukamaa M, Heliövaara M, Knekt P, et al. Schizophrenia, neuroleptic medication and mortality. Br J Psychiatry 2006;188:122–127
20. Mitchell AJ, Malone D. Physical health and schizophrenia. Curr Opin Psychiatry 2006 Jul;19(4):432–437
21. Casey DE, Haupt DW, Newcomer JW, et al. Antipsychotic-induced weight gain and metabolic abnormalities: implications for increased mortality in patients with schizophrenia. J Clin Psychiatry 2004;65 (suppl 7):4–18
22. Newcomer JW. Second-generation (atypical) antipsychotics and metabolic effect: a comprehensive literature review. CNS Drugs 2005;19 (suppl 1):1–93
23. Weiden PJ, Newcomer JW, Loebel AD, et al. Long-term changes in weight and plasma lipids during maintenance treatment with ziprasidone [published online ahead of print July 18, 2007]. Neuropsychopharmacology. doi:10.1038/sj.npp.1301482
24. Taylor CB, Youngblood ME, Catellier D, et al. Effects of antidepressant medication on morbidity and mortality in depressed patients after myocardial infarction. Arch Gen Psychiatry 2005;62:792–798
25. Frasure-Smith N, Lespérance F. Recent evidence linking coronary heart disease and depression. Can J Psychiatry 2006;51:730–737
26. Frasure-Smith N, Lespérance F. Depression and anxiety as predictors of 2-year cardiac events in patients with stable coronary artery disease. Arch Gen Psychiatry 2008;65:62–71
27. Carney CP, Jones L, Woolfson RF. Medical comorbidity in women and men with schizophrenia: a population-based controlled study. J Gen Intern Med 2006;21:1133–1137
28. Carney RM, Freedland KE, Stein PK, et al. Change in heart rate and heart rate variability during treatment for depression in patients with coronary heart disease. Psychosom Med 2000;62:639–647
29. Leucht S, Burkard T, Henderson J, et al. Physical illness and schizophrenia: a review of the literature. Acta Psychiatr Scand 2007;116:317–333
30. Cournos F, McKinnon K, Sullivan G. Schizophrenia and comorbid human immunodeficiency virus or hepatitis C virus. J Clin Psychiatry 2005; 66(suppl 6):27–33
31. Cradock-O'Leary J, Young AS, Yano EM, et al. Use of general medical services by VA patients with psychiatric disorders. Psychiatr Serv 2002; 53:874–848
32. Frayne SM, Halanych JH, Miller DR, et al. Disparities in diabetes care: impact of mental illness. Arch Intern Med 2005;165:2631–2638
33. Saxena S, Sharan P, Saraceno B. Budget and financing of mental health services: baseline information on 89 countries from WHO's project atlas. J Ment Health Policy Econ 2003;6:135–143
34. American Psychiatric Association. Talking points in opposition to psychologists' practicing medicine. American Psychiatric Association website. Available at: http://www.psych.org/MainMenu/AdvocacyGovernmentRelations/GovernmantRelations/StateAffairs/APANonPhysicianScopeofPracticeInformationCenter/CoreResources/PreparationforScopeofPracticeLegislation/TalkingPointsinOppositiontoPsychologistsPracticingMedicine.aspx. Accessed January 31, 2008
35. World Psychiatric Association. Core Curriculum in Psychiatry for Medical Students. Available at: http://www.wpanet.org/home.html. Accessed January 26, 2008
36. World Psychiatric Association. Institutional program on the Core Training Curriculum for Psychiatry. Available at: http://www.wpanet.org/home.html. Accessed January 26, 2008
37. European Union of Medical Specialists. Charter on Training of Medical Specialists in the European Community. Adopted by the Management Council of the UEMS, October 1993. Available at: http://admin.uems.net/uploadedfiles/906.pdf. Accessed January 26, 2008