

# Benzodiazepine Use and the Biopsychosocial Model

Barry Blackwell, MD, and Ruth Cooperstock  
Milwaukee, Wisconsin, and Toronto, Ontario

Longstanding concern about possible misuse of the physician's unique prerogative to prescribe sedative drugs that control behavior has been accentuated by the increasing use of benzodiazepines since 1960. The appropriateness of their use in solving psychosocial predicaments is increasingly questioned because their availability has coincided with social movements toward personal autonomy and scientific doubts about the adequacy of a biomedical model in health care.

Recent information about patients, physicians' prescribing habits, and drugs leads to an exploration of the existing alternatives. Adoption of a biopsychosocial model could result in lowered drug use with increased levels of public and professional satisfaction.

A physician's power over people is epitomized by the right to prescribe. The use of drugs that affect the mind has become symbolic of this issue because it is here that people feel most vulnerable, question more the physician's role, and are especially sensitive to the possible abuse of power.

Wolfe<sup>1</sup> posed a series of rhetorical questions:

Is the physician's power too great at present? Is our society being over-medicated? Is this a new phenomenon? Has medical education kept pace with the pharmaceutical explosion of recent decades? Does the way the doctor practices affect the way he prescribes? Do his prejudices cause him to prescribe mind-affecting drugs selectively, for certain groups in the population? What is the doctor's responsibility in prescribing drugs that affect the mind?

The largest area of concern to which these questions apply has been the use of "minor tranquilizers." At the time the questions were posed, diazepam was the most widely prescribed drug in American medicine,<sup>2</sup> and the Psychopharmacology Research Branch at the National Institute of Mental Health (NIMH) published a series of studies on the national use of psychotropic drugs.<sup>3-5</sup> In Western countries, minor tranquilizers were used by 8 to 12 percent of men and 12 to 25 percent of women in the previous year; the United States was ranked in the middle. A national conference that reviewed this information<sup>6</sup> arrived at a consensus that medical practice was rational and moderate. Nevertheless, the use of benzodiazepines continued to rise, reaching a zenith of 87 million prescriptions a year in 1975. At this time, the Federal Drug Administration concluded that the drugs had significant abuse potential and placed them in category 4 of the Drug Abuse Control Act to restrict the unlimited use of repeat prescriptions.

By 1978 the use of benzodiazepines had dropped to 68 million prescriptions,<sup>7</sup> and a second (still unpublished) NIMH survey completed in 1979 revealed that overall use of minor tranquiliz-

---

From the Department of Psychiatry (Milwaukee Clinical Campus), University of Wisconsin Medical School, Mount Sinai Medical Center, Milwaukee, Wisconsin, and the Department of Epidemiology and Social Policy Research, Addiction Research Foundation, Toronto, Ontario. Requests for reprints should be addressed to Dr. Barry Blackwell, Mount Sinai Medical Center, PO Box 342, Milwaukee, WI 53201.

ers in the United States had fallen from 15 to 11.1 percent of the population. The use among women had fallen from 20 to 14.1 percent, but use was essentially unchanged among men (8 percent compared with 7.5 percent in 1979).<sup>8</sup>

The use of tranquilizing drugs is so linked to pain, pleasure, and power that the topic can hardly be discussed without leading to emotive admonitions directed at physicians for underprescribing or overprescribing them, and at patients for misusing or abusing them. The reason for addressing the matter is to survey findings in a variety of fields to convey the sense of an emerging perspective.

### Models of Medical Care

Today's physician is confronted not only by a philosophical attack on the ways he wields power but also by scientifically fed skepticism about biological solutions and expanding interest in alternatives. The total impact has been confusing. On the one hand, the profession is exhorted to pay more attention to care and less to cure; but on the other, it is berated for blurring the continuum between health and disease and for overextending its responsibility into the social domain. Recently a distinguished medical editor expressed his frustration: "Come now! Are not these expectations unrealistic if not absurd?"<sup>9</sup> Nowhere is this predicament better seen than in one of the most common scenes in American medicine—a patient with vague somatic complaints being prescribed a tranquilizer.

The resolution of this dilemma may require a radical revision of the basic models around which health care is constructed. Engel<sup>10</sup> has stated this need in a recent *Science* article:

The dominant model of disease today is biomedical, with molecular biology its basic scientific discipline. It assumes disease to be fully accounted for by deviations from the norm of measurable biological (somatic) variables. It leaves no room within its framework for the social, psychological and behavioral dimensions of illness. The biomedical model not only requires that disease be dealt with as an entity independent of social behavior, it also demands that behavioral aberrations be explained on the basis of disordered somatic (biochemical or neurophysiological) processes.

Within this biomedical model, the prescription of a minor tranquilizer for stress is often the outcome of a negotiation whereby problems arising in

life situations are defined as somatic or psychological "symptoms" of disease.

Engel's proposed solution is the adoption of a "biopsychosocial" model. From this new perspective:

The doctor's task is to account for the dysphoria and the dysfunction which lead individuals to seek medical help, adopt the sick role and accept the status of patienthood. He must weigh the relative contributions of social and psychological factors as well as of biological factors implicated in the patient's dysphoria and dysfunction as well as in his decision to accept or not accept patienthood and with it the responsibility to cooperate in his own health care.

Given this view, the prescription of a minor tranquilizer would occur as part of a detailed definition of the patient's predicament after social and psychological supports and coping devices had been defined.

### The Disease

One outcome of the biomedical model has been that existential stress becomes diagnosed as a disease requiring treatment by professionals. "Anxiety" is a concept that has evolved in the twentieth century concurrent with the availability of bromides, barbiturates, and benzodiazepines. During this time Western culture has become more sophisticated in its use of language to differentiate and communicate emotional distress, and the availability of treatments has also influenced this perception. For example, the use of lithium in recent years appears to have led to an increase in the diagnosis of mania by American psychiatrists,<sup>11</sup> and an increase in the diagnosis of depression was shown to follow the introduction of antidepressants in one institution.<sup>12</sup>

That an increasing willingness to recognize "anxiety" has met with a readiness to prescribe for it may account for the remarkably steady and linear increase in the use of benzodiazepines of 7 million prescriptions each year between 1960 and 1975. This phenomenon was reproduced in a naturalistic experiment in which diazepam was made freely available on request from a nurse (physicians were excluded) to an entire psychiatric ward for six months.<sup>13</sup> Although individual patient use was modest, the drug-seeking behavior of the entire ward increased progressively and markedly in a manner reminiscent of the national trend. This

suggests that social forces and complex systems are at work that bear less than direct relation to accuracy of diagnosis or the efficacy of treatment.

### The Patients

Patients who are prescribed tranquilizers are clearly a select segment of the population. Research on the kind of patient to whom minor tranquilizers are prescribed suggests overrepresented sections of the population share the common feature that their biological, social, and psychological predicaments render them dependent on physicians. Only one third of minor tranquilizer use is for emotional disorders without a somatic component.<sup>14</sup> The remainder is for a wide variety of physical disorders in which stress is assumed to play a causal, aggravating, or coincidental role. Sometimes the handling of these chronic physical conditions results in the adoption of a sick role that is validated by taking tranquilizers, further reinforcing dependency on the physician.<sup>15</sup>

Women are also prescribed disproportionately more minor tranquilizers, between 67 and 72 percent; and although use among women is now declining in the United States,<sup>8</sup> there is little indication of a similar trend in Canada.<sup>16</sup> There may be several reasons why more women are prescribed minor tranquilizers. A recent study of a community mental health center<sup>17</sup> found that men have less awareness of emotional disorders and that women accept the label of emotional illness and enter treatment more readily. Women appear to experience stress differently from men, as illustrated by a comparison of the responses to examination stress in male and female students.<sup>18</sup> Both sexes performed equally well, but feelings of success and confidence were common in men whereas discomfort and failure predominated in women, even when performance was good.

Increased prescribing of tranquilizers to women is not a function of morbidity alone, as shown by a study in family practice where women patients exceeded men in rate of drug episodes per hundred illness episodes.<sup>19</sup> At least two factors appear to be involved: a culturally determined sense of vulnerability, and a willingness to seek professional help. Women are expected to be nurturant and to care for the health of family members in ways that bring them into contact with predominantly male physicians who may encourage their emotional expressiveness.

There is evidence to suggest that health professionals have stereotyped attitudes in which healthy men are seen as independent and healthy women as more dependent and passive.<sup>20</sup> Since pill-taking is a passive and dependent role, it is likely to be viewed as a preferred treatment for women. In comparison, men are overrepresented among adults who cope with stress by drinking alcohol.<sup>21</sup>

The elderly are also overrepresented among benzodiazepine users, and 21 percent of all diazepam prescriptions in the United States are for the over-65 age group.<sup>22</sup> An identical proportion receives these drugs in family practices in England<sup>23</sup> and in the Province of Saskatchewan, Canada.<sup>24</sup> The Director of the National Institute on Aging in the United States commented recently that "often drugs represent the only form of treatment given to older persons. An overall treatment plan that includes attention to diet, physical and social activities, psychotherapy, and correction of living problems may be totally ignored."<sup>25</sup> Finally, there is some evidence to suggest that high tranquilizer use is more frequent in the lower social, economic, and educational strata<sup>26</sup> as well as among those who are chronically sick or disabled.<sup>27</sup> One reason that the poor and members of minority groups are at greater risk for receiving tranquilizers is that they have fewer coping mechanisms available to them.<sup>28</sup> For instance, drug use is higher in women who stay home and have restricted social outlets.<sup>29</sup>

If the underprivileged are overrepresented in patients prescribed benzodiazepines, this is contributed to in part by willingness to seek help from physician authority figures, perhaps because the mantle of the church and the law has passed imperceptibly to the medical profession for the solution of social predicaments.

### The Physicians

Almost all physicians in general medical practice prescribe benzodiazepines, although the extent to which they do varies considerably. For example, general practitioners prescribe disproportionately more of these drugs than do specialists,<sup>3</sup> and there is some suggestion that physicians in group practice prescribe somewhat more appropriately than those practicing alone.<sup>30</sup>

The patient's emphasis on somatic manifestations legitimizes "sick" behavior just as prescribing a drug sanctions the role of physicians as care

providers. This transaction is rendered more likely because the physician's primary role has traditionally been to detect or exclude physical disorders, and to do so efficiently consumes a large part of the average 14 minutes allotted.<sup>31</sup> In addition, physicians are trained to be action oriented and patients to be submissive in this process.<sup>32</sup> The physicians' "belief" in psychotropic drugs is illustrated by the fact that they themselves are far more likely to take them compared with patients.<sup>33</sup>

The outcome of prescribing in this manner is briefly effective, but seldom satisfactory over the long term to the physician or patient. It reinforces the patient's belief in being medically or psychologically unfit, initiates a lowering of self-esteem,<sup>34</sup> and leads to a chain of repeat prescriptions. The awareness of the absence of disease coupled with a need for action creates an uncomfortable tension and a sense of frustration in the physician that are often expressed as irritation toward patients who appear to have seemingly trivial or insoluble problems.<sup>35</sup>

The patient who senses this may feel accused of "imagining it all" while the physician lacks alternative strategies for shifting to a social or psychological framework and intervening effectively in these spheres. That this stems partly from inadequate training is suggested by recent surveys of psychiatric education in medical schools, where teaching has been oriented toward viewing patients as "vehicles of disease" with "categorical diagnoses."<sup>36</sup> Training in the newer discipline of clinical pharmacology is inadequate. Physicians in general are often unaware of the ingredients in drug combinations that contain benzodiazepines,<sup>37</sup> and family physicians, in contrast to specialists, are more likely to write inappropriate prescriptions.<sup>38</sup> A recent study demonstrated that psychiatrists and physicians were often poorly informed about the indications, pharmacology, and side effects of diazepam, and neither group was more knowledgeable than medical students.<sup>39</sup>

### The Prescriptions

An understanding of the act of prescribing and its symbolism is fundamental to the issue of minor tranquilizer use. Writing in 1904, Osler<sup>40</sup> commented that "the doctor visit is not thought to be complete without the prescription." During 1977, 40,000 patients visited 29 family practices in Oxford, England, and 60 percent of them received at

least one prescription.<sup>23</sup> Psychotropic drugs were prescribed more often than any other group and accounted for 20 percent of prescriptions. The most commonly prescribed drug was diazepam, given to 6.1 percent of all people. This led the authors of the study to conclude, "whether such extreme use of drugs capable of modifying behavior has undesirable medical or social consequences is unknown and more information is certainly needed."

The act of prescribing is sometimes viewed as a means of abbreviating or ending an interview. This may represent a superficial analysis of the situation. In extensive studies on family practice, Parish<sup>41</sup> found that the act of prescribing was not associated with either time spent with or liking of the patient. However, prescribing was less likely to occur if the patient was perceived as easier to talk to, and when compared with prescribing, counseling was associated with higher degrees of patient satisfaction. With specific regard to use of tranquilizers, a study<sup>42</sup> of anxious individuals in the general population found that most of those who consulted physicians spent 6 to 15 minutes in consultation and that drugs were prescribed to 75 percent. A third of the patients (particularly the more anxious) would have preferred additional time to talk.

A more detailed and in-depth analysis of the consultation process in family practice is provided by Stimson and Webb.<sup>43</sup> Nearly two thirds of patients said they expected to be given a prescription, and this expectation was almost precisely fulfilled. The writing or withholding of a prescription was often the major focus of a patient's satisfaction or lack of it. This study confirmed an earlier finding<sup>44</sup> that in general physicians place even greater emphasis than do their patients on the act of prescribing and tend to overestimate their patients' expectations for drugs.

The dynamics of prescribing may obscure the social and psychological etiology of the consultation. In acute circumstances a variety of factors contribute to short-term "success," increasing the patient's tendency to seek medical help again in future social crises. In the more common chronic circumstances, Balint and co-workers<sup>45</sup> have shown how the act of prescribing itself may become a block to effective dialogue whereby problems are not solved but merely controlled. Significantly, those general practitioners who recognized

their patients' social and psychological predicaments had the lowest population of long-term prescription repeaters. When viewed in this perspective, it is not surprising that a percentage of patients become increasingly dependent on benzodiazepines in response to a lack of alternative advice or access to other coping resources.

### The Drugs

Benzodiazepines are superior to both barbiturates and placebo in the treatment of chronic severe anxiety, but patients seldom revert to normal during treatment, and benefits are rarely sustained beyond it.<sup>46</sup> Although benzodiazepines are prescribed to 40 percent of patients with chronic physical disorders,<sup>27</sup> there is no controlled evidence for their efficacy in such populations.<sup>47-49</sup>

Despite this absence of scientific information, the physician's belief in the efficacy of minor tranquilizers is reinforced because the benefit that follows prescribing is often due to a combination of reassurance, attention, spontaneous remission, and change in life circumstances. When these factors remain unexplored, the outcome is naturally attributed to drugs, reinforcing the patient's tendency to seek such help and the physician's willingness to prescribe.

It is paradoxical that what is generally lacking in such transactions is a proper application of scientific method and a closer scrutiny of the events preceding and surrounding the interactions. Several psychopharmacologists have drawn attention to the defects of the disease model in psychotropic drug research.<sup>50-52</sup> A better definition of desired outcomes would allow physicians to make more discriminating use of such drugs in conjunction with other methods of encouraging and enhancing social interaction. Studies of the social and behavioral consequences of the use of psychotropic drugs will be required to elucidate these issues. Two contrasting studies have attempted this: one examined the relationship of psychic distress and life crises to psychotropic drug use,<sup>53</sup> and the other explored prolonged tranquilizer use as an expression of social role strain.<sup>54</sup>

The relative safety of the benzodiazepine drugs compared with the barbiturates has undoubtedly contributed to their escalating use, but safety is a term that must be defined in relationship to the practice of medicine. The extensive use of benzodiazepine drugs for maintenance therapy in

chronic or lifelong physical conditions or for intractable social predicaments may expose those who take them to hazards not revealed in short-term clinical trials. Subtle disruptions in thought processes<sup>55</sup> and unpredictable aggressive behavior<sup>56</sup> are examples. In addition, prolonged exposure to mind-altering medication frequently creates a problem of dependency and abuse. In Britain 147 out of 287 patients referred to psychiatrists by general practitioners were taking benzodiazepines on arrival; 66 percent had taken them for more than two months, and 25 percent for over a year.<sup>57</sup> Anderson<sup>58</sup> found that 48 percent of psychotropic drugs prescribed in general practice had been used for over two years; nearly 60 percent of all repeat prescriptions for sedative-hypnotic drugs were obtained without seeing the physician.

On a global scale new patterns of drug abuse have been characterized by the spread of manufactured substances adopted from medicine.<sup>59</sup> The first reports of abuse often lag behind the clinical availability of the drug.<sup>60</sup> In the case of bromides this took 39 years; with methaqualone, 12 years; and diazepam, 3 years. Even after this, there is delayed recognition of abuse potential on the part of both physicians and patients. It is difficult for physicians to recognize harm caused by their own prescribing habits, and patients are frequently unwilling to report increased tolerance or dependence. A recent monograph<sup>61</sup> indicates that the numerator of reports of abuse for benzodiazepines is still minute compared with the denominator of drug use. This view of the low dependence potential is shared by official review bodies.<sup>62</sup> On the other hand, diazepam has been identified as a street drug in many centers of heavy illicit drug use.<sup>63,64</sup> In the United States it is the most common cause of emergency room visits for overdose,<sup>55</sup> and in Canada benzodiazepines account for 40 percent of all overdose admissions, almost 33 percent having also taken alcohol.<sup>65</sup>

Reports of addiction and dependence in patient populations are also beginning to appear. In 1977 a report of diazepam-abstinence syndrome in three patients was published,<sup>66</sup> followed shortly by another.<sup>67</sup> In a group of 50 outpatients taking diazepam,<sup>68</sup> 20 percent had increased their dose without physician consent, and only 4 percent were able to discontinue voluntarily. Sixty percent regarded themselves as dependent. A controlled Scandinavian study on sedative drug abuse<sup>60</sup> found that

benzodiazepines were the drugs most commonly involved, and several patients developed severe abstinence syndromes. Most had been taking drugs for over five years and began increasing their dosage without the knowledge of their physicians, a minority of whom had prescribed uncritically by telephone over long periods. Middle-aged women were overrepresented, and a majority had begun to take drugs at a time of social stress; most common was bereavement. The majority of patients with dependence have taken benzodiazepines in high dosages for lengthy periods (over 40 mg daily for more than six months), but well-documented withdrawal has also been shown in a patient taking only 15 to 25 mg daily.<sup>69</sup> Peterson and Lader<sup>70</sup> also found marked withdrawal in low-dose, long-term users of benzodiazepines.

In attempting to assess the cost-benefit ratio of benzodiazepine use, the situation differs little from the viewpoint of Frazier and Hiatt<sup>71</sup> that the scientific evidence for many popular medical and surgical practices is dubious and usually evaluated through the subjective value systems of both physicians and patients.

### Alternatives

Since 1960 both social and scientific changes have contributed to current concern about the rapid increase in use of minor tranquilizers. A state of tension has been created between a heightened awareness of "anxiety" with the availability of safer drugs to treat it and self-care movements that have coincided with an evolving biopsychosocial model of medical care. The resulting dilemma highlights the extremes of opinion that have always existed among the public and members of the profession about the appropriateness of sedative drugs as solutions to social and psychological predicaments.

This is clearly a situation for which there may be alternative courses of action but for which there is no simple solution. Adoption of the biopsychosocial model, with its expanded boundaries and shared responsibilities, will present choices in medical education, clinical practice, and patterns of health care delivery.

In education the scope of options may be limited. Engel has discussed in detail the application of the biopsychosocial model to health education.<sup>72</sup> The late 1960s and early 1970s were characterized by attempts to increase social and psycho-

logical input as "behavioral science" into the medical curriculum and by attempts of psychiatrists to increase their input into general medical concerns through involvement in liaison work and primary care programs.<sup>36</sup> That these were not always successful was documented, tongue in cheek, by recent advice on "building a benign behavioral science course."<sup>73</sup> Educational strategies exist to alert students to the subtler implications of prescribing practice,<sup>74,75</sup> but these often compete poorly in pharmacology courses directed toward potent materia medica.

In clinical practice the "Ten Drug Commandments" proposed by Wolfe<sup>1</sup> would be helpful, but they will not be adopted in the absence of leadership and peer pressure. There is evidence that such pressure is gradually occurring under the influence of guidelines for psychotropic drug use developed by national organizations<sup>76</sup> and by various forms of utilization review,<sup>77</sup> including group practice itself. A recent study in family practice cast doubt on the significance of prescribing to patients with vague complaints; these patients, when told they were well and required no treatment, did as well as a control group given a "diagnosis" and prescription.<sup>78</sup> There are also striking examples of reduction in minor tranquilizer use following sanctions applied by state or governmental agencies<sup>79,80</sup>; the impact of placing benzodiazepines on schedule 4 of the Food and Drug Act in the United States is an important illustration.

For those persons prescribed drugs, the significance of patient education and personal involvement is evidenced by the current interest in patient package inserts<sup>81</sup> and lay pharmacopeias,<sup>82</sup> as well as in alternatives to drug taking. The latter is illustrated by an increasing number of self-help agencies and by public interest in nonpharmacologic forms of therapy for stress such as relaxation, meditation, and biofeedback.<sup>83</sup>

Changes in health care delivery will probably include the involvement of patients themselves as well as other agencies and professions as sources of support in dealing with social and psychological predicaments. Although there have been protests about the dangers of expanding the scope and boundaries of medicine, there have also been a reluctance to let go of responsibility and a tendency to display a narrow professionalism by defending unique prerogatives in providing primary health care.

There are compelling practical and economic counteracting forces to this tendency. The demands on physicians' time are unlikely to abate; rather, they will increase with any form of national health insurance. When increased demands occur, the need for cost containment may underline the fact that the price of one month's supply of diazepam is the same as a single 15-minute visit to a family physician. But if cost-benefit ratios include quality-of-life issues and long-term outcome and not simply symptom removal and short-term relief, then less expensive forms of professional assistance will be sought. Many professional schools in psychology, social work, and nursing are producing graduates who are eager for partnership and not for a "handmaiden" role. There is already evidence to indicate that the use of nurse practitioners in family practice<sup>84</sup> can reduce the use of minor tranquilizers and that review of prescriptions by pharmacists can improve the quality and reduce the quantity of prescription writing for these drugs. An increasing number of behavioral medicine units have expanded roles for other health professionals and are dealing effectively with some of the more severe and chronic medical problems using nondrug techniques.<sup>15</sup>

Finally, there are many forms of help available in the community that are presently underutilized by physicians, including self-help support groups, a variety of social agencies, and pastoral counseling services. Their involvement would do much to "demedicalize" the patients' distress.

The best hope for adoption of a biopsychosocial model with the sharing of responsibility that must accompany it is that the process will prove intrinsically rewarding to physicians. There will be those who will find that the efficiency of existing technology, including drugs, is enhanced by this expanded frame of reference and who will discover that it is more satisfying to work together than alone in caring for the chronically sick and the "worried well." Should this occur, there will be a predictable decline in the heavy use of minor tranquilizers and a decrease in public anxiety about their misuse. There is some evidence that, in the United States, this is beginning to occur.<sup>85</sup>

**References**

1. Wolfe S: The social responsibility of the physician in prescribing mind affecting drugs. In Cooperstock R (ed): *Social Aspects of the Medical Use of Psychotropic Drugs*. Toronto, Addiction Research Foundation, 1974

2. Blackwell B: Psychotropic drugs in use today: The role of diazepam in medical practice. *JAMA* 225:1637, 1973

3. Parry HJ, Balter MB, Mellinger GD, et al: National patterns of psychotherapeutic drug use. *Arch Gen Psychiatry* 28:769, 1973

4. Manheimer I, Davidson ST, Balter MB, et al: Popular attitudes and beliefs about tranquilizers. *Am J Psychiatry* 130:1246, 1973

5. Balter MB, Levine J, Manheimer DI: Cross-national study of the extent of anti-anxiety/sedative drug use. *New Engl J Med* 290:769, 1974

6. Society overmedicated, annotation. *Lancet* 1:1325, 1974

7. Prescribing of minor tranquilizers. *FDA Drug Bull* 10:2, 1980

8. Mellinger GD: The 1979 national survey: Model, measures and prevalence of medical use. Presented to the American College of Neuropsychopharmacology, San Diego, Calif, December 17, 1981

9. Ingelfinger FJ: The physician's contribution to the health system. *N Engl J Med* 295:565, 1976

10. Engel GL: The need for a new medical model: A challenge for biomedicine. *Science* 196:129, 1977

11. Lipkin KM, Dyrud J, Meyer GG: The many faces of mania. *Arch Gen Psychiatry* 22:262, 1970

12. Blackwell B, Taylor D: An operational evaluation of MAO inhibitors. *Proc R Soc Med* 60:830, 1967

13. Winstead D, Blackwell B, Anderson A, Eilers MK: Diazepam on demand: Drug seeking behavior in anxious in-patients. *Arch Gen Psychiatry* 30:349, 1974

14. Williams P: Physical ill health and psychotropic drug prescription: A review. *Psychol Med* 8:683, 1978

15. Wooley S, Blackwell B, Winget C: A learning theory model of chronic illness behavior: Theory, treatment and research. *Psychosom Med* 40:379, 1978

16. The Health of Canadians: Report of the Canada Health Survey. Statistics Canada (Cat 82-538E), Health and Welfare Canada, Ottawa, June 1981

17. Horwitz A: The pathways into psychiatric treatment: Some differences between men and women. *J Health Soc Behav* 18:169, 1978

18. Frankenhauser M, Van Wright ME, Collins A, et al: Sex differences in psychoneuroendocrine reactions to examination stress. *Psychosom Med* 40:334, 1978

19. Dixon AS: Drug use in family practice: A personal study. *Can Fam Physician* 24:345, 1978

20. Broverman IK, Broverman DM, Clarkson FE, et al: Sex role stereotypes and clinical judgments of mental health. *J Consult Clin Psychol* 34:1, 1970

21. Parry HJ, Cisin IH, Balter MB, et al: Increasing alcohol intake as a coping mechanism for psychic distress. In Cooperstock R (ed): *Social Aspects of the Medical Use of Psychotropic Drugs*. Toronto, Addiction Research Foundation, 1974

22. Drugs in nursing homes: Misuse, high costs and kick-backs, supporting paper No. 2. *Nursing Home Care in the United States: Failure in Public Policy*. Subcommittee on Long-Term Care, Special Committee on Aging. United States Senate, publication No. 93-1420. Government Printing Office, 1975

23. Skegg DCG, Doll R, Perry J: Use of medicines in general practice. *Br Med J* 1:1561, 1977

24. Harding J: A Socio-Demographic Profile of People Prescribed Mood-Modifiers in Saskatchewan. Saskatchewan, Alcoholism Commission of Saskatchewan, 1978

25. Butler RN: Public interest report No. 19: The over-use of tranquilizers in older patients. *Int J Aging Hum Dev* 7:185, 1976

26. Unlenhuth EH, Lipman RS, Balter MB: Symptom intensity and life stress in the city. *Arch Gen Psychiatry* 31:759, 1974

27. Greenblatt DJ: Antianxiety agents. In Miller JJ, Greenblatt DJ (eds): *Drug Effects in Hospitalized Patients: Experience of the Boston Collaborative Surveillance Program, 1966-1975*. New York, John Wiley, 1976, pp 193-201

28. Dohrenwend BS, Dohrenwend BP: Stressful Life

Events. New York, John Wiley, 1974

29. Cooperstock R: Psychotropic drug use among women. *Can Med Assoc J* 115:760, 1976

30. Stolley PD, Becker MH, Lasagna L, et al: The relationship between physician characteristics and prescribing appropriateness. *Med Care* 10:1780, 1972

31. Muller C: The overmedicated society: Forces in the marketplace for medical care. *Science* 176:488, 1972

32. Cartwright A: Prescribing and the relationship between patients and doctors. In Cooperstock R (ed): *Social Aspects of the Medical Use of Psychotropic Drugs*. Toronto, Addiction Research Foundation, 1974, pp 63-74

33. Vaillant GE, Brighton JR, McArthur C: Physician's use of mood altering drugs: A 20-year follow-up report. *N Engl J Med* 282:365, 1970

34. Cooperstock R, Lennard HL: Some social meanings of tranquilizer use. *Sociol Health Illness* 1:331, 1979

35. Mechanic D: Correlates of frustration among British general practitioners. *J Health Soc Behav* 11:87, 1970

36. Goodstein RK, Napoliello MJ: Clinical psychiatry clerkships and the emergency walk-in service. *Compr Psychiatry* 19:267, 1978

37. Biron P: A hopefully biased pilot survey of physicians' knowledge of the content of drug combinations. *Can Med Assoc J* 109:35, 1973

38. Miles DL: Multiple prescriptions and drug appropriateness. *Health Ser Res* 12:3, 1977

39. Gottlieb RM, Nappi TK, Strain JJ: The physicians' knowledge of psychotropic drugs: Preliminary results. *Am J Psychiatry* 135:29, 1978

40. Osler W: *Aequanimitas, with Other Addresses to Medical Students, Nurses and Practitioners of Medicine*, ed 3. Philadelphia, Blakiston, 1945

41. Parish PA: The family doctor's role in psychotropic drug use. In Cooperstock R (ed): *Social Aspects of the Medical Use of Psychotropic Drugs*. Toronto, Addiction Research Foundation, 1974, pp 75-84

42. Lader M: Benzodiazepines—The opium of the masses? *Neuroscience* 3:159, 1978

43. Stimson G, Webb B: *Going to See the Doctor*. London, Boston, Routledge, Kegan Paul, 1975

44. Dunnell K, Cartwright A: *Medicine Takers, Prescribers and Hoarders*. London, Routledge, Kegan Paul, 1972

45. Balint M, Hunt J, Joyce D, et al: *Treatment or Diagnosis: A Study of Repeat Prescribing in General Practice*. London, Tavistock, 1970

46. Hollister LE: Anti-anxiety drugs in clinical practice. In Grattini E, Mussini E, Randall LO (eds): *The Benzodiazepines*. New York, Raven Press, 1973, p 371

47. Cooperstock R: Some factors involved in the increased prescribing of psychotropic drugs. In Cooperstock R (ed): *Social Aspects of the Medical Use of Psychotropic Drugs*. Toronto, Addiction Research Foundation, 1974, pp 21-34

48. Whitehead WE, Blackwell B: Why physicians prescribe benzodiazepines in essential hypertension. *J Biol Psychiatry* 12:597, 1977

49. Williams P: Physical ill health and psychotropic drug prescription: A review. *Psychol Med* 8:683, 1978

50. Blackwell B, Whitehead WE: Behavioral evaluation of anti-anxiety drugs. In Sudilovsky A, Gershon S, Beer B (eds): *Predictability in Psychopharmacology—Preclinical and Clinical Correlations*. New York, Raven Press, 1975, pp 121-141

51. Lasagna L: The disease model and neuropsychopharmacology. In Lipton MA, DiMascio A, Killam KF (eds): *Psychopharmacology, A Generation of Progress*. New York, Raven Press, 1978, pp 803-806

52. Whitehead WE, Blackwell B, Robinson A: Effects of diazepam on phobic avoidance behavior and phobic anxiety. *J Biol Psychiatry* 13:59, 1978

53. Mellinger GD, Balter MB, Manheimer DI, et al: Psychic distress, life crisis and use of psychotherapeutic medications. *Arch Gen Psychiatry* 35:1045, 1978

54. Cooperstock R, Lennard HL: Role strains and tran-

quilizer use. In Coburn D, D'Arcy C, New P, Torrance G (eds): *Health and Canadian Society*. Toronto, Fitzhenry and Whiteside, 1981, pp 142-157

55. DAWN Data: *US J Drug Alcohol Depend* 2:2, 1978

56. Tranquilizers causing aggression, editorial. *Br Med J* 1:113, 1975

57. Tyrer P: Drug treatment of psychiatric patients in general practice. *Br Med J* 2:1008, 1978

58. Anderson RM: The use of repeatedly prescribed medicines. *J R Coll Gen Pract* 30:609, 1980

59. Ball JC, Graff H, Chien K: Changing world patterns of drug abuse, 1945-1974. *Int J Clin Pharmacol Biopharm* 12:109, 1975

60. Allgulander C: Dependence on sedative and hypnotic drugs. *Acta Psychiatr Scand (suppl)* 270:1, 1978

61. Marks J: *The Benzodiazepines, Use, Overuse, Misuse, Abuse*. Lancaster, MTP Press, 1978

62. Committee on the Review of Medicines: Systematic review of the benzodiazepines. *Br Med J* 1:910, 1980

63. Kapur BM, Everson A, Segal R, LeBlanc AE: Benzodiazepine analysis as a monitoring tool. Presented to International Congress on Clinical Chemistry, Toronto, July 14-18, 1975

64. Woody GE, O'Brien CP, Greenstein R: Misuse and abuse of diazepam: An increasingly common medical problem. *Int J Addict* 10:843, 1975

65. Busto U, Kaplan HL, Sellers EM: Benzodiazepine associated emergencies in Toronto. *Am J Psychiatry* 137:224, 1980

66. Preskorn WH, Denver LJ: Benzodiazepines and withdrawal psychosis. *JAMA* 337:36, 1977

67. Dysken MW, Chan CH: Diazepam withdrawal psychosis—A case report. *Am J Psychiatry* 135:573, 1978

68. Maletsky BM, Klotter J: Addiction to diazepam. *Int J Addict* 11:95, 1976

69. Winkur A, Rickels K, Greenblat DJ, et al: Withdrawal reaction from long-term low-dosage administration of diazepam. *Arch Gen Psychiatry* 37:101, 1980

70. Peterson H, Lader MH: Withdrawal from long-term benzodiazepine treatment. *Br Med J* 283:643, 1981

71. Frazier HA, Hiatt HH: Evaluation of medical practice. *Science* 200:875, 1978

72. Engel GL: The biopsychosocial model and the education of health professionals. *Ann NY Acad Sci* 310:169, 1978

73. Older J: Building a benign behavioral science course. *N Engl J Med* 296:627, 1977

74. Blackwell B, Bloomfield SS, Buncher CR: Demonstration to medical students of placebo responses and non-drug factors. *Lancet* 1:1279, 1972

75. Blackwell B, Griffin B, Magill M, Bencze R: Teaching medical students about treatment compliance. *J Med Educ* 53:672, 1978

76. Dorsey R, Ayd FJ, Cole J, et al: Psychopharmacologic screening criteria development project. *JAMA* 10:1021, 1979

77. Maronde RF: Drug utilization review. In Wertheimer A, Bush P (eds): *Perspectives on Medicine in Society*. Hamilton, Ill, Drug Intelligence Publications, 1977

78. Thomas KB: The consultation and the therapeutic illusion. *Br Med J* 1:1327, 1978

79. Keeler MH, McCurdy RL: Medical practice without anti-anxiety drugs. *Am J Psychiatry* 132:654, 1975

80. Kaufman A, Brickner PW, Varner R: Tranquilizer control. *JAMA* 237:36, 1972

81. Joubert P, Lasagna L: Patient package inserts: Nature, notions and needs. *Clin Pharmacol Ther* 18:507, 1975

82. Parish PA: *Medicines—A Guide for Everybody*. London, Penguin, 1976

83. Blackwell B: Hypertension: Medicate or meditate? *Am Heart J* 93:262, 1977

84. Chaiton A, Spitzer WO, Roberts RS, Delmore T: Patterns of medical drug use—A community focus. *Can Med Assoc J* 114:33, 1976

85. Hollister LE: A look at the issues. *Psychosomatics* 21 (suppl):4, 1980