

## Investigation Into the Cause of Death of a 56-Year-Old Man With Serious Mental Illness

Judith J. Prochaska, Ph.D., M.P.H.

Rebecca Schane, M.D.

Desiree Leek, B.S.

Stephen E. Hall, M.D.

Sharon M. Hall, Ph.D.

The following is a case report of a patient hospitalized on our adult psychiatry unit who died unexpectedly 2 months after hospital discharge. We present this case to raise awareness of the deadly effects of an underdiagnosed psychiatric disorder.

### Case Presentation

"Mr. A," a 56-year-old, gay-identified Caucasian man, was hospitalized on our adult psychiatry unit 15 times over a 10-year span and hospitalized multiple times at other hospitals in the area. Several hospitalizations were protracted, lasting several weeks. Mr. A had a distant history of at least one suicide attempt, an overdose of clonazepam. Often, he presented with severe depressive symptoms, suicidal ideation, and auditory hallucinations criticizing him and/or commanding him to commit suicide. He did not exhibit grossly psychotic behavior. He at times tested positive for stimulants, but made inconsistent statements about his history of stimulant use and attempts at drug abuse treatment. He was variously diagnosed with schizoaffective disorder, major depression with or without psychotic features, posttraumatic stress disorder, and polysubstance or stimulant dependence. Usually he self-presented through the emergency department; on the last admission, he came in complaining of a broken tooth. During his last hospitalization, he reported severe depression, anxiety, insomnia, and irritability. He described his health as fair and ascribed several limitations due to multiple physical and mental health problems. He struggled with extreme pain despite daily prescribed opiate and sedative use. He held a college degree but was fully disabled and received a pension for psychiatric disability.

---

*"Pulmonary emphysema is estimated to be five times more prevalent among the seriously mentally ill relative to the general population."*

---

### Police Report

Mr. A was found by a friend, unresponsive, within his unsecured single residency hotel room in San Francisco, Calif. He was lying in a prone position near his bed. Emergency services arrived and pronounced him dead. According to the friend, Mr. A had called earlier that day saying he was "not feeling good," although this was characterized as typical. At the scene, there was a styrofoam cup on the bedside table with empty medication vials containing the labels hydrocodone/apap and trazodone. There was no evidence of foul play or involvement by another person noted about the cluttered room or evidence of alcohol or illicit drug use. There was evidence of cigarette smoking. An initial physical examination noted an abrasion on Mr. A's left forehead. No other obvious signs of trauma were documented.

The friend and a neighbor both told police that Mr. A suffered from depression and had a history of abusing his medications. The neighbor added that Mr. A was frequently "too stoned" to remember to lock his door. Paperwork found at the scene indicated outpatient treatment for major depression, rule out bipolar II disorder and posttraumatic stress syndrome. Mr. A's psychiatrist, who was contacted, confirmed this clinical information and reported an additional history of anxiety and insomnia along with medication abuse. The psychiatrist further commented that Mr. A frequently voiced suicidal ideation, although he did not recall any past suicide attempts.

### Findings From the Medical Examiner's Report

The medical examiner's report described Mr. A as obese (body mass index=34 kg/m<sup>2</sup>) with multiple pierce marks in each earlobe and several superficial abrasions. There were no acute fatal traumatic injuries. No pill fragments or foreign bodies were identified in the gastrointestinal system. The toxicology report detected oxycodone, 0.1 mg/liter, dextromethorphan, and doxylamine, all within therapeutic levels.

Contrary to initial assumptions by the neighbor, friend, and consulting psychiatrist, the medical examiner's report showed no evidence of suicide or accidental drug overdose. The actual cause of death, however, was just as preventable. According to the medical examiner, this 56-year-old man died from complications of pulmonary emphysema due to tobacco use. External examination showed an increased anterior-posterior thoracic diameter characteristic of patients with chronic obstructive pulmonary disease. The presumptive diagnosis was con-

firmed on autopsy with evidence of emphysematous pulmonary parenchyma and apical bullae along the pleural surfaces. The lung tissue overall was grossly edematous and had signs of diffuse vascular congestion with marked amounts of blood and frothy fluid, concerning for pulmonary edema. A cardiac examination further indicated signs of right heart failure with dilatation of the right ventricle. Anthracotic pigmentation of subpleural lymphatics also was noted on autopsy, a finding often consistent with chronic tobacco use.

Although there are a number of ways in which physicians can diagnose pulmonary emphysema, including spirometry and radiographic imaging, pulmonary emphysema is definitively recognized as a pathologic diagnosis. The disease process, moreover, carries with it systemic manifestations, such as pulmonary hypertension, right heart failure, global muscle atrophy, and wasting. In the case of Mr. A, cardiac complications included right ventricular dilatation and pulmonary edema. These features are concerning for advanced disease; over time, patients are at greater risk for hypoxic events that can cause tissue damage, including cardiac ischemia and eventual death. Proof of Mr. A's disease is seen in the pathology; the anthracotic pigmentation noted on autopsy is evidence of the causal agent: chronic tobacco use. In the United States and abroad, tobacco remains the most significant risk factor for emphysema (1).

Atherosclerotic cardiovascular disease also was noted on the medical examiner's report with moderate (up to 30%) multifocal calcifications of the right and distal left anterior coronary arteries. Although we have no proof of an acute coronary event, the presence of pulmonary emphysema and right ventricular dilatation may raise the issue of cardiac arrhythmia in a patient with underlying atherosclerosis as a potential mechanism to explain his sudden death.

## Medical Chart Findings

Mr. A's medical record at our hospital was notably absent of detected pulmonary or cardiovascular disease. Over the 10 years of admissions, sporadic reference was made to hypercholesterolemia, use of a beta-blocker, and a heart murmur. His oxygen saturation was checked in the emergency department and was normal at the time (97% on room air). There also was one visit recorded in which the patient presented with chest pain and ultimately was admitted to the medical center. The evaluation was notable for negative cardiac enzymes, a normal ECG, and an echocardiogram demonstrating good cardiac function. Mr. A had a portable chest X-ray that was read by the radiologist as low lung volumes. Examination of the films by one of the authors (R.S.), a pulmonary/critical care physician, indicated that the study was poor in quality because Mr. A did not give a good inspiratory effort, which makes confirmation of any lung pathology difficult. Mr. A's chronic use of tobacco, however, was noted in the chart.

## Mr. A's Tobacco Use History

In our interviews with Mr. A during his last hospitalization, he reported smoking two packs of cigarettes per day for 25 years. It was estimated that he spent \$289 per month on cigarettes, 10% of his income. He described 10

attempts to quit using tobacco in his lifetime, including two trials in the previous year. Each quit attempt was unassisted, that is, without clinical support or use of any of the cessation medications approved by the Food and Drug Administration. The longest period he reported being tobacco-free in any single attempt was 7 days. He stated he had not received any advice to quit smoking in the past year by a mental health or general medical provider. While hospitalized on our smoke-free unit, Mr. A expressed a craving for cigarettes but a desire to quit smoking with the eventual goal of complete abstinence. We spoke with Mr. A about his use of tobacco and thoughts about quitting and provided him with a self-help guide on smoking cessation. Despite these efforts, we learned that soon after hospital discharge, he resumed smoking two packs of cigarettes per day. It is this addiction to nicotine which ultimately killed him—not his depression, suicidal thoughts, or use of opiates, which traditionally are perceived as more acute and pressing psychiatric issues.

## Findings in the Literature

A recent report from the Centers for Disease Control estimates that the seriously mentally ill die two and a half decades earlier on average than the general population, with tobacco-related conditions of heart disease, cancer, and cerebrovascular and chronic respiratory diseases identified as leading causes (2). Pulmonary emphysema is estimated to be five times more prevalent among the seriously mentally ill relative to the general population (3). In the case of our patient, he died 20 years prematurely and suffered severe, disabling health consequences in the final years of his life (4). Yet, notably, his lung and cardiovascular disease went largely undetected by the health care system.

Lack of adequate and appropriate health care also has been identified as a cause of premature mortality among patients with severe and persistent mental illness (5). A study of medical treatment among 386 Medicaid enrollees with and without mental illness found that the mentally ill received less health care overall and had a twofold greater proportion of their care provided in emergency rooms and ambulances rather than in traditional outpatient settings (6). Innovative models of multidisciplinary clinics and onsite medical evaluation in inpatient psychiatry have demonstrated significant improvements in primary care linkage for patients with serious mental illness, with improvements in medical outcomes and no difference in health care costs (7). Consistent with the literature, Mr. A presented repeatedly to the emergency department and inpatient services and refused outpatient referrals owing to financial concerns. Mr. A is a prime example of a disenfranchised individual who struggled with depression, nicotine addiction, and significant cardiopulmonary disease.

## Conclusions and Treatment Recommendations

Our patient died 20 years prematurely from complications of pulmonary emphysema due to his use of tobacco. Tobacco smoke remains the leading cause of pulmonary

emphysema worldwide (1). Despite a number of treatment options available to patients with emphysema, including bronchodilators and corticosteroids, smoking cessation is the only intervention with a known mortality benefit (other than oxygen therapy, which is reserved for advanced disease) (1, 8). Patients who quit smoking can significantly slow the progressive loss of lung function that occurs over time and can decrease the typical respiratory symptoms of cough and shortness of breath associated with this disease.

Tragically, the health care system failed to recognize the patient's serious medical sequelae from his smoking, and his emphysema went undiagnosed until postmortem. That said, Mr. A's heavy use of tobacco was evident for 25 years, yet remained largely untreated.

Nicotine dependence and nicotine withdrawal are recognized by DSM-IV as diagnosable psychiatric disorders; however, rarely are tobacco use and dependence diagnosed and treated in clinical practice (9, 10). Nicotine dependence is the most prevalent substance use disorder among psychiatric patients, and rates of tobacco use among the mentally ill are two to four times that seen in the general population (11, 12). It is estimated that 44% of the cigarettes sold in the United States are to individuals with mental illness (11). Psychiatry needs to recognize nicotine as a powerful addiction and prioritize its treatment to enhance the quality and quantity of our patients' physical and mental well-being.

The APA recommends that psychiatrists assess the smoking status of all patients, including readiness to quit, previous quitting history, and level of nicotine dependence, and provide explicit advice to motivate patients to stop smoking (13). Evidence-based treatments for tobacco dependence include nicotine-replacement therapy, sustained-release bupropion, varenicline, nortriptyline, clonidine, and psychosocial therapies. Combined therapies (counseling plus pharmacotherapy) are emphasized (14). Physician advice doubles the rates of patient cessation (15), and the greater the amount of time spent addressing tobacco use, the more likely the patient is to achieve abstinence (14). For smokers with active mental illness, integration of smoking-cessation efforts within psychiatric care is recommended (13, 16).

Patients with mental illness can be helped to quit smoking. Our recent randomized clinical trial with actively depressed patients recruited from outpatient psychiatry clinics demonstrated significant efficacy in helping patients quit smoking without adverse effects on their mental health recovery (17, 18). Our meta-analysis of tobacco treatment interventions with smokers in addiction treatment or recovery showed significant posttreatment effects for smoking cessation with enhanced sobriety from drugs and alcohol at long-term follow-up (19). Of importance, a study with smokers with posttraumatic stress disorder showed a fivefold increase in cessation rates if tobacco treatment services were integrated within ongoing psychiatric care rather than with the provision of a tobacco treatment referral (20).

We present this case study to put a face on the dramatic statistics regarding the deadly toll of tobacco use in populations with mental illness and to raise awareness regarding the incredible need for psychiatry to recognize, diagnose, and provide evidence-based treatments for nicotine dependence.

Received Sept. 14, 2007; revision received Nov. 5, 2007; accepted Nov. 27, 2007 (doi: 10.1176/appi.ajp.2007.07091455). From the Departments of Psychiatry and Medicine and the Division of Pulmonary and Critical Care, University of California, San Francisco. Address correspondence and reprint requests to Dr. Prochaska, Department of Psychiatry, University of California, San Francisco, 401 Parnassus Ave., TRC 0984, San Francisco, CA 94143-0984; jprochaska@ucsf.edu (e-mail).

Dr. Stephen Hall has been on the speakers bureaus and a consultant for AstraZeneca, Eli Lilly, Bristol-Myers Squibb, and Pfizer. The remaining authors report no competing interests.

Drs. Prochaska and Sharon Hall receive grant support from the National Institute on Drug Abuse (numbers K23 DA018691, K05 DA016752, and P50 DA09253).

The authors thank Anthony N. Karnezis, M.D., Ph.D., from the University of California, San Francisco, Department of Pathology for providing consultation on the medical examiner's report.

## References

1. Pauwels RA, Buist AS, Calverley PM, Jenkins CR, Hurd SS, the Gold Scientific Committee: Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease: NHLBI/World Health Organization Global Initiative for Chronic Obstructive Lung Disease (GOLD) Workshop summary. *Am J Respir Crit Care Med* 2001; 163:1256–1276
2. 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. [http://www.cdc.gov/Pcd/issues/2006/apr/05\\_0180.htm](http://www.cdc.gov/Pcd/issues/2006/apr/05_0180.htm)
3. Himelhoch S, Lehman A, Kreyenbuhl J, Daumit G, Brown C, Dixon L: Prevalence of chronic obstructive pulmonary disease among those with serious mental illness. *Am J Psychiatry* 2004; 161:2317–2319
4. Miniño AM, Heron M, Smith BL: Deaths: preliminary data for 2004. *Health E-Stats*, April 19, 2006
5. Druss BG: Improving medical care for persons with serious mental illness: challenges and solutions. *J Clin Psychiatry* 2007; 68(suppl 4):40–44
6. Berren MR, Santiago JM, Zent MR, Carbone CP: Health care utilization by persons with severe and persistent mental illness. *Psychiatr Serv* 1999; 50:559–561
7. Druss BG, von Esenwein SA: Improving general medical care for persons with mental and addictive disorder: systematic review. *Gen Hosp Psychiatry* 2006; 28:145–153
8. Anthonisen NR, Connett JE, Kiley JP, Altose MD, Bailey WC, Buist AS, Conway WA Jr, Enright PL, Kanner RE, O'Hara P, et al: Effects of smoking intervention and the use of an inhaled anticholinergic bronchodilator on the rate of decline of FEV1: The Lung Health Study. *JAMA* 1994; 272:1497–1505
9. Himelhoch S, Daumit G: To whom do psychiatrists offer smoking-cessation counseling? *Am J Psychiatry* 2003; 160:2228–2230
10. Montoya ID, Herbeck DM, Svikis DS, Pincus HA: Identification and treatment of patients with nicotine problems in routine clinical psychiatry practice. *Am J Addict* 2005; 14:441–454
11. Lasser K, Boyd JW, Woolhandler S, Himmelstein DU, McCormick D, Bor DH: Smoking and mental illness: a population-based prevalence study. *J Am Med Assoc* 2000; 284:2606–2610

12. Rohde P, Lewinsohn PM, Brown RA, Gau JM, Kahler CW: Psychiatric disorders, familial factors and cigarette smoking: I, associations with smoking initiation. *Nicotine Tob Res* 2003; 5:85–98
13. American Psychiatric Association: Practice guideline for the treatment of patients with nicotine dependence. *Am J Psychiatry* 1996; 153(10 suppl):1–31
14. The Tobacco Use and Dependence Clinical Practice Guideline Panel, Staff, and Consortium Representatives: A clinical practice guideline for treating tobacco use and dependence. *J Am Med Assoc* 2000; 283:3244–3254
15. Silagy C, Stead LF: Physician advice for smoking cessation (Cochrane Review), in the Cochrane Library, Issue 2, 2003. Oxford, UK, Update Software
16. Hughes JR, Frances RJ: How to help psychiatric patients stop smoking. *Psychiatr Serv* 1995; 46:435–436
17. Hall SM, Tsoh J, Prochaska JJ, Eisendrath S, Rossi JS, Redding CA, Rosen AB, Meisner M, Humfleet G, Gorecki J: Treatment for cigarette smoking among depressed mental health outpatients: a randomized clinical trial. *Am J Public Health* 2006; 96:1808–1814
18. Prochaska JJ, Hall SM, Tsoh JY, Eisendrath S, Rossi JS, Redding CA, Rosen AB, Meisner M, Humfleet GL, Gorecki JA: Treating tobacco dependence in clinically depressed smokers: effect of smoking cessation on mental health functioning. *Am J Public Health* 2007 (Epub ahead of print)
19. Prochaska JJ, Delucchi K, Hall SM: A meta-analysis of smoking cessation interventions with individuals in substance abuse treatment or recovery. *J Consult Clin Psychol* 2004; 72:1144–1156
20. McFall M, Saxon AJ, Thompson CE, Yoshimoto D, Malte C, Straits-Troster K, Kanter E, Zhou XH, Dougherty CM, Steele B: Improving the rates of quitting smoking for veterans with post-traumatic stress disorder. *Am J Psychiatry* 2005; 162:1311–1319