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The mental health professions: Workforce supply and demand, issues, and challenges

William N. Robiner *

Health Psychology, Department of Medicine, University of Minnesota Medical School, Mayo Mail Code 295, 420 Delaware Street, Southeast, Minneapolis, MN 55455-0392, United States

Abstract

The U.S. mental health (MH) workforce is comprised of core disciplines: psychology, psychiatry, social work, psychiatric nursing, and marriage and family therapy. A broader group of practitioners also deserves recognition. Diverse professions provide significant services in a variety of settings, extending the *de facto* mental health workforce. A tally of key disciplines estimates there are 537,857 MH professionals, or 182 per 100,000 U.S. population. This article provides an overview of the need and demand for mental health services and summarizes the MH professions (e.g., training, educational credentials, workforce estimates). It also discusses a range of challenges confronting MH professionals and the need for greater understanding of the workforce and integration of services. Methodological factors that confound estimates of the magnitude of the MH workforce are reviewed.
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* Tel.: +1 612 624 1479, +1 612 899 8925; fax: +1 612 625 7950.
  E-mail address: robin005@umn.edu.

Diverse mental health (MH) professions have developed to provide services addressing a range of mental, behavioral, emotional, and psychosocial problems. The MH workforce (MHW) comprises professional and paraprofessional service providers whose educational and training backgrounds differ and whose skill sets span both overlapping and relatively unique or specialized domains. This article purports to describe the MH professions and their respective workforces that contribute to an overall MHW. The focus of this report is on applied practice. Education and research are largely beyond the scope of this review. Evolutionary changes (e.g., scientific, demographic) and challenges (e.g., systems, economics) affecting service provision are addressed along with suggestions for enhancing training and integrating service.

1. Mental health care in the United States

1.1. Need and demand for mental health services

The necessity for an MHW stems from the need and demand for MH services. Need can be inferred, in part, from epidemiological data, such as the landmark Epidemiologic Catchment Areas (ECA) study of the prevalence of mental disorders in the United States. It estimated adult rates of psychiatric disorders (19%), addictive disorders (6%), and comorbid psychiatric and addictive disorders (3%; Regier et al., 1993). Regier et al. further estimated that 14.7% of U. S. adults annually seek services for mental or addictive disorders, which constitutes a substantial portion of the demand for MH service. Similarly, an estimated six to nine million children and adolescents experience serious emotional disturbances (Friedman, Katz-Leavy, Manderscheid, & Sondheimer, 1996; Lavigne et al., 1996). The Report of the Surgeon General estimated 21% of children and adolescents are served annually (U.S. Department of Health and Human Services [DHHS], 1999), but as few as 30% of children and adolescents needing MH services obtain any (Leaf et al., 1996). The public health significance of MH conditions (e.g., depression) is increasing (Cross-National Collaborative Group, 1992): The age of onset is lowering and the risk of developing conditions is increasing over successive generations (Hirschfeld et al., 1997). These epidemiological and utilization trends reveal a compelling need for MH services (Kessler et al., 1994; Regier et al., 1993). A robust MHW comprised of multiple disciplines is critical to providing a continuum of services to meet this need.

In addition to services related to psychiatric disorders that are delivered through the healthcare system, a plethora of psychosocial problems have implications for the demand for MH services. For example, the psychological effects of

poverty, discrimination, family disruption and divorce, unemployment, and now terrorism, warrant preventative efforts, intervention, and research. Similarly, psychosocial problems (e.g., teenage pregnancy; violence in the home and workplace; bullying in schools) necessitate prevention and intervention. Behavioral contributions to disease (e.g., nicotine dependence, intravenous drug usage, unsafe sexual practices, Type A behavioral patterns) and injury (avoidance of seat belts), along with greater recognition of special needs for certain populations, and the aging, and diversification of the population provide social and psychological challenges. Moreover, economic, social, and technological changes place growing demands on workers (e.g., extended work hours; precarious job security) adding stress that likely translates into greater demand for services.

1.2. Mental health costs

Service provision entails costs for both the public and private sectors. The Surgeon General's Report on Mental Health noted that the proportion of spending for MH services relative to all health spending has declined (DHHS, 1999). Still, the costs of mental and substance disorders are staggering, accounting for approximately 7.3% of all U. S. healthcare expenditures (Mark, McKusick, King, Harwood, & Genuardi, 1998). In 1996, an estimated $69 billion was spent on assessing and treating mental illness. An estimated 10% covered psychiatrists' services, 14% was spent on psychologists and social workers, 5% went to other physicians, with the remainder ($\approx 71\%$) attributed to hospitals, MH centers, residential centers, and outpatient drugs (Mark et al., 1998). An additional $18 billion and $13 billion were spent, respectively, for care related to dementias and addictive disorders. Private insurance accounted for about 47% of the direct costs, with Medicare paying 14%, Medicaid 19%, and other governmental entities accounting for the remaining 20%. Such costs motivate consumers, and other contributing parties (i.e., employers, third-party payers, and legislators) to take keen interest in containing costs. Costs for age-related conditions (e.g., Alzheimer's dementia) invariably will increase as greater numbers reach ages at which they are vulnerable to later onset disorders.

The tolls of mental illness and substance abuse in terms of human suffering are incalculable. Indirect economic costs (e.g., lost productivity of probands and their caregivers, premature death) associated with mental disorders and addictions are high, probably exceeding the direct costs of care. For example, in 1990 the indirect costs of mental illness in the U.S. were estimated to be $79 billion (Rice & Miller, 1996). The World Bank and World Health Organization estimated the indirect costs of mental disorders worldwide as 15.4% of the global burden of all diseases (Murray & Lopez, 1996). These costs reflect the chronic and relapsing course of major mental illness (Sharfstein, 1998), and the long-term challenges in treating them. Most direct and indirect MH costs are likely to have risen from the statistics cited above. Healthcare costs will be discussed further later in this article.

2. The mental health professions

Webster's Dictionary defines profession as:

"A calling requiring specialized knowledge and often long and intensive preparation including instruction in skills and methods as well as in the scientific, historical, or scholarly principles underlying such skills and methods, maintaining by force of organization or concerted opinion high standards of achievement and conduct, and committing its members to continued study and to a kind of work which has for its prime purpose the rendering of a public service"... (Merriam-Webster, 1986, p. 1811).

The MH professions share these attributes of professions, focusing on understanding, preventing, and intervening to address mental, psychosocial and behavioral problems. A workforce of skilled MH professionals (MHPs) is fundamental to addressing the needs of individuals and families associated with psychiatric disorders and other psychosocial problems described earlier. Although the concept of interdisciplinary professional activities are common and may be endorsed by numerous professions, it is unclear how well professionals truly understand each other's disciplines in terms of their unique training paradigms, scope of practice, codes of ethics and conduct, regulatory mechanisms, or workforces. The following sections describe the workforces of several MH disciplines, along with issues that affect service delivery, professional roles, and potential steps toward enhancing the MHW in an increasingly complex and competitive healthcare environment. Greater cognizance of the universe of MHPs could enhance collaboration and understanding of the systems in which they work.

The National Mental Health Act of 1946 identified four core MH disciplines: Psychiatry, Psychology, Social Work, and Nursing. These disciplines' clinical activities are complemented by other types of MHPs, non-psychiatric physicians, and paraprofessionals. MH services are provided in varied settings, including the healthcare, service sectors (e.g., schools, industry), and other contexts (Narrow, Regier, Rae, Manderscheid, & Locke, 1993; Regier et al., 1993). For example, treatment of depression in primary care settings (i.e., by family physicians, internists, pediatricians) has increased in response to physician education, the popularity of newer medications, and capitation of care that limits referrals to specialists (Hirschfeld et al., 1997; Pincus, Zarin, & West, 1996; Williams et al., 1999).

Estimates of the utilization of the "de facto" U.S. MH system illustrate the scope of MH services. An estimated 5.9–6.7% of the population obtain services from MH specialty providers annually, with more obtaining services elsewhere (Knesper & Pagnucco, 1987; Regier et al., 1993). Regier et al. (1993) estimated that 6.4% of the population obtain services through non-psychiatric medical practitioners; 3.0% from other human service professionals (e.g., rehabilitation counselors, school-based services, criminal justice system, clergy); 0.7% via self-help groups (e.g., 12-step groups); and 3.5% through family and friends. For pediatric MH services, more children seem to use specialty MH services (9%) and human services (17%), than general medical professionals (3%; Shaffer et al., 1996). Such trends illustrate the multiplicity of existing models and overall fragmentation of services. Such complexity confounds ascertaining the need, demand, and utilization of services, and identifying composition of a cost-effective MHW. Moreover, the diversity of care options challenges the development of streamlined and integrated care delivery systems.

3. Estimates of the mental health workforce

The term *workforce*, which aptly reflects the expanded roles and increased proportions of women in the health professions, has replaced "manpower" in denoting the number of professionals available to provide services. As evident in Table 1, several MH professions are comprised of majorities of women while the proportion of women is increasing in other fields. As with other professions, racial and ethnic minorities are under-represented in the MHW relative to the U.S. population.

Estimating the size of the MHW is difficult because it is not a unitary entity. Instead, it is a chaotic amalgam of separate disciplines with ambiguous boundaries, and overlapping roles and scopes of practice, whose practitioners both collaborate and compete with each other. It is not clear how well the public distinguishes among practitioners in different disciplines (Murstein & Fontaine, 1993). Similarly, it is not known how fully professionals in each discipline are aware of, understand, or value the respective contributions and complimentary skills of the other MH professions.

In addition to examining the size of the workforce (i.e., number of practitioners), it is essential to examine the distribution of the workforce. MHPs tend to cluster in urban and suburban areas, leaving rural and inner-city areas under-staffed (Merwin, Hinton, Dembling, & Stern, 2003). Areas may be designated as underserved if they fall below one MH provider to 6000 population, or one psychiatrist to 20,000 (see http://bphc.hrsa.gov/shortage). Historically, practitioners have aggregated in areas with better MH insurance benefits and a more educated populace (Knesper,

Table 1
Estimated U.S. Mental Health Practitioners

Profession % White	Estimated number non-Hispanic	Number per 1000,000	Year of civilians	% Female estimate	
Counseling	111,931	49.4	2002	71	81
Social work	99,341	35.3	2002	79	88
Psychology	88,491	31.1	2002	49	94
Marriage and family therapy	47,111	16.7	2002	67	93
Psychiatry	38,436	13.7	2001	27	75
School psychology	31,278	11.4	2003	70	95
Psychiatric nursing	18,269	6.5	2000	92	90
Psychological rehabilitation	100,000	37.7	1996	66	30
Pastoral counseling	>3,000 [a]	0.9 [b]	2004	32	83
Total	537,857	182 [b]			

Adapted from Duffy et al. (2004) Tables 2 and 3 and text. Heterogeneous sources of information were used among professions confounding accurate comparisons.

[a] From AAPC website, accessed 3/1/05.

[b] Census estimate from U.S. Census Bureau = 295,599,518 accessed 3/5/05 from http://factfinder.census.gov/home/saff/main.html?_lang=en.

Wheeler, & Pagnucco, 1984). Theoretically, workforce analyses could identify the relative surpluses and scarcities of practitioners serving targeted populations, leading to methodical and judicious titration of the MHW to address need and demand. Such adjustments are considerably beyond the state of the art for MHW analyses and would likely be subject to controversy and political influence.

Since 1987, impressive collaborative efforts involving professionals from Psychiatry, Psychology, Social Work, and Nursing have been undertaken to describe the MHW (Manderscheid & Henderson, 1998; Manderscheid & Sonnenschein, 1996). Despite multidisciplinary efforts to gauge the MHW (e.g., Duffy et al., 2004; Peterson et al., 1996, 1998) and publication of findings by the Substance Abuse and Mental Health Services Administration (SAMHSA) in biennial editions of *Mental Health, United States*, understanding of each professions' workforces, and of the MHW in totality, is elusive. Such attempts are complicated by the absence of a national registry or entity with the capacity and authorization to (a) coordinate workforce assessments across disciplines; (b) deploy and track professionals; and (c) control or integrate training across the MH professions. Table 2 delineates challenges to estimating the size of the MHW and its component professions.

Workforces in each discipline are moving targets. Each profession has a unique history and specific challenges to obtaining precise estimates. It is harder yet to measure disciplines' workforces relative to need or demand for services, especially in the context of the availability of practitioners in other disciplines who could provide comparable or complementary services, or services that might substitute for each profession's service contributions. Data on clinically trained individuals (i.e., who completed applied clinical training programs) are imprecise (e.g., due to inclusion of graduates who subsequently left the country or are not practicing and exclusion of foreign-trained individuals and graduates of non-accredited programs). Nevertheless, it could be useful to develop a longitudinal educational database (e.g., number trained each year) rather than rely on alternate information (e.g., professional organization memberships) that suffers from other confounding factors.

From the standpoint of determining how many MHPs are needed to meet the demand for MH services, a meaningful index of the workforce is the number of clinically active practitioners. Unfortunately, ascertaining the magnitude of clinical services delivered by MHPs also is beset by formidable challenges. There is no universal process for obtaining data or for gauging professionals' involvement (i.e., actual level of service provided) in clinical and other professional activities that compete for their time. Individuals' activities can vary temporally (e.g., in response to interests, opportunities, life circumstances, acceptance into provider networks, credentialing in institutions and delivery systems, evolving standards of care, success in obtaining grants, funding, etc.).

Two sources offer incomplete and somewhat different insights into the MHW: Membership in key national organizations of professions (e.g., American Psychological Association [APA]) and regulatory boards that oversee MHPs' activities. Unfortunately, both data sources are problematic: Not all professionals are members of their respective professional organization. Professions may have multiple organizations with partially overlapping membership (e.g., APA and American Psychological Society [APS]). Data from regulatory boards can be imprecise, duplicative, and difficult to obtain and interpret. Different regulatory entities may be involved with specific subgroups of a profession (e.g., clinical and counseling psychologists are regulated by psychology boards whereas school psychologists can be regulated by departments of education). Furthermore, individuals may hold licenses in multiple jurisdictions, leading to overestimates of the workforce. Regulatory requirements, processes, structures [e.g., single profession board vs. multiple profession board) and record keeping (e.g., annual vs. biannual) are heterogeneous. The language used to tally licensees can be critical due to the complexities, nuances, and inconsistencies across jurisdictions (Robiner & Crew, 2001). Some organizations in which MHPs work are exempt from licensure requirements in some jurisdictions. Moreover, indices such as membership, licensure, and board certification do not reflect an individual's actual clinical effort (i.e., %F.T.E.) which is the most important factor in determining one's contributions to meeting MH demand.

Other sources also provide perspectives on the MHW. Trends may be gleaned, in part, from the U.S. Bureau of Labor Statistics (BLS). Unfortunately, definitional problems (e.g., The BLS counts psychologists at the master's level, whereas most jurisdictions require doctorates for licenses with the title "psychologist"), lack of specificity (e.g., the number of physicians is estimated, but the number of psychiatrists is not reported), and other methodological issues confound the data and efforts to obtain real-time tallies. Also, BLS analyses are largely based on retrospective data to predict future needs, rather than calculated based on projections of the impact of trends that are likely to affect the future employment outlook. BLS analyses reported herein generally were accessed from its website in 2005.

Another imperfect source of information for some professions (e.g., psychology) is the National Research Council's (NRC) estimates of doctorates. Its utility is limited because it counts researchers (who may not be part of the clinical

Table 2
Challenges to estimating workforce of clinically active professionals

Heterogeneity of data sources
Training institutions (enrollment, degrees granted)
Professional organizations (membership)
Regulatory boards (licensed, certified, and registered professionals within jurisdictions)
Government (e.g., National Research Council)
Methodological approaches inherently are based on assumptions which may yield underestimates or overestimates

Sources of data are imprecise, conflicting, and lack comprehensiveness for full workforce
Data from all sources is prone to error and inconsistency, is quickly outdated, and may be slow to reflect major changes [a, b]
There is not a standardized process for obtaining data that allow for universal counts of professionals and consistency of tallying process over time
Sources may fail to capture some individuals or training programs [a] and may erroneously include others
Professionals may have >1 professional degree or type of license [c]
Professions may have >1 relevant professional organizations
Professionals may hold licenses in >1 jurisdiction
Tallies which are based on licensure or combinations of sources may be duplicative of individuals across jurisdictions
Tallies may miss individuals who provide services (e.g., extenders such as psychometrists, "all but dissertation" [A.B.D.]) but do not meet criteria for inclusion
Regulatory requirements vary across jurisdictions
Data from some boards is difficult to obtain because it is embedded in operations of a "super" or omnibus board for multiple professions or archived by other state agencies
Statutory and regulatory changes can result in difficulties classifying some categories of practitioners

Individuals' clinical efforts vary
Individuals' areas of specialization may be narrow, limiting their direct contributions in meeting demands in broader health care system
Some professionals' caseloads or clinical efforts are part-time, intentionally or due to other factors (limited opportunity, disability, extenuating factors, limited referrals due to tight controls on utilization)
Some professionals' caseloads or clinical efforts exceed expectations for full-time employment
Some professionals are engaged in non-clinical activities (e.g., education, research, administration, business, forensics, or activities unrelated or peripherally related to provision of health care or human services)
Attrition (e.g., due to death, retirement, semi-retirement) is difficult to track

Coordination of professions and other types of providers
There is no consensus about which disciplines to include and exclude (i.e., estimates may underestimate the true workforce due to exclusion of relevant disciplines)
There is no consensus about how to integrate data across professions
Emerging or allied professions may be especially difficult to track (e.g., employee assistance program counselors, genetics counselors, pastoral counselors, applied philosophers, lay hypnotists)

Systems issues
Funding for workforce assessments and projections is limited
Sources providing data may not fully appreciate the importance of participation and provision of timely, accurate information
Within-discipline heterogeneity of activity and competencies is difficult to track

[a] For example, data in the table suggest that 48% of clinically trained psychologists are women. It does not reflect the changing demographics in the profession (i.e., currently about 70% of students in doctoral psychology programs are women, which is rapidly changing the gender composition of the workforce).
[b] New and non-accredited programs, or unique or interdisciplinary programs may be omitted from tallies.
[c] For example, half of the marriage and family therapists responding to a national survey had licenses in other disciplines as well (Doherty & Simmons, 1996).

workforce), and excludes graduates of free-standing professional schools whose graduates with Psy.D. degrees now account for over half of psychology doctorates entering human service and healthcare (Reich, 1999). Also, NRC analyses exclude master's level practitioners.

The heterogeneity of disciplines' training paradigms, practitioners, clinical emphases, scope of practice, professional organizations, regulatory mechanisms, and other factors within and between disciplines confound comparisons among them. The unique historical developments and complexities within each discipline and the evolving aspects of their clinical practice patterns are largely beyond the purview of this review. Caution is advised against assuming simplistic understanding of each discipline's roles in diverse sectors. Their respective scopes of

practice are overlapping and complementary, appearing to be increasingly fluid in response to changes in the healthcare system. A critical analysis comparing the roles and relative strengths and limitations of each profession would be valuable, but is beyond the scope of this review.

Despite the inherent imprecision and limitations of the available data, a review of the MHW requires empirical foundation to estimate the supply of persons working to satisfy the needs and demand for services. Peterson et al. (1998) estimated that there were 392,486 clinically trained MHPs. Steen (cited in Mills, 1997) similarly estimated there were 394,800 behavioral health professionals, or 113.4 per 100,000 population. A more recent, broad effort suggested as many as 537,857 MHPs (Duffy et al., 2004). However, this number could be an underestimate based on its methodology and non-uniform time frames for different professions. The following sections present a general overview of several MH professions along with estimates of their respective workforces. Snapshots of MH professions are largely based on data compiled by Duffy et al. (2004) with input from other sources, (e.g., BLS and membership organizations). Inclusion of professions beyond the traditional core MH professions provides a more comprehensive picture of the breadth and diversity of providers who likely consider themselves part of the MHW, and who are likely to be perceived by consumers as MHPs.

3.1. Psychology

Psychology is the discipline with the most extensive training in assessment (e.g., psychological testing), psychotherapy, and research. The U.S. government undertook a massive initiative, including major funding through the Veterans Administration, to train psychologists to address the MH needs of World War II soldiers' and veterans. In 1945, Connecticut became the first state to license psychologists. By 1977, all 50 states were licensing psychologists. In most states, a doctoral degree in psychology (i.e., Ph.D., Psy.D.) or its interface with education (i.e., Ed.D.), 1-year internship, dissertation (or scholarly paper), postdoctoral supervised practice, passing the Examination for the Professional Practice of Psychology (EPPP) are required for licensure. Additional examinations (e.g., professional responsibility; ethics) are required by many states. APA currently has accredited 369 doctoral programs, 465 internships, and 38 postdoctoral psychology residency training programs (L. Bibbs, personal communication, October 14, 2005).

Psychology is a diverse profession with a workforce that is particularly difficult to estimate because of the multiple sectors in which psychologists work (e.g., healthcare, academia, industry) and their diverse roles (clinical, teaching, research, consultation, administration). The 55 divisions of the American Psychological Association (APA) reflect assorted specialization and non-applied areas. The APA website estimates a membership of 150,000. About two thirds of graduates from doctoral programs are in the health service sector. The largest proportion of psychologists work in university or college settings (34%), the next largest group are self-employed private practitioners (17%), with others employed by business or group practices (22%), government (11%), nonprofits (10%), or other educational settings (6%; APA Research Office, March, 1999 cited by Chamberlin, 2000). In 2002, the BLS estimated that there were 139,000 psychologists, including those in professional psychology (clinical, counseling, and school psychologists) involved in healthcare and human services, and other areas of psychology.

Psychology may be viewed primarily as a MH profession or more broadly as a healthcare profession (Belar, 1998; Schofield, 1969, 1976). The "scientist-practitioner" training model, designed to promote the integration of science and practice, has been the premier paradigm for 50 years. However, this may be changing in that more internships indicate that they provide training consistent with the practitioner-scholar (27%) model than with the scientist-practitioner (21%; Rodolfa, Kaslow, Stewart, Keilin, & Baker, 2005). Decreased emphasis on scientific and research training concerns some psychologists, who view the field's scientific rigor as a distinguishing feature, preparing psychologists to undertake clinical research (Belar, 1998). It is also controversial in light of some psychologists' interests to pursue prescription privileges (Robiner et al., 2002).

By 2002, there were an estimated 88,491 clinically trained psychologists and 31,278 school psychologists in the US (Duffy et al., 2004). An earlier survey of psychology boards revealed 89,514 licensed doctoral and master's psychologists, or 95,104 licensees (including other master's designations, e.g., "psychological associate"; Robiner & Crew, 2000). Between 1988 and 1995 the number of LPs grew an estimated 44% (Robiner & Crew, 2000).

Questions about the balance between the supply of professional psychologists and the demand for their services grew during the 1990s (e.g., Pederson et al., 1998; Robiner, 1991b). Related controversy arose around the number of

psychology trainees and the slots available for them at the internship level. For example, in the 2005 APPIC Match, there were 3117 applicants for 2757 positions, indicating 360 more trainees than training slots: An increase of 58 (19%) in the gap relative to 2004. Only recently has limited federal funding become available again for graduate psychology education (GPE) through the Bureau of the Health Professions, to help fund training.

The highest estimate of need for psychologists per capita (i.e., 35–40 psychologists per 100,000 population estimated by VandenBos, DeLeon, and Belar (1991)) had been exceeded by the mid-1990s in many jurisdictions (Robiner & Crew, 2000). According to the combined estimates for psychology and school psychology reported by Duffy et al. (2004), by 2003, there were 42.5 psychologists per 100,000 civilians. The economic implications of an oversupply are significant. For example, salaries of psychologists have been lower than those reported by Ph.D. recipients in other science and engineering fields. Regional saturation of psychologists seems to adversely influence psychologists' earnings (Pingitore, Scheffler, Sentell, Haley, & Schwalm, 2001).

In response to these and other concerns, the APA Board of Educational Affairs (BEA) convened a Task Force to review the possibility of undertaking a workforce analysis. It concluded that:

"APA conduct a major workforce analysis to include at least the following three sectors of psychologist employment: health and human services; other applied areas of psychology; and academic/research positions… conduct(ing) workforce analyses… is essential if psychology is to remain a major participant with other scientific disciplines and professions that are recognized as essential to our nation's needs in healthcare, education, science, industry, social services, and government, including the military" (APA, BEA Task Force on Workforce Analysis, 2004).

3.2. Psychiatry

Psychiatry is the medical specialty principally oriented toward MH services. It is comprised of physicians who completed medical school and a 4-year full-time psychiatry residency accredited by the Accreditation Council for Graduate Medical Education (ACGME), with possible additional fellowship training in subspecialization areas (e.g., child, adolescent, geriatric, consultation-liaison, forensic). There are approximately 35,000 members in the American Psychiatric Association.

Data from the National Medical Expenditure Survey (Edwards & Berlin, 1989) suggest that psychiatrists tend to serve more complex or severely disordered patient populations (e.g., bipolar disorder, depression, schizophrenia, substance abuse) with greater social disadvantages than other MHPs (Olfson & Pincus, 1996) and non-psychiatric physicians (Schurman, Kramer, & Mitchell, 1985). Psychiatric practice increasingly has emphasized biological and somatic approaches (e.g., psychoactive medications; electroconvulsive therapy), with decreasing emphasis on psychotherapy. This change from eras in which psychiatrists had intensive (e.g., psychoanalytic) psychotherapeutic training, results from advances in neuroscience, increased competition for psychotherapy patients, and financial incentives and policies (e.g., within managed care and government programs) that effectively curtail psychiatrists' roles as therapists (Gabbard, 1999). It also likely reflects the shortage of psychiatrists, resulting in their deployment in activities for which they have the most specialized expertise. These trends have contributed to declines in psychotherapy training in psychiatric residencies. Psychiatric residents' psychotherapy training had become so limited that residency requirements were recently promulgated for more psychotherapy training to increase psychiatrists' psychotherapeutic competence.

Data from the Bureau of the Health Professions and the Department of Health and Human Services estimates that during the 1990s the number of psychiatrists increased by 15.2%, considerably slower growth than for psychologists and social workers (Scheffler & Kirby, 2003). In 2000, there were an estimated 40,867 clinically active psychiatrists in the U.S. (American Medical Association, 2002). The number of residents increased about 15% from 5312 in 1984 to 6089 in 1994 according to the American Psychiatric Association Resident Census (Weissman, 1996). A growing number of residency slots (i.e., nearly 6000 combined across training levels nationwide) have been filled by international medical graduates (IMG) as indicated by the 63% increase between 1990 and 1998 according to the American Psychiatric Association's Census of Residents. This likely reflects growing challenges facing psychiatrists due to managed care, increased primary care management of MH conditions, and greater economic opportunities afforded by other medical specialties (De Titter, Robinowitz, & More, 1991; Scheffler & Kirby, 2003).

Cuts in Medicare funding for residency training in teaching hospitals for all specializations, including psychiatry, as required by the Balanced Budget Act of 1997, also affect training. In addition to threatening the viability of teaching hospitals (Cohen, 1999a,b), and academic departments of Psychiatry, the cuts have reduced psychiatry training. Residencies have downsized (Yager, Burt, & Mohl, 1998) resulting in a 10% decline between 1997 and 2001 (National Resident Matching Program 2003 Match Data).

3.3. Social Work

Social Work as a profession and academic discipline began in the 1800s. Social workers address a broad range of societal problems, including MH and health problems. Social workers fulfill administrative and direct service roles in diverse organizations (e.g., hospitals, governmental and non-profit agencies, schools, corporations, managed care organizations [MCOs] prisons, nursing homes, MH centers, private practice, etc.), including psychotherapy, triage, referral, discharge, and facilitating or managing access to resources and programs. Social work has a relatively distinctive focus on helping people function effectively "in their environment" by addressing issues related to individuals, families, and the broader social context.

Social Work is a popular major (Peterson et al., 1998). There are about 200 accredited graduate and 430 undergraduate Social Work programs in the U.S. (Lennon, 2001). In 1995, there were an estimated 35,539 students in MSW programs and 1,953 in doctoral level social work programs (Lennon, 2001).

The National Association of Social Workers (NASW) is the largest organization of social workers, with about 153,000 members. The BLS estimated there were 477,000 social workers in 2002: 274,000 in child, family, and school practices; 107,000 in medical and public health systems; and 95,000 in MH and substance abuse. In 2002, there were an estimated 99,341 clinically active master's and doctoral level social workers in the NASW (Duffy et al., 2004), making it one of the largest MH professions. A1991survey suggested that 63% of the NASW membership worked in MH (Gibelman & Schervish, 1995). The difficulty in gleaning a clear picture is illustrated by the results of a 2000 NASW survey indicating that only 39% considered MH their main area of activity, a figure that likely underestimates the true extent of social workers' MH activity (www.socialworkers.org/naswprn/area.pdf; accessed 7/23/05).

Social work regulatory mechanisms are heterogeneous across states, generally requiring a degree in social work from a program accredited by the Council on Social Work Education, supervised experience, and passage of an examination developed by the American Association of Social Work Boards. Levels of licensure or certification vary as a function of academic credential (intermediate or advanced for M.S.W.; basic for B.S.W.), with the M.S.W. commonly required to provide psychotherapy. Doctoral level social workers (Ph.D. or D.S.W.) tend to focus on research.

3.4. Psychiatric Nursing

The scope of practice of Nursing is evolving as healthcare systems seek cost-effective delivery models (e.g., community based cf. hospital based; use of least expensive providers) and as nurses seek greater specialization and professional autonomy. Nursing affords some MH involvement at the baccalaureate level and more at the master's level. The American Psychiatric Nurses Association (APNA) has approximately 4,800 members (Jennifer Wash, personal communication, March 29, 2006). The International Society of Psychiatric-Mental Health Nurses (ISPN) has an estimated 800 members, of whom approximately one third have doctoral degrees (Bruce Wheeler, personal communication, April 12, 2006). The American Nurses Association developed mechanisms for certifying generalist nurse practitioners as well as advanced practice psychiatric nurses. Graduate education for clinical nurse specialists (CNS) dates back to the 1950s, first as generalists, but later with specialist options. There has been a growing movement toward specialization as nurse practitioners (NPs). Controversy continues about the relative emphases between specialty psychiatric models and primary care models (Dyer, Hammill, Regan-Kubinski, Yurick, & Kobert, 1997; McCabe & Grover, 1999), mirroring similar controversies within medicine about whether MH services are best provided in primary care or psychiatric settings, and by generalists or specialists. In general, the number of nurses seeking graduate psychiatric nursing training has declined: In 2001–2002 an estimated 1,153 nurses were seeking advanced psychiatric training (Berlin, Stennett, & Bednash, 2002, 2003; Duffy et al., 2004). By March 2000, there were an estimated 16,731 nurses with doctoral degrees in either nursing or related fields, accounting for approximately 0.6% of all nurses (Spratley, Johnson, Sochalski, Fritz, & Spencer, 2002). Nearly 10% had master's degrees. It is not clear how many of the doctorates are related to mental health or how many of those with doctorates related to mental

health actually have clinical practices in mental health. In 2004, the American Association of Colleges of Nursing voted for the Doctorate of Nursing Practice (DNP) to become the entry-level degree for new advanced practice nurses by 2015 (National Association of Clinical Nurse Specialists, 2005). This is likely to result in increased numbers of doctoral level nurses who have a clinical focus.

NPs have prescriptive authority in 49 states and the District of Columbia (Duffy et al., 2004). It is generally "complementary" or "dependent" on supervision by a physician. The extent of this authority, and requirements for eligibility and implementation, vary by jurisdiction. For example, in Minnesota, master's level clinical nurse specialists (CNSs) who pass the CNS examination of the American Nurses Credentialing Center (ANCC) may be granted dependent authority with a limited formulary. In other states, to obtain prescriptive authority, nurses must complete a master's degree and a family (FNP) or adult (ANP) NP examination and possibly the CNS examination (i.e., dual examinations to document their MH and primary care expertise; McCabe & Grover, 1999). A psychiatric NP exam became available in 2000.

There are an estimated 18,269 nurses with graduate degrees from psychiatric MH programs. They work in assorted settings (e.g., hospitals and community MH centers). In part due to difficulties blending the psychiatric-MH CNS role (which does not always permit prescriptive authority) with the NP model that does (but which emphasizes primary care), enrollment in CNS psychiatric nursing programs declined (McCabe & Grover, 1999). Concurrently, enrollment in NP programs has grown, with small minorities (8%) of NPs pursuing dual certification as psychiatric CNSs (Washington Consulting Group, 1994 cited by Peterson et al., 1998). The potential, for nurses to play expanded roles in the MHW seems especially strong given their breadth of training, expanding scope of practice, and cost-effectiveness. Some NP programs attract MH professionals from other fields (e.g., psychology), who seek prescription privileges and broader knowledge than clinical psychopharmacology.

3.5. Counseling professions

Among the MH professions, counseling may be distinguished by its developmental, educational, and preventative approaches to problem solving. It focuses on individual functioning within an environmental context, and tends to focus less on the treatment of diagnosable mental disorders than on helping people deal with a range of life problems (American Medical Association, 1999; Duffy et al., 2004). Counselors function in multiple contexts, both within and outside of the healthcare system (e.g., schools, industry, social service agencies, vocational rehabilitation). Forty-seven states and the District of Columbia either license or certify master's trained counselors.

Across all BLS counseling categories, there were an estimated 526,000 jobs in 2002, making it the largest segment of the MHW. The BLS estimated that there were 228,000 educational, vocational, and school counselors, 85,000 MH counselors, and 122,000 rehabilitation counselors, plus 23,000 MFTs, and 67,000 substance abuse counselors. The National Counselor Examination (NCE) is required for licensure or certification in most states and allows for registry by the National Board for Certified Counselors (NBCC). There can be limitations in counselors' scope of practice (e.g., need for supervision or constraints on assessment approaches, diagnosis, or in working with the seriously and persistently mentally ill [SPMI]). The Council for Accreditation of Counseling and Related Educational Programs (CACREP) accredits 125 graduate counseling programs; there are approximately 250 additional non-accredited programs (Hollis, 1997). There were an estimated 19,576 master's students and about 1061 doctoral students in counseling programs in 2000–2001 (Duffy et al., 2004), suggesting a reduction (31% masters; 35% doctoral) since 1995 (Peterson et al., 1998).

3.6. Marriage and family therapy

Marriage and family therapists (MFTs) tend to focus on marital, couples, or family issues, but have a broader purview. MFTs' services seek to improve relationships or address behavioral or emotional issues from a family perspective. Despite a relationship focus, approximately half of MFTs' patients are seen individually (Doherty & Simmons, 1996). The profession began in the 1930s in response to demand for professional help for relationship problems and emerging interest in family systems. It has been added as a core MH discipline to the original four (Peterson et al., 1998). By 2004, 46 states and the District of Columbia regulated the practice of marriage and family therapy. California was the first state to regulate MFTs in 1966; Most states have adopted regulation of MFTs since 1980.

In 2002, there were an estimated 47,111 clinically active marriage and family therapists (Duffy et al., 2004). Training for marriage and family therapists is at the master's or doctoral level. In 1997, there were an estimated 7,696 students in master's training programs, 741 students in doctoral programs, and 840 trainees in post-graduate programs, many of which were accredited by the Commission of Accreditation for Marriage and Family Therapy Education (COAMFTE). By 2000–2001, there were an estimated 17,298 students in training and 10,169 graduates in the process of seeking independent practice. There is also a number of individuals with other degrees (e.g., MSW) who seek certification or licensure as MFTs, with the majority (78%) at the master's level (Northey, 2002). In 2002, the BLS estimated there were 23,000 marriage and family therapists. The American Association for Marriage and Family Therapy has about 23,000 members. Nearly a quarter of MFTs are dual-licensed, including the 3% of MFTs who are also licensed psychologists.

3.7. Substance abuse counselors

The National Association of Alcoholism and Drug Abuse Counselors (NAADAC) is the largest organization of professionals serving people with substance use problems and their families. It has approximately 12,000 members and 47 state affiliates, representing more than 80,000 addiction counselors. In 1991 there were an estimated 67,400 health professionals involved in substance abuse programs according to the National Institute for Drug abuse (Department of Health and Human Services, 1992), whereas by 2002, there were 67,000 substance abuse counselors per se according to the BLS. There are approximately 145 programs approved by the NAADAC to provide education as well as regionally accredited schools providing training at the associates, bachelors, and master's level.

There are several levels of counselors based on training and experience. It is not uncommon for counselors to be in recovery from their own substance use. In addition to substance abuse counselors, some professions, such as psychiatry and psychology, provide certification for their practitioners serving substance abuse populations.

3.8. Psychosocial rehabilitation

The deinstitutionalization movement shifted the locus and costs of treatment for the SPMI from hospitals to communities. From the 1950s to the 1970s, the census for state psychiatric hospitals declined from 550,000 to 125,000 (77%) by capitalizing on the early successes of psychopharmacologic treatment for the SPMI. Many SPMI who previously would have resided in large psychiatric facilities, now receive community-based care and support. Psychosocial rehabilitation services span a spectrum of services, including housing, case management, crisis intervention, residential treatment, recreational and socialization, and other types of community support (Peterson et al., 1998). Such services assist the SPMI to function within their communities by streamlining access to necessary services, and decreasing the incidence of hospitalization. The proliferation of agencies providing such services reflects its growing importance in outpatient management of the SPMI. In 1996, there were an estimated 100,000 people providing psychosocial services; about a quarter had graduate degrees (Peterson et al., 1998). This field is becoming more organized and professional. Training programs are emerging, a professional group, the International Association of Psychosocial Rehabilitation Services (IAPSRS) is developing practice standards, and the Registry for Psychiatric Rehabilitation Practitioners is being phased out as a credentialing program, and replaced by the Psychiatric Rehabilitation Certification Program. There are 2,178 certified psychiatric rehabilitation practitioners (Jette Engstrom, personal communication, March 1, 2005). The field has its own journals.

3.9. Related disciplines

In addition to the groups above, allied professional and paraprofessional groups provide MH services in settings, including inpatient psychiatric units, through specific modalities. Despite the involvement of at least some practitioners in these fields with MH programs and problems, these groups generally have been overlooked in tallies of the MHW. Whether and how they should be considered in MHW estimates may be debated, though it seems likely that practitioners self-identify primarily as MHPs and that consumers perceive them to be MH professionals. Unless otherwise cited, data for following disciplines came from the websites of the professional associations listed or the BLS. Whereas, space constraints limit the following descriptions to cursory reviews, considerably more information is readily available about each discipline.

Art Therapy weaves in the arts and creative process to address multiple medical, educational, and psychiatric problems. There are approximately 4,750 members of the American Art Therapy Association. Certification as a register Art Therapist (ATR) require a master's degree and supervised client contact. The profession dates back to the 1930s.

Music Therapy is composed of musical approaches to facilitating change and enhancing development to address physical, emotional, cognitive, and social needs and improve quality of life. The profession began to organize in the 1950s and is practiced across a broad continuum of settings. There are about 5,000 members of the American Music Therapy Association (AMTA), which was founded in 1998. The National Music Therapy Registry lists registered or certified music therapists who have undergone bachelor's level training in one of approximately 70 programs. The field has at least two journals and a code of ethics.

Dance Therapy embodies the "emotional, social, cognitive, and physical integration of the individual" through physical movement according to the American Dance Therapy Association (ADTA). It was founded in 1966 and has a code of ethics. There are approximately 1,200 dance therapists. Graduates of master's programs and 700-h internships work with a range of populations (autism, mental retardation, older adults), exploring the interaction of the body and mind. It is undertaken in a range of settings (e.g., MH rehabilitation, medical and, educational, nursing homes, day care, forensic). It is eligible for some third party reimbursement and is recognized by the Health Care Financing Administration (HCFA) as a covered element of partial hospitalization programs in Medicare facilities.

Drama Therapy and Creative Arts Therapy "enacts drama and theater processes...to achieve the...goals of symptom relief, emotional and physical integration, and personal growth" according to the National Association of Drama Therapy (NADT). Drama therapists are trained in theater, psychology, psychotherapy, and drama therapy (including puppetry, improvisation, and role-playing). Registered drama therapists (RDTs) have a master's degree and specific training in drama therapy, including an internship. There are 420 members of NADT; about 200 are RDTs. It is in the process of becoming more organized, as reflected in its ethics code and current efforts to develop licensure in New York for Creative Arts Therapy (CAT).

Occupational Therapy comprises a broad range of activities with psychiatric, developmental, and disability populations, including neuromotor, sensory, adaptive skill, and functional assessment, and facilitation of skills. The BLS estimated there were 82,000 occupational therapists (OTs) in 2002. A relatively small minority of OTs (2–9%) work primarily in psychiatric settings, with declining numbers identifying MH settings as primary, as MH has shifted locus to outpatient settings (Trickey & Kennedy, 1995; J. Reisman, personal communication, April 20, 1999). Shortages of OTs have been identified by several groups, including the BLS and the American Hospital Association (Jones, Johnson, Beasley, & Johnson, 1996).

Psychiatric Aides engage in a range of psychosocial activities in therapeutic milieus. The BLS estimated there were 59,000 psychiatric aides, 60,000 psychiatric technicians, and 305,000 social and human service assistants in 2002. Of the MH personnel reviewed, this group is predicted to offer the greatest growth in the next decade, though they may increasingly work outside of hospital environments (e.g., case managers). In general, aides require on the job or postsecondary vocational training and earn less than professional groups.

Recreation Therapy integrates recreational and leisure activities to serve therapeutic aims. The BLS estimates there were 27,000 recreation therapists in 2002. Recreational therapists (RTs) provide recreational programs in hospitals, nursing homes, residential treatment centers, and community settings for diverse medical and psychiatric conditions. Many states regulate RTs. The National Council for Therapeutic Recreation Certification (NCTRC) awards credentials for bachelor's level RTs. There are currently more than 16,000 certified therapeutic recreation specialists (CTRS). The U.S. Department of Labor classifies RTs with other therapists who treat persons with physical or mental disabilities or disorders. Recreation therapy originated in psychiatric settings; the majority of RTs worked in psychiatric hospitals since the 1920s (Annand, 1994; Carter, Van Andel, & Robb, 1995). There are roughly 140 training programs, most of which are bachelor's level; some are at the doctoral, master's or associate level.

Pastoral Counseling refers to counselors who have a spiritually based approach to counseling, integrating religious and psychotherapeutic perspectives and methods. The American Association of Pastoral Counselors, founded in 1963 as an inter-faith organization to certify individuals and accredit programs, now exceeds 3,000 members. Pastoral counselors have been estimated to provide 3 million treatment hours annually, mainly in religious and healthcare institutions. This volume could increase as a result of recent federal faith-based initiatives. Training typically entails three years of post-baccalaureate seminary training leading to a master's or doctoral degree in an MH field. There are requirements of 1,375 supervised clinical hours and 250 h of supervision.

Genetics Counseling provides specialized consultation about risks for inherited conditions (e.g., birth defects, cancer, cystic fibrosis, Huntington's Chorea), including psychiatric disorders. The profession was spawned in the late 1940s. Practitioners obtain specialized training, currently offered in one of the 23 U.S. master's degree programs, and often have backgrounds in related areas. Certification is available through the American Board of Genetic Counseling (ABGC). There are approximately 1,967 members of the National Society of Genetics Counselors (Lisa Brodeur, personal communication, February 28, 2005). As understanding of the human genome and its health implications advances, the need for health professionals with combined understanding of genetics and counseling skills will likely increase.

In addition to these groups, other disciplines have begun to establish roles addressing MH issues. For example, *applied philosophers* are beginning to offer philosophical counseling about problems in living, drawing upon philosophical insights (Lahav, 1993). *Clinical pharmacists* are assuming new roles in medication consultation, counseling, monitoring, and management (Cohen, 1999a,b; Trott & Botts, 1997). Also, *applied and clinical sociology* practice programs have begun to emerge, though their role in the delivery of MH services is not yet well-understood (Peterson et al., 1998). By contrast, sociologists' roles in MH research, teaching, and administration is well known and appreciated.

4. Challenges to the mental health professions

The MH professions face numerous challenges. These include responding to healthcare trends, demographic trends, changing research agendas and funding instability, clarifying areas of competence needed, and defining their respective roles. The following section summarizes trends and issues that affect practice.

4.1. Trends in healthcare delivery

Between 1960 and 1992, national health expenditures rose from 5.3% to 13.3% of the Gross Domestic Product (GDP); annual per capita costs rose from $141 to $3,144 (Levit, Lazenby, & Sivarajan, 1996a, Levit et al., 1996b). Between 1986 and 1996, U.S. healthcare expenditures rose 8% annually (Mark et al., 1998). By 2008, healthcare is anticipated to account for 16.2% of the GDP (Center for Medicare and Medicaid Services, 2005).

MH expenditures rose at a slightly lower rate (7%). By 1990, an estimated $85.1 billion was being spent in treating MH and substance abuse disorders (Iglehart, 1996). Rising costs resulted from a confluence of factors: expensive technological advances (e.g., MRI scans, higher cost medications), consumers' growing acceptance of and demand for services (e.g., SSRIs), and greater access to providers (Mirin, 1999). Increased MH costs also reflected more for-profit psychiatric hospitals in the 1980s and expanded MH insurance benefits (Mirin, 1999), and inadequate accountability leading to over utilization in the fee-for-service system. Rising costs were not sustainable, motivating corporations and the government to trim costs. The impact of reforms wrought unprecedented transformation of healthcare, reconceptualizing the objectives from providing optimal care to "just enough care" (Spruill, Kohout, & Gehlmann, 1997).

4.2. Managed care

Managed Care Organizations (MCOs), including managed behavioral healthcare organizations (MBHOs), led efforts to control MH costs, generally by limiting services. Substantial savings were initially achieved by managing MH care (Bloom et al., 1998; DHHS, 1992; Mirin, 1999; Ma & McGuire, 1998). The Rand Health Insurance Experiment found that HMO enrollees had only one third the number of MH visits of a fee-for-service program, resulting in about a third of the costs (Newhouse et al., 1993). Also, the mean cost to employers of MH benefits decreased from $9 per insured member per month (PMPM) in the mid 1980s to $5 PMPM nationally, and about $3 PMPM in strong MCO penetration regions (Ginsburg & Pickreign, 1996; Levit et al., 1996a).

Savings reflected the effectiveness of several strategies: (a) sharply discounting provider and hospital fees; (b) restricting provider networks (e.g., provider profiling and deselection); (c) maximizing use of least expensive providers; (d) specifying provider roles (or use of incentives/disincentives) to achieve cost effective "skill mix" in providing care (e.g., restricting psychiatrists' roles to medical management, crisis management, and pharmacotherapy [Mirin, 1999]); (e) utilization management (e.g., precertification, concurrent review, retroactive review) to shorten and prevent inpatient stays and minimize the length and intensity of outpatient care; (f) limiting services to "medically" or

"therapeutically" necessary; (g) developing continuums of care integrating services from employee assistance programs (EAPs) to clinics, day hospitals, and hospitals; and (h) selecting risk by curtailing or denying care for serious illness and pre-existing conditions (Frank & McGuire, 1995; Goldman, McCulloch, & Sturm, 1998; Iglehart, 1996; Ma & McGuire, 1998; Mechanic, 1996; Mirin, 1999; Sharfstein, 1998).

By the end of the 20th century, cost savings catapulted MBHOs to managing the MH services of an estimated 72% of Americans with private insurance (OPEN MINDS, 1999a). It had profound impacts on practitioners, including flat (Scheffler, Ivey, & Garrett, 1998) or decreased earnings (Williams, Kohout, & Wicherski, 1998), abridged professional autonomy (Iglehart, 1996), increased case loads, and increased paperwork detailing justifications for providing care, targeted outcomes, and requisite treatment plans. Changes in care included shortening treatment duration, reducing the frequency, and narrowing the focus of care to the short-term symptomatic treatment; limiting coverage; intrusions on privacy and confidentiality (despite the implementation of the Health Insurance Portability and Accountability Act [HIPAA]); and restricting consumers' access to providers (Mechanic, Schlesinger, & McAlpine, 1995; Mirin, 1999).

The more the healthcare system focuses on reducing costs, the greater the likelihood that quality of care will be de-emphasized, leading to undertreatment, especially, potentially, for people with SPMI (Mechanic et al., 1995; Mirin, 1999). Pressure for public sector mental health organizations to adopt managed care models, raises concerns about the potential dissolution of the nation's "behavioral health safety net" as funding for programs is replaced by capitated, eligibility-driven care delivery systems (OPEN MINDS, 1999b). Alas, these and related developments have "progressively starved" mental health systems of resources needed to function (Applebaum, 2002).

The challenges associated with managed care are not limited to MCOs or to MH. Health professionals are challenged to avoid temptations to engage in unethical and fraudulent practices such as misleading payers through upcoding or engaging in other questionable practices (Bloche, 2000; Robiner, 1991b; Spruill et al., 1997; Wynia, Cummins, Van Geest, & Wilson, 2000). More broadly, practitioners' responsibilities to society come more clearly into focus: Withholding service which is not reasonably expected to benefit patients, and understanding the impact of their professional activities from a societal perspective (i.e., judicious allocation of limited health resources (AMA Council on Ethical and Judicial Affairs, 1996; Lazarus, 1999).

Managed care also is profoundly affecting training the future MHW. Because MCOs generally do not consider training MHPs within their mission, they often refuse to remunerate the clinical activities of trainees. The increasing dominance of MCOs, along with changes in Medicare funding and regulations, jeopardize historic funding streams for the education and training of MHPs (Meyer, 1993; Robiner, 1999). Additionally, the changing practice patterns demand that programs develop curriculum to prepare trainees to understand healthcare systems, healthcare financing, quality management, population-based healthcare delivery, evidence-based practice, as well as the clinical skills to function within evolving delivery systems (Spruill et al., 1997).

4.3. Delineating roles of specialists and primary care practitioners

The respective roles of primary care practitioners (i.e., generalists) and MHPs (i.e., specialists) in providing MH services are fundamental to the organization of MH services. It has implications for the size and distribution of the MHW. Systems that favor providing MH treatment through primary care clinicians compress the role and activities of MH specialists (especially psychiatrists) focusing on consultation about the most seriously disturbed patients, rather than providing ongoing care to a broader range of patients with MH issues. Such models limit demand for MHPs, and are also used in other countries (e.g., Great Britain; Andrews, 1990; Scully, 1999).

Practice guidelines, such as those addressing assessment and treatment of depression in primary care (Depression Guidelines Panel, 1993a,b) are changing how and where care is delivered and by whom. Psychiatrists are responsible for only about one third of patient visits associated with psychoactive medication prescriptions. Appointments with primary care physicians and medical specialists account respectively for 48% and 19% of all appointments involving psychoactive drug prescriptions (Pincus et al., 1998). Non-psychiatric physicians provide more outpatient MH services (35%) than psychologists (31%) or psychiatrists (27%; Olfson & Pincus, 1996). MH services are provided by primary care clinicians in conjunction with care of non-psychiatric conditions (Knesper & Pagnucco, 1987).

Primary care models of MH service can (a) be cost-effective, less stigmatizing, and more acceptable to some patients; (b) facilitate early detection; (c) integrate physical and MH care; and (d) streamline care by using existing relationships with health professionals (Williams et al., 1999). A quarter of office visits to physicians are estimated to

be for MH issues (Kamerow, Pincus, & MacDonald, 1986). Improvements have been noted in primary practitioners' detection of and care for MH conditions (Hirschfeld et al., 1997; Williams et al., 1999).

Some question whether primary care providers are adequately interested, prepared, reimbursed, and have the time to recognize and treat MH problems (e.g., depression; Mechanic, 1997; Popkin & Callies, 1987; Pincus et al., 1998; Robinowitz, 1999). Earlier estimates suggested that 30–50% of depressed patients were not appropriately identified or treated by primary care providers (Wells, Strum, Sherbourne, & Meredith, 1996; Williams et al., 1999). Mechanic (1996) raises doubts about how well primary care providers substitute for MH specialists. One explanation for how primary care providers can, at least in part, is that they see less disturbed populations than do psychiatrists (Schurman et al., 1985). Theoretically, the better primary care clinicians can handle MH problems, the smaller the MHW needed.

Due to the relatively labor-intensive nature of traditional MH services, savings can be realized when providers minimize time spent with patients. Data from the 1981 National Ambulatory Medical Care Survey suggest that the mean psychiatric visit is more than twice as long as appointments with other physicians and more likely to entail psychotherapeutic interactions (Schurman et al., 1985). In light of the efficacy of psychotherapy and its synergies with pharmacotherapy (e.g., Elkin et al., 1989), it is important to explore whether and how primary care practitioners' apparent disinclination to provide psychotherapy may detract from care for MH disorders.

There is growing interest in melding primary care and MH by integrating MHPs into primary care settings (Frank, McDaniel, Bray, & Heldring, 2004; Kamerow & Burns, 1987; Katon & Gonzales, 1994). Closer collaborations between primary care practitioners and MHPs, including relocating MH service to primary care settings, hold promise for enhancing care, augmenting collaborations, and decreasing morbidity and mortality (Kamerow, 1987; Mechanic, 1992; Spruill et al., 1997).

4.4. Heterogeneity of practice and overlapping scopes of practice

MH services comprise a vast spectrum of clinical practices. For example, Beutler (1991) estimated there were more than 300 "brand names" of psychotherapy. Although these may not be readily differentiable (Schofield, 1988) and probably reflect a smaller core of approaches, it reflects the heterogeneous nature of clinical practice. Such diversity is likely to continue regardless of efforts to systematize care delivery through practice guidelines to promote more uniform clinical decision-making through evidence-based care (American Psychiatric Association, 1996; McIntyre, Zarin, & Pincus, 1999) and manualized empirically supported therapies (Bologna, Barlow, Hollon, Mitchell, & Huppert, 1998; DeRubeis & Crits-Christoph, 1998).

The diversity of clinical approaches confounds differentiation due to disciplines. The boundaries distinguishing MH disciplines are becoming more ambiguous as scopes of practice of some groups expand (e.g., prescriptive authority of advanced practice nurses, and psychologists in some jurisdictions [i.e., New Mexico, Louisiana]; diagnosis, administration and interpretation of tests by counselors) into professional provinces that have been exclusive to other groups (e.g., psychiatrists and psychologists respectively). As professions' roles and scopes of practice evolve, how the relative value of each discipline's contributions can be assessed and will be reimbursed remains to be seen. Such changes have implications for each discipline's size (including its proportion of the MHW) to effectively meet society's need and demand for generic and specialized MH services.

Whereas clearer delineation among MH professions would be desirable for consumers, payers, and professionals, it seems likely that overlapping scopes of practice for the MH professions will continue to perplex professionals and the public. Clearer articulation of disciplines' respective scopes of practice and training models potentially could enhance consumers' understanding of their choices among MHPs. However, such efforts are likely to be superficial and confounded by historical precedents, turf considerations, and professional rivalries. To counter such confusion and promote greater standardization of care, it may be fruitful to develop a universal MH core curriculum based on fundamental, generic knowledge domains and competencies that are prerequisites for practice across disciplines. Theoretically, a core curriculum could be integrated with additional curricula addressing the specific knowledge and skill domains, emphases, and training paradigms of each discipline.

4.5. Use of least expensive providers

Certain professional groups (e.g., doctoral psychologists) generally receive more intensive psychotherapy training than other providers. However, payers' appreciation of the value of such training and willingness to pay more for it are

limited. Whereas practitioners' salaries within and across groups overlap, there are differences between certain groups. Earnings for psychiatrists generally exceed those of doctoral level psychologists, which in turn typically exceed those of master's level clinicians (e.g., social workers) (Scheffler et al., 1998; Scheffler & Kirby, 2003; Wicherski, Woerheide, & Kohout, 1996). As MCOs develop service delivery systems that compete aggressively on costs, they are likely to rely increasingly on master's level practitioners to deliver clinical services. Despite doctoral-level MHPs' reluctance to compete with them, they may be reimbursed at comparable levels (reducing salary disparities), be excluded from provider networks, or be authorized to provide only those services for which their greater or specialized training is most clearly indicated. In some states, "any willing provider" laws mandate that all qualified providers, regardless of cost, be allowed to participate in provider panels.

It is not clear how treatment provided by practitioners of different disciplines differs or what the consequences are of restricting treatment by more extensively trained MHPs (Sharfstein, 1998). There are some indications that more training results in more extensive clinical knowledge. For example, doctoral level applicants for psychology licensure consistently score significantly higher than master's level applicants and have higher pass rates on the EPPP (Association of State and Provincial Psychology Boards, 1999; Robiner, Arbisi, & Edwall, 1994). Also, in addition to performance on objective examinations, indices such as malpractice suits, complexity of clinical examinations, and peer review, have suggested that higher professional standards in various professions enhance practitioner quality (Carroll & Gaston, 1983). The concern about relatively lesser training is that potential gaps in training may yield non-trivial effects (Robiner, 1991b). For instance, Tori (1989) reported positive correlations between EPPP scores and performance on clinical proficiency exams. An inescapable paradox is that professionals simply may not realize what they do not know. As services rely on ever increasingly complex scientific and technical foundations, the risk rises that gaps in knowledge could translate into suboptimal care.

Nevertheless, as concerns about costs and quality are balanced, the roles of relatively more intensively trained professionals (i.e., psychologists) are likely to change. Increasingly, their roles may focus on their knowledge and skills in supervision, management, research, and program development, and less on the direct provision of clinical services (Spruill et al., 1997).

4.6. Recruitment

Recruitment to the MH professions has succeeded in growing the MHW. It has been less successful in attracting students of diverse ethnic and cultural backgrounds (other than IMGs in Psychiatry). The MHW composition is increasingly female. For years, recruitment to most MH professions seems to have been a function of the interests and ambitions of applicants and objectives of educational institutions, rather than on empirical projections or any clear consensus regarding how many trainees might be needed to meet workforce demands (Robiner, 1991a,b; Robiner & Crew, 2000). The clearest exception has been Psychiatry, where proposals for training levels to meet the population's needs were developed by the Graduate Medical Education National Advisory Council (GMENAC, 1980; Pardes & Pincus, 1983) and Council of Graduate Medical Education (1992, 1996). Such efforts yielded recommendations for more child and adult psychiatrists. Whether the MHW could become more responsive to other variables (e.g., clinical need; geographic dispersion) remains to be seen.

4.7. Neuroscience advances

Stunning progress in neuroscience in the past two decades sets the stage for more dramatic clinical innovations in MH diagnosis and treatment. Albeit beyond the scope of this review, brief discussion is warranted to provide a context for evolving practice that will demand greater levels of scientific understanding (Coyle, 1999).

4.7.1. Psychopharmacology

The introduction of selective serotonin reuptake inhibitors (SSRIs) in 1988 offered safer, better tolerated regimens in treating mood, anxiety, and other disorders radically increasing the popularity of psychopharmacologic approaches. From 1986 to 1996, there was a 40% increase in the frequency of patient visits that included psychoactive prescriptions (Pincus et al., 1998). By 1998, outpatient prescriptions accounted for an estimated 9% of direct MH costs, as drugs are among the most sharply rising MH expenditures (Mark et al., 1998). By 2004, antidepressants had become a $16.9 billion market globally (Datamonitor, 2004). More efficacious agents and more liberal use of medications may

exert downward pressure on the utilization of psychotherapy. The burgeoning arsenal of psychopharmacologic agents makes it critical that MHPs develop clearer understanding of medications (e.g., adverse effects, drug interactions).

4.7.2. Molecular biology

Research is increasing the understanding of the structure and function of the nervous system, propelling development of medications that pinpoint locus of action and target specific mechanisms. The potential for clinical innovations (e.g., regulation of gene expression; alteration of neural functioning through more sophisticated psychopharmacology) based on advances in molecular biology is vast (Hyman, 1999), and will require a more scientifically sophisticated MHW.

4.7.3. Genetics

Understanding of genetic factors in the etiology of mental illness is expanding (e.g., via Human Genomics). The major mental disorders (e.g., schizophrenia, bipolar disorder) appear to be heritable, associated with complex genetic patterns. Defects in multiple genes on specific chromosomes appear to contribute to the vulnerability for several disorders (DHHS, 1999; National Institute of Mental Health, 1998). Environmental factors also play major roles in genes' expression, and the course and severity of disorders. Further genetic mapping is likely to result in prevention, earlier diagnosis, and more targeted and effective intervention. Growing knowledge of genetic aspects of mental disorders challenges MHPs to master new domains of knowledge . Also, such advances are likely to increase the need for genetic counselors (Gottesman & Moldin, 1998).

4.7.4. Brain imaging

Increasingly sensitive brain imaging techniques, including functional imaging, are yielding fresh insights into the structure and function of the brain (e.g., loci of neurotransmitter systems, cerebral blood flow, and oxygen consumption). Whereas clinical applications have yet to realize their potential, technological advances are likely to lead to new frontiers in diagnosing and treating mental disorders (Callicott & Weinberger, 1999; Coyle, 1999).

5. Demand for mental health services and professionals

Sanford's (1951) forecast that, "our society may be neither inclined nor able to support an infinite number of psychologists" can be extended to other MHPs. The end of the era when access to MH care can be determined principally by the number of practitioners who wish to provide services and generate revenue is approaching (Robiner, 1991b). Instead, the demand for services needs to be conceptualized within a larger, societal framework.

Assessing the demand for professionals is a complex task, fraught with controversy, methodological hurdles, imprecision, and threat to potential stakeholders (e.g., Faulkner, Scully, & Shore, 1998; Feil, Welch, & Fisher, 1993; Pion, 1991; Robiner, 1991b; VandenBos et al., 1991). Estimates of workforce demand vary based on the perceived roles of practitioners, funding mechanisms, healthcare and social service delivery systems, sampling methodology, as well as the assumptions underlying projections (Hart, Wagner, Pirzada, Nelson, & Rosenblatt, 1997; Tarlov, 1995). Projections of demand have fundamental policy, service, and educational implications.

Demand can be inferred from multiple sources (e.g., El-Guebaly, Beausejour, Woodside, Smith, & Kapkin, 1991). Estimates can be linked to the rates of employment, underemployment, unemployment, and job vacancies in a field. Need and demand for services can be estimated by epidemiological patterns, population demographics, service utilization, adjusting for relevant economic and service delivery trends. Sociocultural factors (e.g., public acceptance; consumers' preferences) also influence demand.

Diverse models have been advanced to gauge workforce demand. Needs based models (i.e., focusing on epidemiological trends) tend to suggest a need for more psychiatrists. Demand-based approached emphasize the number of professionals that society or healthcare systems are willing to compensate (Dial, Bergsten, Haviland, & Pincus, 1998). A third approach, "benchmarking", allows comparisons in the ratio of professionals to the population in various sectors or regions, such as the "out-of-pocket" sector, the public sector, the indemnity insurance sector, and the managed care sector (Dial et al., 1998; Goodman et al., 1996). Because workforce patterns are inconsistent across regions and systems, and different models yield inconsistent estimates, there is no consensus on how many professionals are needed.

As cost accountability in healthcare inexorably rises, demand increasingly needs to consider cost factors (Arnhoff, 1968), and utilization of alternative types of providers. In other words, the workforce of each profession needs to be

viewed within the context of the supply of the entire MHW, with consideration given to the substitutability of disciplines based on clinical, economic, and systems factors. The corporatization of healthcare increases attention to costs and the integration and management of service delivery, bringing more sharply into focus the interdependence of the MH professions' workforces and the finite resources for which they compete. In assessing demand, this necessarily broadens the emphasis from the simple availability of professionals, or would be professionals, in a discipline to demand. Theoretically, estimates of demand consider cost-effectiveness: Balancing the clinical needs of the populations served with the unique knowledge domains and skill sets of practitioners of each discipline while factoring in their respective costs.

5.1. Workforce projections

Governmental interest in underwriting projections of the physician workforce reflects its compelling interest in safeguarding the public health by ensuring sufficient physicians across areas of practice and regions. Forecasts also are essential to the government's central role in funding medical education and residency training. In the late 1960s, shortages of physicians led to more governmental funding to enlarge the number of physicians being trained by increasing class size and opening new medical schools (Scully, 1999).

A decade ago, projections of the workforce for physician and selected other health professions suggested that rightsizing was likely to entail reducing the size of some professions and the programs that train them (Pew Health Professions Commission, 1995). The greater accuracy of hindsight reveals that some of those estimates (e.g., oversupply of nurses and medical specialists) have missed the mark. Thus far, systematic analyses of non-physician MH disciplines' workforces have not been forthcoming, presumably reflecting the government's inadequately defined stake and meager financial investment in them, as well as the complexity of the undertaking.

5.1.1. Psychiatry

As part of the assessments of the U.S. physician workforce, the psychiatry workforce was scrutinized (Council on Graduate Medical Education, 1992, 1996; Pew Health Professions Commission, 1995; Weiner, 1994). Projections about the psychiatric workforce reveal a growing workforce, but there is controversy about some trends. Earlier GMENAC (1980) projections of the need for physicians estimated 15.8 FTE psychiatrists per 100,000 were needed, based largely on the fee-for-service model of service delivery. That model suggested long-term shortages of both adult and child psychiatrists (Council on Graduate Medical Education, 1992, 1996), despite shortfalls in funding for psychiatric services.

More recent estimates focusing on managed care staffing patterns have suggested rates of 3.8–4.8 (Weiner, 1994) to 6.8 (Dial et al., 1998), or even 7.2 (Hart et al., 1997) psychiatrists per 100,000, with a median across HMOs of 6.5 FTE psychiatrists per 100,000 members (Dial, Bergsten, Kantor, Buck, & Chalk, 1996). Other countries provide benchmarks of 3.5 (England), 4.3 (New Zealand), 8.8 (Australia), 10–12.5 (Canada), 12 (Holland), and the World Health Organization estimated a demand for 10 psychiatrists per 100,000 (Andrews, 1990; El-Guebaly et al., 1991; Scully, 1999).

The disparity between these patterns and estimated that there are somewhere between 12 and 16 psychiatrists per 100,000 in the U.S. (AMA, 1996; Duffy et al., 2004; Scully, 1999; Weiner, 1994), suggesting a potential oversupply of psychiatrists of 25–30% (Weiner, 1994; Scully, 1999; Verhulst & Tucker, 1995) or even 54–58% if managed care models account for higher proportions of the population (Robiner, 1991b). Certain cities, such as Boston, were projected to have acute oversupplies (Mirin, 1999). Clearly the accuracy of forecasts depends on assumptions about future systems for delivering services. Mitigating factors need to be considered. For example, because MCOs will probably never account for all psychiatric services, estimates of the severest oversupplies are probably overstated. Also, sociodemographic trends portend a need for more specialists in certain areas of practice, such as geropsychiatry (Small, Fong, & Beck, 1988) and child and adolescent populations. Also, based on changes in the gender composition of Psychiatry, the number of FTE psychiatrists has not grown as quickly as the number of psychiatrists.

5.1.2. Psychology

Within psychology, workforce projections have been less systematic. Psychologists' broad roles and involvement in multiple systems complicate projections (Pion, 1991; VandenBos et al., 1991). Earlier estimates suggested a need for

10 to 15 psychologists per 100,000 (Albee, 1959; Albee & Dickey, 1957; Marwit, 1982). The most generous estimates posited a need for 35–40 psychologists per 100,000 (VandenBos et al., 1991).

Tentative benchmarks within managed care staffing patterns have been derived from a survey of 58 HMOs that yielded a median ratio of 9.2 psychologists per 100,000 enrollees (Group Health Association of America, 1993). Combined estimates of personnel and outside referrals for two staff model HMOs suggested that MCOs may utilize as many as 23.6 doctoral psychologists per 100,000 enrollees (Hart et al., 1997). These estimates can be compared to national estimates of 34.0 licensed psychologists per 100,000, varying from as few as 10.3 (Louisiana) to as many as 85.2 (Vermont) licensed psychologists per 100,000 (Robiner & Crew, 2000). Overall, the current rate of training of psychologists has produced a workforce approximating the highest projections for demand, and is surpassing it in many regions (Robiner & Crew, 2000). Thus far, there is no mechanism within the profession for down-regulating training. The APA Board of Educational Affairs is currently considering undertaking a work force analysis for psychology.

5.1.3. Other disciplines

Scant information is available about other MH professions' efforts to project demand and regulate supply. It is clear, however, that as such forecasts are attempted, they will be complicated by a number of variables (e.g., complex patterns of employment spanning multiple sectors of the economy, and multiple fields [e.g., clinical and academic activities). For example, Dial et al. (1998) identified a rate of all non-physician MHPs affiliated with 54 HMOs of 22.9 per 100,000 enrollees. The analysis did not specify how many of each type of MHP was working at the time, nor would be needed in the future.

6. Future directions for the mental health professions

The combined MHW has grown dramatically in recent decades. As seen in Table 1, broadening the definition of MHP yields an estimate of 537,857 individuals, or 182 per 100,000 civilians. More traditional, narrower definitions yield estimates of approximately a quarter million MHPs in the US. Together, they provide a vast array of services, ranging from generic MH services, to highly specialized services (e.g., neuropsychology). The professions' common goals (i.e., of preventing problems, improving the lives of those with emotional disorders, and ameliorating other psychosocial problems), and the threats to their practitioners (e.g., changes in healthcare and social service; swelling ranks of practitioners) intricately link their futures. Dialogue about how to enhance the workforce of the MH professions is growing (Faulkner et al., 1998; Ivey, Scheffler, & Zazzali, 1998; Robiner & Crew, 2000; Scully, 1999; Weissman, 1996).

6.1. Development and coordination of an interdisciplinary workforce

The current system in which multiple types of professionals provide similar services is "unstable, divisive, and potentially inefficient" (Ivey et al., 1998). Better communication and coordination of services among disciplines has the potential to enhance services for consumers and enrich each discipline. Efforts by professional organizations to develop effective interdisciplinary collaborations may potentially improve care to consumers, working relationships among practitioners, and reduce divisiveness and professional rivalries.

Although ideally, this would seem achievable, especially for groups of professionals with expertise in communication, organizational systems, and group process, it poses challenges as professions seek to stake out their scope of practice and distinguish themselves from each other. The goal of delineating clearer boundaries and roles for each profession across systems ultimately could minimize inter-professional rivalries and lead to more rational and standardized practices for inter-disciplinary collaboration and referral. However, as disciplines consider their respective ambitions and are insecure about their economic future, they may be tempted to assume new roles for which their training is questionable. The ultimate challenge for mental health services is to preserve their quality while making them sufficiently available to meet true demands. Wisdom, objectivity, and deep understanding of the professions are needed to resolve such issues. Their resolution will have implications for the deployment of the MH professions.

Similarly, it is in the professions' collective interests to share resources for advocating for patients and lobbying for reasonable service delivery models, professional roles, and working conditions. Such coordinated efforts are likely to be more productive than channeling individual professions' energies into conflicts with each other. The greatest threats

to professional practice are arguably no longer arising from each other, but from larger social, economic, and political forces that are producing structural changes throughout healthcare that affect all MHPs. As healthcare and social systems evolve, professions may need to develop more constructive ways of approaching and achieving their goals together.

6.2. Adjusting supply to meet demands for mental health services

Despite growing recognition of the adequacy of the U.S. MHW (Ivey et al., 1998; Robiner & Crew, 2000; Wedding, 1999), there has not been a unified effort to address workforce issues within most MH professions, let alone for the MHW as a whole. One author estimated a need for 70 professionals per 100,000, yet by the late 1990s there were 113.4 per 100,000 (i.e., a surplus >50%; Mills, 1997). Since then, the number of MHPs has risen further.

The consequences of workforce oversupply extends beyond concern about a tight job market and flat earnings for the professionals and the prospects for trainees (Scheffler et al., 1998). There is an association between the supply of practitioners and the amount of care provided which ultimately affects healthcare spending. Even if providers do not consciously try to inflate demand, pressures to generate revenue may result in greater than absolutely necessary rates of service provision (Califano, 1986; Public Health Service, Health Resources Administration Bureau of Health Manpower, Manpower Analysis Branch, 1978; Robiner, 1991b).

Despite compelling statistics of an MHW build-up, the distribution of professionals is skewed, so needy segments of the population continue to be underserved. This suggests that a cross-disciplinary assessment of the MHW is warranted, spanning both the core MH professions, and, arguably, other disciplines that provide MH services.

A substantive workforce assessment would need to be comprehensive across disciplines and sectors of service. The methodological challenges of a workforce analysis are formidable (e.g., Table 2). The fact that successive volumes in the *Mental Health United States* series offer somewhat discrepant estimates of practitioners as do BLS statistics (including some unexplained reductions over time) underscores the need for definitional matters to be resolved precisely and data-gathering approaches to be well coordinated.

It would be most beneficial if an analysis of the MHW was independent from the professional associations that represent each discipline because of the potential conflicts of interest. The mission of professional associations implicitly includes protecting the clinical practices and financial well-being of their members and the perpetuation of the organization. This includes a tacit agenda to expand their roster of dues—paying members and of maximizing the distribution of its publications or enhancing other revenue streams. Such groups may be hard pressed to acknowledge or accept limitations to their members' ranks or scopes of practice, and may lack the will or discipline to propose or introduce modifications (e.g., in training levels) even if they might be prudent (Robiner & Crew, 2000).

Consequently, a governmental agency, or independent, interdisciplinary group such as the Center for the Health Professions at the University of California at San Francisco, or a Pew-type Mental Health Professions Commission, might be most appropriate for reviewing supply and demand issues in the MHW. Input from various stakeholders, such as MCOs and public policy analysts, would increase the credibility of such efforts.

At a minimum, it would be prudent to develop a uniform reporting mechanism that tracks the activities for all MHPs (Ivey et al., 1998; Robiner & Crew, 2000). The creation of an accurate, reliable and comprehensive database, that is synchronized across professions (e.g., every 5 years or decade like a census) is fundamental to crafting informed recommendations. For example, mechanisms to expand services to underserved populations could be considered, such as a National Health Service-type program linking new MH graduates with rural areas, and targeting training to meet the needs of specific underserved clinical populations (e.g., SPMI; geriatrics). As necessary, recommendations about developing revenue sources to support training could be proposed (e.g., extending GME funding to other professions; expanding GPE funding).

Such an effort would require considerable planning and consensus building about the objectives as well as methodology, process, and content. Recommendations would need to be perceived as impartial, objective, and fair, and likely would need to outline areas of needed clinical and health services research (Ivey et al., 1998). A potentially useful step could be to establish feedback loops among the professions. For example, a constructive critical analysis of each profession's training models, strengths, and limitations might lead to recommendations that clarify professions' focus, roles, and relative supply and demand. Such reports and could be distributed to policy makers, governmental entities, MHPs, students, educational institutions, consumers, and other stakeholders and hopefully would yield reasonable recommendations that could be phased in over realistic time frames.

7. Closing comments

The MHW is complex, composed of complementary, competing, and interdependent disciplines that are characterized by both differentiation and overlap. Whereas some fields show signs of saturation, current growth rates are likely to produce even greater supplies of MHPs. This is despite the likelihood that greater numbers of MHPs will not necessarily ensure adequate service to underserved populations. It should not be presumed that a large MHW with an excess of some types of MHPs will compensate for shortages in other disciplines.

The composition of the MHW, the knowledge and skills necessary for professional practice, practitioners' roles and scopes of practice, and the systems in which MHPs function are changing. As MHPs confront new realities, sober and dispassionate reassessment of the resources within each discipline's workforce, training agenda, and curriculum are warranted. The future of the MH professions depends on whether they can summon the resolve to respond to their collective challenges, settle internecine conflicts, and develop appropriate plans for adapting to the trends shaping their future. The substantial need for effective MH services renders the vitality of the MH professions to be in the public interest.

References

Albee, G. W. (1959). *Mental health manpower trends.* New York: Basic Books.

Albee, G. W., & Dickey, M. (1957). Manpower trends in the mental health professions. *American Psychologist*, *12*, 57−70.

American Medical Association (1999). *Health professions education directory, 1999–2000*, 27th Ed. Chicago: Author.

American Medical Association Council on Ethical and Judicial Affairs (1996). *Code of medical ethics: Current opinions with annotations.* Chicago, IL: American Medical Association.

American Medical Association, Department of Data Survey and Planning, Division of Survey and Data Resources (1996). *Physician characteristics and distribution in the United States.* Chicago: Author.

American Medical Association, Department of Physician Practice and Communication Information, Division of Survey and Data Resources (2002). *Physician characteristics and distribution in the United States.* Chicago.

American Psychiatric Association (1996). *Practice guidelines.* Washington, DC: American Psychiatric Press.

American Psychological Association, Board of Educational Affairs Task Force on Workforce Analysis (2004). *APA Task Force on Workforce Analysis final report.* Washington, DC: Author.

Andrews, G. (1990). Health services research and the future of Australian Psychiatry. *Australian and New Zealand Journal of Psychiatry*, *24*, 371−376.

Annand, V. S. (1994). Therapeutic recreation in psychiatry. In D. M. Compton, & S. E. Iso-Ahola (Eds.), *Leisure and mental health* (pp. 147−159). Park City, UT: Family Development Resources.

Applebaum, P. S. (2002). Starving in the midst of plenty: The mental health care crisis in America. *Psychiatric Services*, *53*, 1247−1248.

Arnhoff, F. N. (1968). Reassessment of the trilogy: Need, supply, and demand. *American Psychologist*, *23*, 312−316.

Association of State and Provincial Psychology Boards (1999). *Report on Master's credentialing in psychology.* Montgomery, AL: Author.

Belar, C. D. (1998). Graduate education in clinical psychology: "We're not in Kansas anymore". *American Psychologist*, *53*, 456−464.

Berlin, L. E., Stennett, J., & Bednash, G. D. (2002). *2001–2002 enrollment and graduations in baccalaureate and graduate programs in nursing.* Washington, DC: American Association of Colleges of Nursing.

Berlin, L. E., Stennett, J., & Bednash, G. D. (2003). *2002–2003 enrollment and graduations in baccalaureate and graduate programs in nursing.* Washington, DC: American Association of Colleges of Nursing.

Beutler, L. E. (1991). Have all won and must all have prizes? Revisiting Luborsky et al.'s verdict. *Journal of Consulting and Clinical Psychology*, *59*, 226−232.

Bloche, M. G. (2000). Fidelity and deceit at the bedside. *Journal of the American Medical Association*, *283*, 1881−1884.

Bloom, J., Hu, T., Wallace, N., Cuffel, B., Hausman, J., & Schaffer, R. (1998). Mental health costs and outcomes under alternative capitation in systems in Colorado: Early results. *Journal of Mental Health Policy and Economics*, *1*, 3−13.

Bologna, N. C., Barlow, D. H., Hollon, S. D., Mitchell, J. E., & Huppert, J. D. (1998). Behavioral health treatment redesign in managed care settings. *Clinical Psychology. Science and Practice*, *5*, 94−114.

Califano, J. (1986). *America's health care revolution.* New York: Random House.

Callicott, J. H., & Weinberger, D. R. (1999). Functional brain imaging: Future prospects for clinical practice. In S. Weissman, M. Sabshin, & H. Eist (Eds.), *Psychiatry in the new millennium* (pp. 119−138). Washington, DC: American Psychiatric Press.

Carrol, S. L., & Gaston, R. J. (1983). Occupational licensing and the quality of service: An overview. *Law and Human Behavior*, *7*(2/3), 139−146.

Carter, M. J., Van Andel, G. E., & Robb, G. M. (1995). *Therapeutic recreation: A practical approach.* Prospect Heights, IL: Waveland Press.

Center for Medicare and Medicaid Services (2005). *Projections show national health spending to grow more slowly than projected last year: National health spending will still double by 2008.* Retrieved October 15, 2005, from http://www.cms.hhs.gov/media/press/release.asp?Counter=135

Chamberlin, J. (2000). Where are all these students coming from? *APA Monitor*, *31*(2), 32−34.

Cohen, J. J. (1999a, April 28). *AAMC Media briefing on the impact of the BBA on U.S. teaching hospitals.* Chicago: Association of American Medical Colleges.

Cohen, L. J. (1999b). The role of neuropsychiatric pharmacists. *Journal of Clinical Psychiatry*, *60*, 54−57.

Council on Graduate Medical Education (1992). *Improving access to health care through physician workforce reform: Directions for the 21st century.* Rockville, MD: U.S. Department of Health and Human Services.

Council on Graduate Medical Education (1996). *Patient care physician supply and requirements: Testing COGME recommendations.* Rockville, MD: U.S. Department of Health and Human Services.

Coyle, J. T. (1999). The neuroscience revolution and psychiatry. In S. Weissman, M. Sabshin, & H. Eist (Eds.), *Psychiatry in the new millennium* (pp. 7−23). Washington, DC: American Psychiatric Press.

Cross-National Collaborative Group (1992). The changing rate of major depression. *Journal of the American Medical Association*, *268*, 3098−3105.

Datamonitor (2004, February 6). *Commerical insight: Antidepressants—sliding SSRI revenues inevitable. Pharmaceutical Business Review Online.* Retrieved October 15, 2005, from http://www.pharmaceutical-business-review.com/research.asp?guid=DMHC1

De Titter, M., Robinowitz, C. B., & More, W. W. (1991). The future of psychiatry: Psychiatrists of the future. *American Journal of Psychiatry*, *148*, 853−858.

Department of Health and Human Services (1992). *Health personnel in the United States, eighth report to Congress, 1991 (DHHS Publication No. HRS-P-OD-92-1).* Washington, DC: United States Government Printing Office.

Depression Guidelines Panel. (1993a). *Depression in primary care: Volume 1. Detection and diagnosis. Clinical practice guideline, Number 5.* Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research. Publication No. 93-0550.

Depression Guidelines Panel. (1993b). *Depression in primary care: Volume 2. Treatment of major depression. Clinical practice guideline, Number 5.* Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research. Publication No. 93-0550.

DeRubeis, R. J., & Crits-Christoph, P. (1998). Empirically supported treatments: Implications for training. *Journal of Consulting and Clinical Psychology*, *66*, 151−162.

Dial, T. H., Bergsten, C., Haviland, M. G., & Pincus, H. A. (1998). Psychiatrist and mental health provider staffing levels in health maintenance organizations. *American Journal of Psychiatry*, *155*, 405−408.

Dial, T. H., Bergsten, C., Kantor, A., Buck, J. A., & Chalk, M. E. (1996). Behavioral healthcare in HMOs. In R. W. Manderscheid, & M. A. Sonnenschein (Eds.), *Mental Health, United States, 1996* (pp. 45−58). Washington DC: Center for Mental Health Services DHHS Pub. No. (SMA)96-098. Government Printing Office.

Doherty, W. J., & Simmons, D. S. (1996). Clinical practice patterns of marriage and family therapists: A national survey of therapists and their clients. *Journal of Marital and Family Therapy*, *22*, 9−25.

Duffy, F. F., West, J. C., Wilk, J., Narrow, W. E., Hales, D., Thompson, J., et al. (2004). Mental health practitioners and trainees. In R. W. Manderscheid, & M. J. Henderson (Eds.), *Mental Health, United States, 2002.* Rockville, MD: Substance Abuse and Mental Health Services Administration DHHS Pub No. (SMA) 3938.

Dyer, J. G., Hammill, K., Regan-Kubinski, M. J., Yurick, A., & Kobert, S. (1997). The psychiatric-primary care nurse practitioner: A futuristic model for advanced practice psychiatric-mental health nursing. *Archives of Psychiatric Nursing*, *XI*, 2−12.

Edwards, W. S., & Berlin, M. (1989). *National Medical Expenditure Survey: Questionnaires and data collection methods for the Household Survey and Survey of American Indians and Alaska Natives.* Washington, DC: US Government Printing Office DHHS Publication PHS-89-3450.

El-Guebaly, N., Beausejour, P., Woodside, B., Smith, D., & Kapkin, I. (1991). The optimal psychiatrist-to-population ratio: A Canadian perspective. *Canadian Journal of Psychiatry*, *36*, 9−15.

Elkin, I., Shea, T. M., Watkins, J. T., Imber, S. D., Sotsky, S. M., Collins, J. F., et al. (1989). National Institute of Mental Health Treatment of Depression Collaborative Research Program. General effectiveness of treatments. *Archives of General Psychiatry*, *46*, 971−982.

Faulkner, L. R., Scully Jr., J. H., & Shore, J. H. (1998). A strategic approach to the psychiatric workforce dilemma. *Psychiatric Services*, *49*, 493−497.

Feil, E. C., Welch, H. G., & Fisher, E. S. (1993). Why estimates of physician supply and requirements disagree. *Journal of the American Medical Association*, *269*, 2659−2663.

Frank, R. G., McDaniel, S. H., Bray, J. H., & Heldring, M. (2004). *Primary care psychology.* Washington, DC: American Psychological Association.

Frank, R. G., & McGuire, T. G. (1995). Estimating costs of mental health and substance abuse coverage. *Health Affairs*, *14*, 102−115.

Friedman, R., Katz-Leavy, J., Manderscheid, R., & Sondheimer, D. (1996). Prevalence of serious emotional disturbance in children and adolescents. In R. W. Manderscheid, & M. A. Sonnenschein (Eds.), *Mental Health, United States, 1996* (pp. 77−91). Washington, DC: U.S. Government Printing Office.

Gabbard, G. O. (1999). The psychiatrist as psychotherapist. In S. Weissman, M. Sabshin, & H. Eist (Eds.), *Psychiatry in the new millennium* (pp. 163−178). Washington, DC: American Psychiatric Press.

Gibelman, M., & Schervish, P. (1995). Practice areas and settings of social workers in mental health. *Psychiatric Services*, *46*, 1237.

Ginsburg, P. B., & Pickreign, J. D. (1996). Tracking health care costs. *Health Affairs*, *15*, 140−149.

Goldman, W., McCulloch, J., & Sturm, R. (1998). Costs and use of mental health services before and after managed care. *Health Affairs*, *17*, 40−52.

Goodman, D. C., Fisher, E. S., Bubols, T. A., Mohr, J. E., Poage, J. F., & Wennberg, J. E. (1996). Benchmarking the US physician workforce. *Journal of the American Medical Association*, *276*, 1811−1817.

Gottesman, I. I., & Moldin, S. O. (1998). *Schizophrenia genetic risks.* Arlington, VA: National Alliance for the Mentally Ill.

Graduate Medical Education National Advisory Committee (1980). *Summary report to the SecretaryDepartment of Health and Human Services*, *Vol. I.* DHHS Publication HRA 81-651. Washington, DC.

Group Health Association of America, Inc. (1993). *HMO industry profile* (p. 184), 3rd Ed. Washington, DC: Author.

Hart, L. G., Wagner, E., Pirzada, S., Nelson, A. F., & Rosenblatt, R. A. (1997). Physician staffing ratios in staff-model HMOs: A cautionary tale. *Health Affairs*, *16*, 55−70.

Hirschfeld, R. M., Keller, M. B., Panico, S., Arons, B. S., Barlow, D., Davidoff, F., et al. (1997). The National Depressive and Manic Depressive Association consensus statement on the undertreatment of depression. *Journal of the American Medical Association*, 277, 333−340.

Hollis, J. W. (1997). *Counselor preparation, 1996–98: Program, faculty, trends*, 9th ed. Philadelphia: Accelerated Development, Inc.

Hyman, S. E. (1999). Looking to the future: The role of genetics and molecular biology in research on mental illness. In S. Weissman, M. Sabshin, & H. Eist (Eds.), *Psychiatry in the new millennium* (pp. 97−117). Washington, DC: American Psychiatric Press.

Iglehart, J. K. (1996). Health policy report: Managed care and mental health. *New England Journal of Medicine*, 334, 131−135.

Ivey, S. L., Scheffler, R., & Zazzali, J. L. (1998). Supply dynamics of the mental health workforce: Implications for health policy. *The Milbank Quarterly*, 76, 25−58.

Jones, W. J., Johnson, J. A., Beasley, L. w., & Johnson, J. P. (1996). Allied health workforce shortages: The systemic barriers to response. *Journal of Allied Health*, 25, 219−232.

Kamerow, D. B. (1987). Anxiety and depression in the medical setting: An overview. *Medical Clinics of North America*, 72, 745−751.

Kamerow, D. B., & Burns, B. J. (1987). The effectiveness of mental health consultation and referral in ambulatory primary care: A research lacuna. *General Hospital Psychiatry*, 9, 111−117.

Kamerow, D. B., Pincus, H. A., & MacDonald, D. I. (1986). Alcohol abuse, other drug abuse, and mental disorders in medical practice: Prevalence, costs, recognition, and treatment. *Journal of the American Medical Association*, 255, 2054−2057.

Katon, W., & Gonzales, J. (1994). A review of randomized trials of psychiatric consultation-liaison studies in primary care. *Psychosomatics*, 35, 268−278.

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., et al. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. Results from the National Comorbidity Survey. *Archives of General Psychiatry*, 51, 8−19.

Knesper, D. J., & Pagnucco, D. J. (1987). Estimated distribution of effort by providers of mental health services to U.S. adults in 1982 and 1983. *American Journal of Psychiatry*, 144, 883−888.

Knesper, D. J., Wheeler, J. R., & Pagnucco, D. J. (1984). Mental health services providers' distribution across counties in the United States. *American Psychologist*, 39, 1424−1434.

Lahav, R. (1993). Using analytic philosophy in counselling. *Journal of Applied Philosophy*, 10, 243−253.

Lavigne, J. V., Gibbons, R. D., Christoffel, K. K., Arend, R., Rosenbaum, D., Binns, H., et al. (1996). Prevalence rates and correlates of psychiatric disorders among preschool children. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 204−214.

Lazarus, J. A. (1999). Ethical conduct of the psychiatrist. In S. Weissman, M. Sabshin, & H. Eist (Eds.), *Psychiatry in the new millennium* (pp. 249−268). Washington, DC: American Psychiatric Press.

Leaf, P. J., Algegria, M., Cohen, P., Goodman, S. H., Horwitz, S. M., Hoven, C. W., et al. (1996). Mental health service use in the community and schools: Results from the four-community MECA Study. Methods for the Epidemiology of Child and Adolescent Mental Disorders Study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 889−897.

Lennon, T. (2001). Statistics on social work education in the United States: 1999. Alexandria, VA: Council on the United States: 1999. Alexandria, VA: Council on Social Work Education.

Levit, K. R., Lazenby, H. C., & Sivarajan, L. (1996a). Health care spending in 1994, slowest in decades. *Health Affairs*, 15, 130−144.

Levit, K. R., Lazenby, H. C., Sivarajan, L., Stewart, M. W., Braden, B. R., Cowan, C. A., et al. (1996b). National health expenditures, 1994. *Health Care Financing Review*, 17, 205−242.

Ma, C. A., & McGuire, T. G. (1998). Costs and incentives in a behavioral health carve-out. *Health Affairs*, 17, 53−69.

Manderscheid, R. W., & Henderson, M. J. (Eds.) (1998). *Mental Health, United States, 1998.* Rockville, MD: U.S. Department of Health and Human Services.

Manderscheid, R. W., & Sonnenschein, M. A. (Eds.) (1996). *Mental Health, United States.* Washington DC: Center for Mental Health Services DHHS Pub. No. (SMA)96-098. Print. Off.

Mark, T., McKusick, D., King, E., Harwood, H., & Genuardi, J. (1996). *National expenditures for mental health, alcohol, and other drug abuse treatment.* Rockville, MD: Substance Abuse and Mental Health Services Administration.

Marwit, S. J. (1982). In support of university-affiliated schools of professional psychology. *Professional Psychology*, 13, 181−190.

McCabe, S., & Grover, S. (1999). Psychiatric nurse practitioner versus clinical nurse specialist: Moving from debate to action on the future of advanced psychiatric nursing. *Archives of Psychiatric Nursing*, XIII(3), 111−116.

McIntyre, J. S., Zarin, D. A., & Pincus, H. A. (1999). Practice guidelines in psychiatry and a psychiatric practice research network. In S. Weissman, M. Sabshin, & H. Eist (Eds.), *Psychiatry in the new millennium* (pp. 143−162). Washington, DC: American Psychiatric Press.

Mechanic, D. S. (1992). General physicians' limited role in mental health. *Hospital and Community Psychiatry*, 43, 429.

Mechanic, D. S. (1996). Key policy considerations for mental health in the managed care era. In R. W. Manderscheid, & M. A. Sonnenschein (Eds.), *Mental Health, United States* (pp. 1−16). Washington DC: Center for Mental Health Services DHHS Pub. No. (SMA)96-098. Government Printing Office.

Mechanic, D. (1997). Approaches for coordinating primary and specialty care for persons with mental illness. *General Hospital Psychiatry*, 19, 395−402.

Mechanic, D., Schlesinger, M., & McAlpine, D. D. (1995). Management of mental health and substance abuse services: State of the art and early results. *Milbank Quarterly*, 73, 19−55.

Merriam-Webster (1986). *Webster's third new international dictionary of the English language unabridged.* Springfield, MA: Merriam-Webster, Inc.

Merwin, E., Hinton, I., Dembling, B., & Stern, S. (2003). Shortages of rural mental health professionals. *Archives of Psychiatric Nursing*, XVII, 42−51.

Meyer, R. E. (1993). The economics of survival for academic psychiatry. *Academic Psychiatry*, 17, 149−160.

Mills, M. (1997, September). U.S. has 114 behavioral health professionals per 100,000 population: Oversupply greatest issue in coastal states. *OPEN MINDS*, 12.

Mirin, S. M. (1999). Predictions about the financing and delivery of care. In S. Weissman, M. Sabshin, & H. Eist (Eds.), *Psychiatry in the new millennium* (pp. 321−339). Washington, DC: American Psychiatric Press.

Murray, C. J., & Lopez, A. D. (Eds.). (1996). *The global burden of disease: A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020.* Cambridge, MA: Harvard University Press.

Murstein, B. I., & Fontaine, P. A. (1993). The public's knowledge about psychologists and other mental health professionals. *American Psychologist*, *48*, 839−845.

Narrow, W. E., Regier, D. A., Rae, D. S., Manderscheid, R. W., & Locke, B. Z. (1993). Use of services by persons with mental and addictive disorders: Findings from the National Institute of Mental Health Epidemiologic Catchment Area Program. *Archives of General Psychiatry*, *50*, 95−107.

National Association of Clinical Nurse Specialists (2005, April). *White paper on the Nursing Practice Doctorate.* http://www.nacns.org/nacns_dnpwhitepaper2.pdf (accessed March 28, 2006)

National Institute of Mental Health (1998). *Genetics and mental disorders: Report of the National Institute of Mental Health's Genetics Workgroup.* Rockville, MD: Author.

Newhouse, J. P.the Insurance Experiment Group. (1993). *Free for all? Lessons from the Rand health insurance experiment.* Cambridge: Harvard University Press.

Northey, W. F. Jr. (2002). Characteristics and clinical practices of marriage and family therapists: A national survey. *Journal of Martial and Family Therapy*, *28*, 487−494.

Olfson, M., & Pincus, H. A. (1996). Outpatient mental health care in nonhospital settings: Distributions of patients across provider groups. *American Journal of Psychiatry*, *153*, 1353−1356.

OPEN MINDS (1999a). Over 72% of insured Americans are enrolled in MBHOs: Magellan Behavioral Health continues to dominate the market. *OPEN MINDS Behavioral Health and Social Service Industry Analyst*, *11*, 9.

OPEN MINDS (1999b). Accountability is the future of managed behavioral health: The evolution of public sector managed care and its implications for providers. *OPEN MINDS Behavioral Health and Social Service Industry Analyst*, *9*.

Pardes, H., & Pincus, H. A. (1983). Report of the Graduate Medical Education National Committee and Health Manpower Development: Implications for psychiatry. *Archives of General Psychiatry*, *4*, 97−102.

Pederson, S. L., DePiano, F., Kaslow, N., Klepac, R. K., Hargrove, D. S., & Vasquez, M. (Eds.). (1998). *Proceedings from the national working conference on supply and demand: Training and employment opportunities in professional psychology.* Washington, DC: American Psychological Association.

Peterson, B. D., West, J., Pincus, H. A., Kohout, J., Pion, G. M., Wicherski, M. W., et al. (1996). An update on human resources in mental health. In R. W. Manderscheid, & M. A. Sonnenschein (Eds.), *Mental Health, United States, 1996* (pp. 168−204). Washington DC: Center for Mental Health Services DHHS Pub. No. (SMA)96-098. Government Printing Office.

Peterson, B. D., West, J., Tanielian, T. L., Pincus, H. A., Kohout, J., Pion, G. M., et al. (1998). Mental health practitioners and trainees. In R. W. Manderscheid, & M. J. Henderson (Eds.), *Mental Health, United States, 1998* (pp. 214−246). Rockville, MD: U.S. Department of Health and Human Services.

Pew Health Professions Commission (1995). *Critical challenges: Revitalizing the health professions for the twenty-first century.* San Francisco, CA: UCSF Center for the Health Professions.

Pincus, H. A., Tanielian, T. L., Marcus, S. C., Olfson, M., Zarin, D. A., Thompson, J., et al. (1998). Prescribing trends in psychotropic medications: Primary care, psychiatry, and other medical specialties. *Journal of the American Medical Association*, *279*, 526−531.

Pincus, H. A., Zarin, D. A., & West, J. C. (1996). Peering into the black box: Measuring outcomes of managed care. *Archives of General Psychiatry*, *53*, 870−877.

Pingitore, D., Scheffler, R., Sentell, T., Haley, M., & Schwalm, D. (2001). Psychologist supply, managed care, and the effects on income: Fault lines beneath California psychologists. *Professional Psychology, Research and Practice*, *32*, 597−606.

Pion, G. M. (1991). A national human resources agenda for psychology: The need for a broader perspective. *Professional Psychology, Research and Practice*, *22*, 449−455.

Popkin, M. K., & Callies, A. L. (1987). Psychiatric consultation to inpatients with "early-onset" type I diabetes mellitus in a university hospital. *Archives of General Psychiatry*, *44*, 169−171.

Public Health Service Health Resources Administration Bureau of Health Manpower, Manpower Analysis Branch (1978). *A report to the President and Congress on the status of health professions personnel in the United States.* Education, and Welfare, Hyattsville, MD: U.S. Department of Health DHEW Publication No. HRA 78-93.

Regier, D. A., Narrow, W. E., Rae, D. S., Manderscheid, R. W., Locke, B. Z., & Goodwin, F. K. (1993). The de factor US mental and addictive disorders service system: Epidemiologic Catchment Area prospective 1-year prevalence rates of disorders and services. *Archives of General Psychiatry*, *50*, 85−94.

Reich, J. (1999, March). *Back to the future: Preparing the next generation*. Paper presented at the Second APPIC Membership Meeting and Conference, Orlando, FL.

Rice, D. P., & Miller, L. S. (1996). The economic burden of schizophrenia: Conceptual and methodological issues, and cost estimates. In M. Moscarelli, A. Rupp, & N. Sartorious (Eds.), *Handbook of mental health economics and health policy. Schizophrenia, vol. 1* (pp. 321—324). New York: John Wiley and Sons.

Robiner, W. N. (1991a). Dialogue on a human resource agenda for psychology: A welcome and a response. *Professional Psychology, Research and Practice*, *22*, 461−463.

Robiner, W. N. (1991b). How many psychologists are needed? A call for a national psychology human resource agenda. *Professional Psychology, Research and Practice*, *22*, 427−440.

Robiner, W. N. (1999). Psychology training programs need support. *Minnesota Medicine*, *82*, 59−60.

Robiner, W. N., Arbisi, P., & Edwall, G. E. (1994). The basis of the doctorate for psychology licensure. *Clinical Psychology Review*, *14*, 227−254.

Robiner, W. N., Bearman, D. L., Berman, M., Grove, W. M., Colón, E., Armstrong, J., et al. (2002). Prescriptive authority for psychologists: A looming health hazard? *Clinical Psychology. Science and Practice*, *9*, 231−248.

Robiner, W. N., & Crew, D. P. (2000). Rightsizing the workforce of psychologists in healthcare: Trends from licensing boards, training programs, and managed care. *Professional Psychology, Research and Practice*, *31*, 245−263.

Robiner, W. N., & Crew, D. P. (2001). Periodic tallies by regulatory boards: A vital tool for tracking supply in the psychology workforce. *Administration and Policy in Mental Health*, *28*, 459−474.

Robinowitz, C. B. (1999). Psychiatric education for the new millennium. In S. Weissman, M. Sabshin, & H. Eist (Eds.), *Psychiatry in the new millennium* (pp. 301−315). Washington, DC: American Psychiatric Press.

Rodolfa, E. R., Kaslow, N. J., Stewart, A. E., Keilin, W. G., & Baker, J. (2005). Internship training: Do models really matter? *Professional Psychology, Research and Practice*, *36*, 25−31.

Sanford, F. H. (1951). Notes on the future of psychology as a profession. *American Psychologist*, *6*, 74−76.

Scheffler, R. M., Ivey, S. L., & Garrett, A. B. (1998). Changing supply and earning patterns of the mental health workforce. *Administration and Policy in Mental Health*, *26*, 85−99.

Scheffler, R. M., & Kirby, P. B. (2003). The occupational transformation of the mental health system. *Health Affairs*, *22*, 177−188.

Schofield, W. (1969). The role of psychology in the delivery of health services. *American Psychologist*, *24*, 565−584.

Schofield, W. (1976). The psychologist as a health professional. *Professional Psychology*, *7*, 5−8.

Schofield, W. (1988). *Pragmatics of psychotherapy.* New Brunswick, NJ: Transaction Books.

Schurman, R. A., Kramer, P. D., & Mitchell, J. B. (1985). The hidden mental health network: Treatment of mental illness by nonpsychiatric physicians. *Archives of General Psychiatry*, *42*, 89−94.

Scully Jr., J. H. (1999). The psychiatric workforce. In S. Weissman, M. Sabshin, & H. Eist (Eds.), *Psychiatry in the new millennium* (pp. 273−283). Washington, DC: American Psychiatric Press.

Shaffer, D., Fisher, P., Dulcan, M. K., Davies, M., Piacentini, J., Schwab-Stone, M. E., et al. (1996). The NIMH Diagnostic Interview Schedule for Children, version 2.3 (DISC 2.3): Description, acceptability, prevalence rates and performance in the MECA study. Methods for the Epidemiology of Child and Adolescent Mental Disorders Study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *35*, 865−877.

Sharfstein, S. S. (1998). Less is more: Financing mental health care for the new century. In S. Weissman, M. Sabshin, & H. Eist (Eds.), *Psychiatry in the new millennium* (pp. 237−248). Washington, DC: American Psychiatric Press.

Small, G. W., Fong, K., & Beck, J. C. (1988). Training in geriatric psychiatry: Will the supply meet the demand? *American Journal of Psychiatry*, *145*, 476−478.

Spratley, E., Johnson, A., Sochalski, J., Fritz, M., & Spencer, W. (March, 2002). *National sample survey of registered nurses: March 2000.* Washington, DC: U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing.

Spruill, J., Kohout, J., & Gehlmann, S. (1997). *Final report of the American Psychological Association Working Group on the implications of changes in the health care delivery system for the education, training, and continuing professional education of psychologists. Discussion of knowledge and skills and selected readings.* Washington, DC: American Psychological Association.

Tarlov, A. R. (1995). Estimating physician workforce requirements: The devil in the assumptions. *Journal of the American Medical Association*, *274*, 1558−1560.

Tori, C. D. (1989). Quality assurance standards in the education of psychologists: Reliability and validity of objective comprehensive examinations developed at a freestanding professional school. *Professional Psychology, Research and Practice*, *20*, 203−208.

Trickey, B. A., & Kennedy, D. B. (1995). Use of occupational therapists in mental health settings in South Carolina. *American Journal of Occupational Therapy*, *49*, 452−455.

Trott, J. C., & Botts, S. R. (1997). Compliance and the treatment alliance in serious mental illness: The pharmacist's role. In B. Blackwell (Ed.), *Treatment compliance and the therapeutic alliance. Chronic mental illness*, *Vol. 5* (pp. 201—210). Singapore: Harwood Academic Publishers.

U.S. Department of Health and Human Services (1999). *Mental health: A report of the Surgeon General.* Rockville, MD.

VandenBos, G. R., DeLeon, P. H., & Belar, C. D. (1991). How many psychologists are needed? It's too early to know! *Professional Psychology, Research and Practice*, *22*, 441−448.

Verhulst, J., & Tucker, G. (1995). How many psychiatrists do we need? *Academic Psychiatry*, *19*, 219−223.

Washington Consulting Group (1994). *Survey of certified nurse practitioners and clinical nurse specialists: December 1992/final report.* Author.

Wedding, D. (1999). Does Missouri have too many psychologists? Examining the state's behavioral health workforce. *Missouri Psychologist*, *2*, 7−10.

Weiner, J. P. (1994). Forecasting the effects of health reform on US physician workforce requirement: Evidence from HMO staffing patterns. *JAMA: Journal of the American Medical Association*, *272*, 222−230.

Weissman, S. (1996). Recruitment and workforce issues in late 20th century American psychiatry. *Psychiatric Quarterly*, *67*, 125−137.

Wells, K. B., Strum, R., Sherbourne, C. D., & Meredith, L. S. (1996). *Caring for depression: A Rand study.* Cambridge: Harvard University Press.

Wicherski, M., Woerheide, K., & Kohout, J. (1996). *Salaries in psychology 1995: Report of the 1995 APA Salary Survey.* Washington, DC: American Psychological Association Research Office.

Williams, S., Kohout, J. L., & Wicherski, M. (1998). Changes in salaries of independent practitioners of psychology. *Psychiatric Services*, *49*, 1020.

Williams Jr., J. W., Rost, K., Dietrich, A. J., Ciotti, M. C., Zyzanski, S., & Cornell, J. (1999). Primary care physicians' approach to depressive disorders: Effects of physician specialty and practice structure. *Archives of Family Medicine*, *8*, 58−67.

Wynia, M. K., Cummins, D. S., VanGeest, J. B., & Wilson, I. B. (2000). Physician manipulation of reimbursement rules for patients: Between a rock and a hard place. *Journal of the American Medical Association*, *283*, 1858−1865.

Yager, J., Burt, V., & Mohl, P. C. (1998). Downsizing psychiatric residency programs: A pilot study. *Academic Psychiatry*, *22*(2), 127−134.

William N. Robiner is Associate Professor and Director of Health Psychology and of the Psychology Internship at the University of Minnesota Medical School. He earned his Ph.D. (1981) in clinical psychology at Washington University in St. Louis. He is board certified in Health Psychology by the American Board of Professional Psychology. Dr. Robiner has served as the Vice President of the Minnesota Psychological Association, and in several capacities for the Minnesota Board of Psychology. He has served on the Education and Training for Credentialing Committee and on the Task Force for Master's Level Issues of the Association of State and Provincial Psychology Boards (ASPPB) and is an ASPPB Fellow. He chairs the Psychology Standards Committee of the University of Minnesota Medical Center, Fairview. He represented the American Psychological Association to the U.S. Council on Graduate Medical Education in 1990. He represented the APA Board of Scientific Affairs (BSA) with the APA Board of Educational Affairs Task Force on Workforce Analysis of Psychology Education and Training in 2003.