



## Bridging Mental Health and Medical Care in Underserved Pediatric Populations: Three Integrative Models

Arturo Brito, MD, MPH<sup>a</sup>, Adrian J. Khaw, MD<sup>b</sup>,  
Gladys Campa, LMHC<sup>b</sup>, Anai Cuadra, PhD<sup>b</sup>,  
Sharon Joseph, MD<sup>c,d</sup>, Lourdes Rigual-Lynch, PhD<sup>c,d</sup>,  
Alina Olteanu, MD, PhD<sup>c</sup>, Alan Shapiro, MD<sup>c,d</sup>,  
Roy Grant, MA<sup>a,\*</sup>

<sup>a</sup>Children's Health Fund, 215 West 125th Street, New York, NY 10027, USA

<sup>b</sup>University of Miami Miller School of Medicine, Department of Pediatrics, Miami, FL 33101, USA

<sup>c</sup>Children's Hospital at Montefiore Medical Center, Bronx, New York, NY 10467, USA

<sup>d</sup>Albert Einstein College of Medicine, Department of Pediatrics, New York, NY 10461, USA

<sup>e</sup>Section of Community Pediatrics and Global Health, Department of Pediatrics, Tulane University School of Medicine, New Orleans, LA 70112, USA

In pediatric primary care, the term mental health should be taken to include child and family psychosocial needs across a wide spectrum. Mental illness therefore includes developmental, behavioral, emotional, and cognitive dysfunction. Quantifying the number of children with a mental illness can be challenging. Even within a narrow definition limited to psychiatric disorders, there is wide variation in prevalence estimates because of differing methodologies and criteria used (eg, screening or clinical diagnosis, different screening instruments, who makes the diagnoses and whether diagnoses are ascertained by chart review or parent report, and whether diagnoses reflect current symptoms or a prior lifetime diagnosis). A published review of 52 articles found prevalence estimates ranging from 1% to 51%, with a median of 18% [1]. The most frequently cited prevalence rate for child and adolescent psychiatric disorders is 20%, from the Surgeon General's mental health report (1999) [2]. This figure, derived from a federal survey that only included children and youths 9 to 17 years of age, indicates that at least 8.4 million children have a diagnosable psychiatric condition, including 4.3 million with a disability (ie, a condition that impairs daily functioning at home, school, and community), of whom an estimated 2 million have severe functional impairments [3].

Although this number of children with psychiatric illness is impressive, it does not include diagnosed preschool-age children or young children who

\*Corresponding author. *E-mail address:* rgrant@chfund.org

developmentally do not meet criteria for a psychiatric diagnosis despite atypical social-emotional functioning. Pediatric primary care providers (PCPs) are in the ideal position to identify and begin the process of managing mental health illness early in its course. However, pediatric PCPs often lack the necessary tools and means to do so consistently and effectively. Often PCPs work within systems that themselves may be barriers. Moreover, pediatric PCPs providing care to the medically underserved confront even greater challenges to meeting their patients' needs because these populations generally have higher rates of mental illness and even fewer community resources compared with the general pediatric population. An enhanced medical home has previously been described as a means to address these often complex needs of the medically underserved [4]. This model includes an integrative approach to care between medical and mental health providers.

This article discusses integrative pediatric and mental health care, differentiating it from other types of collaborative care, and provides 3 examples of how this integrative model is currently being applied to 3 distinct medically underserved populations of the country: homeless children in New York City, immigrant children in South Florida, and children affected by Hurricane Katrina in New Orleans. These 3 populations are currently being served by programs supported by Children's Health Fund (CHF), a national nonprofit organization focused on medically underserved pediatric populations and their families through the use of innovative strategies to deliver that care, most notably the use of mobile clinics.

## **THE ROLE OF THE PEDIATRIC PCP**

In pediatrics, the term mental health may be used to encompass the range of psychosocial issues presented in primary care, such as emotional and behavioral problems, developmental delay, and problems families have coping with their circumstances, including poverty [5]. There has been a trend toward an increased level of psychosocial need presented by pediatric primary care patients, with the rate tripling between 1979 and 1996 [6]. The role of the pediatric PCP has evolved accordingly to include a greater emphasis on identification of child and family needs [7], ongoing developmental surveillance and screening [8], and the identification and management of mental health problems [9].

However, success with the early identification of mental health needs in the primary care setting has fallen short. Federal data show that, in 2007, only 2.5% of infants and toddlers who were age eligible for an Early Intervention (EI) program received services [10]. EI programs provide services for developmental delays, including social-emotional problems, as well as disorders for infants and toddlers from birth to 36 months of age, at no cost or low cost to families. However, federal survey data from the Early Childhood Longitudinal Study, Birth Cohort, indicate that 13% of toddlers aged 9 to 24 months have delays that should make them eligible for EI services [11].

This suggests a failure to identify and treat early developmental delays in the primary care setting. Data from various sources show that children are not routinely screened for developmental problems in primary care using any type of standardized, evidence-based instruments. However, when formal screening is carried out, it is often targeted toward children who are already suspected of having a delay [12,13].

There has been a dramatic increase in the availability of standardized screening instruments for use in primary care designed to identify young children with social-emotional problems. These instruments can be used in combination with a first-level developmental surveillance or screening tool to identify young children at risk of developmental problems, with the social-emotional screening instrument used based on risk [14]. Screening for developmental delay and referring for EI services may also contribute to primary prevention of behavioral and emotional problems of childhood, because developmental delays place the child at heightened risk of later psychiatric disorders [15]. For instance, 3-year-old children with developmental delays are up to 4 times more likely than young children without delays to show signs of a behavior problem (based on a standardized measure, the Child Behavior Checklist). These behavior problems increase parental stress, which further heightens the child's risk of emotional problems [16]. National Health Interview Survey data show that 18% of school-age children (5–17 years old) have a functional deficit that affects their learning (sensory, motor, cognitive, or emotional/behavioral). The highest percentage (10%) had a reported emotional or behavioral problem [17,18]. Depression is a serious psychiatric disorder that is increasingly prevalent among adolescents. Lifetime prevalence for adolescent depression is as high as 20% [19].

## **HIGH-RISK POPULATIONS**

Mental illness prevalence rates are notably higher in high-risk populations [20]. Children in homeless families have a higher rate of acute and chronic illness and psychosocial problems compared with other pediatric populations, and often do not have a regular source of care [21]. In one study of homeless school-age children, more than half (57%) had current symptoms consistent with clinically diagnosed depression [22]. Children in homeless families are exposed to more stress than low-income children in community housing, as well as more interruptions of their school placement because of their transient housing situation. This profile is consistent with homeless children also showing a higher rate of behavior problems [23]. Often their needs are not identified in a timely fashion and, as such, they do not receive necessary services. In a study of children and youths in Los Angeles homeless shelters, nearly half (45%) had learning problems consistent with special education placement, and most had never received any needed services [24].

Compared with other low-income families, domestic violence is more common among homeless families (35% vs 16% in 1 study) [25]. Mothers in homeless family shelters show high rates of depression and of trauma-related

psychiatric disorders including posttraumatic stress disorder [26]. In comparing the mental status of homeless mothers in 2003 with those in shelters a decade previously, investigators found that the prevalence of these conditions had increased [27]. In another study of homeless children in New York City shelters, about one-third (34%) had been exposed to domestic violence and 30% of children and youths from 12 months to 19 years of age had a diagnosed psychiatric or developmental disorder. Virtually none of these children and youths received any intervention before becoming patients of a comprehensive health care for the homeless program, the New York Children's Health Project (NYCHP) [28].

Latino children, especially if poor and/or not born in the United States, often have difficulty accessing health care. They are often uninsured even when eligible for a public insurance program such as Medicaid [29,30]. Financial access barriers may be exacerbated by immigration, cultural, language, and geographic issues [31]. Transportation may also be a significant barrier to care for children living in rural communities [32]. Immigrant children of parents without documented citizenship are 5 times more likely than other children to lack a usual source of care, and are also more likely to be in poor health than other children [33]. Access to mental health care is even more problematic [34]. Studies have found that 60% to nearly 80% of Latino children with mental health problems do not access needed care [35].

Multiple data sources show that children exposed to a disaster have increased rates of mental health problems, and that these problems persist for years after the event. For example, after Hurricane Andrew in South Florida in 1992, high rates of posttraumatic stress symptoms were found among school-age children nearly 2 years later [36]. Three weeks after the terror attacks of 9/11/01 in New York City, survey data show that 36% of children citywide were reported by their parents as having 3 or more new signs of psychological distress. Two years after this disaster, nearly 1 in every 4 children (23%) continued to show multiple signs of distress. The highest rates were in the city's lowest income boroughs and among African American and Hispanic children. A related study of available postdisaster mental health services found that services were least available in these high-risk communities where mental health care need was greatest [37].

In the aftermath of Hurricane Katrina in New Orleans, a disaster in which the most affected community was poor and predominantly African American, persistent mental health needs were found among children and families, many of whom had protracted periods of displacement from home following evacuation from the flooded city. A prospective longitudinal study of displaced children and families in shelters found that nearly half of parents reported that their child had a new psychiatric symptom 6 months after the hurricane [38]. This rate did not substantially abate 2 years after the disaster, and increased levels of hurricane-related mental health disability and poor academic performance continued to be reported by parents 3 years after the disaster [39].

## **MENTAL HEALTH SERVICE GAPS**

Overall, only an estimated 1 in every 4 children in need of mental health services gets the necessary interventions [20], with at least 6.5 million remaining unserved [2,40]. The problem of unmet mental health need is even greater for preschool-age children [41]. This lack of service reflects the long-standing shortage of child and adolescent mental health professionals. After the Surgeon General's report, former President Bush's New Freedom Commission on Mental Health confirmed the inadequate supply of child and adolescent mental health professionals [42]. To illustrate this shortage, in Florida in 2001, there were only 255 child psychiatrists for a child and adolescent population (birth to 17 years of age) of 3.6 million. Before Hurricane Katrina made landfall in Louisiana, there were 81 child psychiatrists for a population of 1.2 million children and adolescents. Overall, mental health professionals are poorly distributed, with the greatest shortages found in low-income inner-city urban and rural communities, where the need is by far the greatest [43,44]. There are also significant racial and ethnic disparities in access to mental health care, with minority children and youths having lower use of outpatient mental health treatment [45,46].

The outlook for an adequate supply of child and adolescent mental health professionals remains bleak. In their joint statement in 2009, the American Academy of Pediatrics (AAP) and American Academy of Child & Adolescent Psychiatry noted that there has been a steady decline in the number of positions in child psychiatry residency programs. There has also been a concurrent increase in the management of mental health disorders by primary care pediatricians, with about one-fourth of children (4–17 years of age) who receive mental health care other than psychotropic medication being seen by a general medical practitioner. However, systemic problems complicate the pediatrician's role in treating mental health conditions. These problems include restrictions on reimbursement for management of subclinical psychosocial problems that do not meet diagnostic criteria; lack of reimbursement for necessary collateral contacts with parents, teachers and others involved in the pediatric patient's care; and restrictions on third-party reimbursement to PCPs for visits with a patient who has a primary mental health diagnosis [47].

Collaborative models to bring together primary care pediatricians and mental health care professionals have emerged as a strategy to improve child mental health access. Consultation and referral are best facilitated when the pediatric practice has on-site mental health care (colocation of services) [48].

## **COLLABORATIVE STRATEGIES TO ADDRESS MENTAL HEALTH-RELATED ILLNESS IN THE PEDIATRIC PRIMARY CARE SETTING**

There are 3 basic models of collaboration in which pediatric PCPs formally consult with, and refer patients to, mental health providers: (1) external consultation, (2) colocation, and (3) integration. External consultation models can vary widely, and are generally used when resources do not permit mental health services within the primary care setting, the clinic's mental health

caseload is not large enough to warrant hiring permanent staff, or patients' mental health needs are beyond the capacity (volume) or specific skills set (specialization) of existing mental health providers. The colocation model adds the advantage of medical and mental health providers working within the same structural setting. However, colocation does not necessarily translate into integrated care, and services may not be an improvement compared with the more traditional external consultation model (ie, referrals from primary care to a mental health provider via the completion of a form and provision of instructions for making an appointment) [49].

The most comprehensive model, the integrative model, refers to a system in which primary and mental health care providers work together to identify the most appropriate screening and management tools for their patient population and clinic setting, as well as to develop protocols for their collaborative use and for their bidirectional and ongoing communication about patient needs and progress [49]. This communication includes the development of a system for sharing relevant components of patients' medical and mental health records, whether paper or electronic. Ultimately, the integrative model allows PCPs serving medically underserved populations to focus more on the biomedical needs of patients, while mental health professionals address their patients' psychosocial concerns. In contrast, PCPs working in isolation frequently spend valuable time addressing both types of needs, slowing clinical flow.

Collaborative models have been shown to result in higher satisfaction among PCPs, more comfort addressing psychiatric disorders, and greater adherence to evidence-based standards of care [50]; however, data on their efficacy are limited. To the extent that outcome data are available, they generally are disease-specific and limited to adult populations. Integration of care from psychologists and pediatric PCPs improves access to mental health, but there continues to be insufficient empirical evidence to support their apparent clinical and cost benefits [51]. In one randomized controlled trial limited to white, middle-class adults with major depression, participants receiving a multifaceted intervention, including alternating visits between PCPs and psychiatrists, had increased adherence to adequate dosages of antidepressant medication, rated quality of care more often as good to excellent, and were more likely to rate antidepressant medications as helping somewhat or a great deal compared with the group receiving usual care only from the PCP [52]. The integrated team discussed here included PCPs who received extra mental health training before the trial and psychologists who were physically located in the primary care office and available for consultation.

In a review of 42 studies that were conducted to assess the effects of on-site mental health workers delivering psychotherapy and psychosocial interventions in primary care settings on the clinical behavior PCPs, having on-site mental health workers decreased the PCP's need for external consultation and referral around mental health issues and to prescribe psychotropic medication for their patients [53]. There have also been several randomized controlled trials conducted within the Veterans Administration (VA) system to determine

the efficacy of the integrative model [54,55]. In one study, integration of mental health care providers in a VA primary care clinic resulted in increased patient and provider satisfaction as well as fewer referrals to external mental health specialists [55]. In another study, a primary care team was specifically integrated into a VA mental health center. Compared with control patients who received usual PCP care, these integrated care patients were more likely to visit their PCP and receive preventive care and, as such, reported both higher satisfaction with care and better physical health status [56].

In the pediatric population, the external consultation model has been shown to be effective in managing attention-deficit/hyperactivity disorder (ADHD). In one study in which psychologists did not meet or interact with patients but were responsible for helping pediatricians with diagnostic and treatment decisions, scoring and interpreting behavioral ratings, and creating medication titration and maintenance plans, there was a significant decrease of patients' ADHD-related symptoms [56].

In another collaborative model, psychologists were colocated on-site at a large pediatric primary care clinic in New York City and focused on young children to 36 months of age. This model facilitated the screening of all infants and toddlers for developmental and social-emotional problems and improved the ability of primary pediatric care staff to identify developmental problems and to provide more effective anticipatory guidance. Parents of young pediatric patients reported that the PCPs were more responsive to their specific concerns, a change consistent with the medical home model. The on-site presence of a psychologist specializing in infant-toddler care also allowed for immediate, short-term intervention. In addition, the psychologist served as a direct link between the primary care clinic and a larger developmental/learning disability clinic, which facilitated referral to more comprehensive services for patients with more serious, longer-term needs. The psychologists also regularly educated pediatric PCPs about infant mental health and development [57].

Another study conducted in North Carolina looked at 3 different colocation models between pediatric primary care facilities and mental health providers: (1) a community mental health center employee was out-stationed in a private pediatric practice, (2) a mental health provider was employed by a pediatric practice, and (3) an independent mental health practice was located on the same floor as a pediatric practice. This study was conducted by interviewing patients and providers, and focused primarily on process outcomes. All 3 models resulted in improved perceived quality of care by patients and increased comfort among physicians in diagnosing and treating behavioral health disorders, such as medication management. Pediatricians and mental health providers in all 3 models reported satisfaction with colocation and increased patient follow-through with mental health referrals. Communication between pediatricians and mental health providers to coordinate care for shared patients was also improved. The colocation model was especially effective in reducing patient concerns about stigma associated with mental health care [58].

## THE PEDIATRIC MEDICAL HOME MODEL

The AAP advocates that all children have a medical home in which health care is accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective. In their definition of the pediatric medical home, the AAP emphasizes that it is not simply a physical place but, more importantly, an approach to care by an experienced and dedicated primary health care team [59]. Having a pediatric medical home has been shown to reduce both nonurgent emergency department use and hospitalizations [60]. However, children in medical homes with mental health-related illness are more likely to have unmet health care needs than those with biomedical illness. In a cross-sectional analysis of National Survey of Children's Health 2003 survey data, the proportion of children in medical homes was the same, but children with ADHD were more likely to have unmet health care needs than children with asthma [61].

Medically underserved children, with heightened health risks associated by socioeconomic, geographic, and psychosocial factors, frequently have multiple and complex health care needs. They are best served in an enhanced medical home model that provides more comprehensive care than the core medical home [4]. This model includes the components of the traditional medical home as defined by the AAP and adds the following attributes:

- The capacity to spend more time than typical at pediatric visits
- The ability to provide evidence-based and -informed care to manage chronic conditions beyond what would be expected from a PCP
- The provision of health education that is concordant with the dominant language, culture, and health literacy level of the patient and family
- Facilitated access to pediatric subspecialists, including dentists, with coordination at the primary care site
- The incorporation of health information technology to effectively improve access to care
- The integration of pediatric subspecialty services, including mental health care.

The CHF, a nonprofit organization established in 1987, supports a national network of 25 programs and affiliates that use a fleet of 50 mobile medical, dental, and mental health clinics in 16 states and the District of Columbia. In 2008, the national network provided 206,491 encounters (in this article, encounters refers to an aggregate number that includes discrete medical, mental health, oral health, health education, case management, screening/testing, nutrition, and immunization activities) to an estimated 65,000 patients at more than 200 different community- and school-linked sites. Populations served by the mobile clinics are generally of low income and from minority backgrounds. Services are free of charge to patients, comprehensive, and consistent with the traditional medical home model.

Previous studies have documented the efficacy of mobile health clinics in the early identification, prevention, and management of specific illnesses [62,63];

the reduction of unnecessary emergency department use [64]; and the overall reduction in health care costs, particularly when targeting medically underserved populations [65].

To more effectively address the needs of underserved populations served by mobile clinics, CHF programs integrate medical and mental health services. Medical and mental health clinicians work together to choose the most appropriate mental health screening tools for their patient population and develop protocols for making and prioritizing referrals to mental health providers and related services, both on and off site, when problems are identified. Once a referral has been made, medical and mental health providers continue to communicate about patient status regularly via scheduled meetings and through sharing pertinent parts of the respective medical records. In an effort to lessen the stigma of accessing mental health services, and to increase the likelihood of adherence to mental health appointments, medical providers routinely introduce patients and their families to mental health providers who are also available for on-the-spot consultations. Box 1 shows how CHF mobile clinic programs meet the 7 requisite components of the traditional pediatric medical home and integrate mental health services.

### **MOBILE CLINIC-BASED INTEGRATIVE APPROACHES**

Three of CHF's national network programs and corresponding case histories are described later, highlighting aspects of how the integration of medical and mental health services more effectively serves 3 distinct medically underserved populations: homeless children in New York City, immigrant children in South Florida, and postdisaster-affected children in New Orleans.

#### **NYCHP**

Since 1987, CHF's flagship program, the NYCHP, based at Montefiore Medical Center and the Albert Einstein College of Medicine's Department of Pediatrics, has been addressing the health care needs of homeless children, youths, and adults in New York City. In 2008, 3 mobile medical clinics visited 13 homeless sites, including 9 family shelters, a shelter and drop-in center for homeless youths, and 2 domestic violence shelters, providing 12,757 encounters, in which 2483 were mental health visits. Forty-eight percent of this population self-identified as being Hispanic and 48% as African American.

The NYCHP mental health team is led by a clinical psychologist and includes 2 licensed clinical social workers and an outreach worker. A mental health provider is present at most primary care sites. Sites that cannot accommodate a mental health provider because of logistics send patients to the home office of the NYCHP where they receive care. The entire mental health team is both bilingual (English/Spanish) and multicultural.

With homeless populations, medical providers have a small window of opportunity in which to intervene because families tend to shuttle through the system rapidly and frequently. In spite of this, of the 60 to 75 monthly referrals

**Box 1: How CHF mobile clinic programs meet the 7 requisite components of the traditional pediatric medical home and integrate mental health services**

1. Accessible. Mobile clinics bring care directly to communities where medically underserved pediatric populations reside, reducing transportation barriers. No one is turned away based on ability to pay. Medical and mental health clinicians are available by phone when not at the service site.
2. Continuous. Many medical and mental health providers on mobile clinics have been at their specific projects for years and have been providing health care to their patients from infancy through adolescence and into young adulthood, after which they help transition their care to patient-centered medical homes.
3. Comprehensive. Primary care and mental health providers on mobile clinics are well trained in all aspects of pediatric health care. Each program is based at an academic medical center/children's hospital or a federally qualified health center ensuring that other aspects of care such as subspecialty and inpatient care may be accessed when needed. Preventive care, including the provision of immunizations, growth and developmental assessments, age-appropriate screenings, and anticipatory guidance, is prioritized with the AAP/Bright Futures schedule of recommendations as the guide [66]. Case managers ensure that families are well informed and have access to needed programs that help meet their psychosocial needs, such as EI; Women, Infants, and Children; Medicaid; and Children's Health Insurance programs.
4. Family centered. Mobile clinics visit community or school sites on a regularly scheduled basis with the same team members, giving patients and their families the opportunity to develop trusting and long-lasting relationships. Care is provided in the context of the patient's family, involving them in the decision making and care coordination processes. The physical structure of the mobile clinics provides a more intimate feeling and is less intimidating than larger environments of hospital-based or public health clinics.
5. Coordinated. Medically underserved children often face multiple barriers to accessing subspecialty care, including insurance problems, transportation restrictions, and psychosocial issues [4]. The Referral Management Initiative, a special initiative of CHF, is designed to facilitate timely scheduling of pediatric subspecialty appointments, coordinate appointments with available transportation and make transport services available if needed, help patients navigate medical center complexes, and integrate medical records from the specialist into the primary care and mental health records. This initiative has previously been demonstrated to significantly increase adherence with specialty appointments for homeless children and families [67].
6. Compassionate. The well-being of the child is the priority. Mobile clinic staff are sensitive to the psychosocial circumstances facing families, and care is provided in a nonjudgmental manner.
7. Culturally effective. Providers, in many cases from similar cultural and ethnic backgrounds as their patients, respect the varied cultural backgrounds, beliefs, and approaches to health care. Each provider communicates in the patient's preferred language, using a translator when necessary. In collaboration with its national network, CHF produces low-literacy and culturally sensitive health educational materials for use by the projects [68].

that medical providers of the NYCHP made to the mental health team in 2008, 75% received assessment/treatment services, a significantly higher rate than for general, nonhomeless populations [69].

Since 1988 the NYCHP has used an electronic health records system (EHR) developed in collaboration with CHF and others from the national network. The current system is designed to address the needs of medically underserved pediatric populations in the community setting. The psychosocial history is comprehensive and includes elements relevant to homeless populations. The system is organized on the notion of a comprehensive patient-centered pediatric medical home and allows for time-efficient sharing of pertinent health information between medical and mental health providers. The system also facilitates more effective communication with shelter staff to help families access needed community resources. Smart Forms, which facilitate the entry and retrieval of clinical content, are also included in the EHR and are routinely used by providers to screen children and their caregivers. Examples include the 2- and 9-item Patient Health Questionnaires (PHQ-2 and PHQ-9), Center for Epidemiologic Studies Depression Scale (CES-D), and the Pediatric Symptom Checklist.

The NYCHP protocol for the identification and management of developmental delays is rigorous because of the higher incidence in homeless populations [28]. When a developmental delay is suspected, the medical and mental health providers jointly make an initial assessment, meet with the child's caregiver(s) to review results, provide anticipatory guidance, and answer questions regarding the findings. When referrals are needed, they may include the Early Intervention Program (EI), Committee on Preschool Education, Committee on Special Education, and accessible mental health clinics for conditions that may require long-term care. Case managers and family health workers guide families through the referral process, providing transportation services, and facilitating communication with outside referral sources when necessary. The mental health team also screens for maternal depression, which has the benefit of both engaging the parent in care and potentially preventing or ameliorating the developmental effects of maternal depression on the child. A representative case study is shown in Box 2.

### South Florida Children's Health Project

The South Florida Children's Health Project (SFCHP), established in 1992 and based at the University of Miami Miller School of Medicine Department of Pediatrics, addresses the health care needs of an almost exclusively uninsured pediatric population (birth to 21 years of age) through the use of a mobile medical clinic. In 2008, the mobile medical clinic visited 11 schools/day care centers and 7 community centers in 8 different regions of Miami-Dade County, providing 7974 encounters, of which 697 were mental health visits. Only 3% of this population had Medicaid, with the remainder being uninsured (97%). Sixty-nine percent self-identified as being Hispanic and 20% as being Haitian.

The population served by the SFCHP has income at or less than the federal poverty level, limited English language proficiency, and is generally unaware of

**Box 2: Case study #1\***

Ms Q. is a 23-year-old woman with a long history of major depression, insomnia, and being underweight. Her medical history includes strabismus and severe scoliosis. Her social history is significant for a childhood of cycling in and out of foster care homes and eventually being raised by her maternal grandparents. She is in the homeless shelter with her 3-year-old daughter and 1-year-old son. Her daughter has a history of sleepwalking, temper tantrums, and speech delay. Her son presents with irritability, unspecified developmental delays, and constant crying. Ms Q. and the 2 children are referred to the mental health team. As Ms Q. tells her history, she starts crying and states that "her mother didn't want her because she is damaged" and "it hurts." Ms Q. requires help in opening her public assistance case because she does not have all of the required documents.

She is subsequently referred to a psychiatrist, prescribed psychotropic medication, and receives individual counseling. Because of scoliosis and associated chronic pain, arrangements are made for an aide to regularly visit her home to assist with daily tasks. Her daughter is referred for preschool special education evaluation and services. Her son is referred to the EI program for comprehensive developmental evaluation. He is subsequently diagnosed with autism spectrum disorder and begins to receive appropriate services.

Almost a year later, Ms Q. is in permanent housing, continues to have a home attendant, and receives ongoing assistance from a case worker from a community agency. Her daughter is enrolled in a Head Start program, receiving speech and language services, and her 1-year-old son is receiving intensive home-based EI services.

\*This and the following are not actual patient case histories but are representative of patients and families seen by these programs.

resources available in the community. These factors are often compounded in this community by fear about immigration issues and further limitation of access to medical care and contributions to health disparities. The SFCHP health care team includes medical and mental health providers who provide culturally and linguistically competent services.

More than 1 in 5 children in Florida was uninsured before the recession of 2008, with 120,000 uninsured children residing in Miami-Dade County [70,71]. There has been an increase of demand for health care services in the county partly as a result of the steady influx of disenfranchised families from other parts of the country, the continuing influx of immigrants, and health provider shortages. Many families live in rural areas without public transportation or any other means to get to health providers.

The SFCHP has an on-site mental health team that includes a full-time social worker/mental health counselor and a part-time clinical psychologist. These 2 mental health specialists work in collaboration with the medical team that comprises 2 pediatricians, a nurse practitioner, a medical assistant, and resident physicians and students. The mental health team provides mental health screenings, consultation with the medical team, individual and family counseling/therapy, parenting training, school advocacy, psychoeducational

assessments, and referrals to community-based mental health agencies if long-term, intensive treatment is indicated. The mental health team also contributes to the training of the residents and medical students by consulting with them about mental health and psychosocial issues that are of particular importance to the population served. The mental health team also helps families navigate a large public medical system and access low-cost and/or free visits with medical specialists and rehabilitation services (ie, physical and occupational therapies), and makes sure that families are informed about community resources to address everyday needs and to enhance psychosocial support.

All children receive standardized developmental and behavioral screening at their routine well-care visits. Either the Parents Evaluation of Developmental Status (PEDS), a parent report developmental screening instrument, or the Guidelines for Adolescent Preventive Services (GAPS) surveys is used for this particular screen, according to the age of the child. A complete physical examination and appropriate laboratory tests are completed to rule out medical causes. Depending on the needs of the child and family, the referral process to mental health/social work services is initiated through a consult form explaining the reason for referral, which includes a brief description of medical, behavioral, developmental or psychological symptoms. Also, one of the medical team members explains the reason for referral face to face with the mental health specialist when appropriate.

If time allows, the mental health team meets with the patient and the family to gather more information and to further assess the situation on the same day as the referral. In addition, cases that are critical, such as those with previous or present concerns about abuse, domestic violence, suicidality, major depression or anxiety, and severe developmental delays are prioritized and followed on the same day as the referral. Otherwise, parents are provided with a copy of the consult form, briefly meet a member of the mental health team, are instructed to complete and mail behavioral questionnaires such as the Behavioral Assessment System for Children (BASC) and/or ADHD Rating Scale-IV when appropriate, and receive a letter explaining the mental health referral process. The mental health team follows up within a week of referral and/or receipt of these questionnaires.

In 2008, about 1 child in 5 (21%) screened by the SFCHP in well child visits received a mental health or developmental referral. The most common primary symptoms among the patients referred were learning difficulty (18%), ADHD symptoms (16%), developmental delay (16%), behavioral problems (15%), adjustment issues (11%), and depressive symptoms (8%). Other symptoms included anxiety (4%), conduct/oppositional disorder (4%), parental conflict (4%), medical condition (2%), and abuse/neglect (2%).

Although mobile clinics are an atypical service modality, services adhere to the highest professional standards, including protection of patient privacy for mental health services. For families receiving care from community-based agencies, parents report back to the medical and mental health team on their compliance with following through with the referrals, barriers accessing these

outside services, progress made through the services received, and need for additional referrals. The trust established during the medical visits and initial contact with a mental health provider as an integrated part of a medical team encourages these families to continue to communicate about their various issues of concern. A representative case study is shown in Box 3.

### New Orleans Children's Health Project

The New Orleans Children's Health Project (NOCHP), based at Tulane University School of Medicine Department of Pediatrics, was established in 2006 to address the ongoing health care needs of the community in the aftermath of Hurricane Katrina. NOCHP operates out of 2 mobile clinics. One offers pediatric primary care services and the other, referred to as the Community Support and Resiliency Unit (CSRU), provides children and their families with mental health and case management services. In 2008, the mobile clinics visited 4 schools in communities devastated by Hurricane Katrina that experienced continued limited health care access on a regular schedule and provided 6953 encounters, including 3750 mental health encounters (including collateral contacts with teachers, parents, and other community-based providers). Most of the patients were either insured through Medicaid/Comprehensive Health Insurance Plan (60%) or uninsured (40%). Fifty percent self-identified as being African American and 30% as being Hispanic.

Recognizing that depression may present as physical symptoms or co-occur with medical illnesses and that early detection and management is key to minimizing lifelong effects, an adolescent depression screening project was developed by medical and mental health staff of the NOCHP. A review of patient information data collected for the beginning of 2008 revealed that medical

#### **Box 3: Case study #2**

Juan is a 9-year-old boy from Colombia. At the time of referral, he had been living in Miami for 6 months and was reported to be failing in school. Multiple teachers have complained that he will not stop talking and disrupting the class. At home, his mother states that he has to be constantly reminded to perform household chores and scolded for fighting with his sister. This behavior had also occurred in Colombia, but was never addressed. He was referred to our team by a school counselor.

After a medical history and physical examination to rule out medical causes, Juan's mother and 2 teachers were given BASC and ADHD Rating Scale-IV forms to evaluate his behavior at home and at school, respectively. The pediatrician summarized the patient's story to the on-site psychologist, who scored the BASC forms. The evaluations resulted in Juan being diagnosed with ADHD. At an information interview with Juan's mother, it was agreed that behavioral therapy would be started. The psychologist then discussed the diagnosis and treatment plan with the referring pediatrician. After 1 month, Juan's mother noticed a small improvement in his symptoms, but agreed that he may benefit more from a daily medication trial. Juan is followed monthly in collaboration with the on-site psychologist and the pediatrician and has shown great progress both in school and at home.

providers of NOCHP did not routinely screen for depression or, if they provided a screening, did not document having done so. In collaboration with the mental health providers of NOCHP and consistent with US Pediatric Task Force Preventive Guidelines [19], a depression screening protocol was developed and implemented. All patients 11 years of age or older accessing the mobile medical clinic were to be screened using the PHQ-2; patients with a positive PHQ-2 screen were to have a PHQ-9; and all patients who screened positive on the PHQ-9 questionnaire were referred to the CSRU for depression evaluation and management.

Of the initial 19 patients screened, 8 (42%) had positive findings: 5 patients with symptoms consistent with mild depression, 2 with moderate depression, and 1 with severe depression. As per protocol, all 8 were referred to the CSRU, but only 1 followed up. Based on this result, medical and mental health staff reevaluated and revised the protocol, bringing it more in line with the Guidelines for Adolescent Depression in Primary Care tool kit [72] and adding a suicide screening question for patients who screened positive for depression on the PHQ-9. Only moderate and severely depressed patients were referred for mental health services. The mildly depressed patients were managed by the pediatrician, received written self-care information, including a depression information handout developed by the mental health staff, and were scheduled for a 1-month follow-up appointment with the pediatrician. In a 12 month period, 107 patients aged 11 to 18 years were screened for depression. Of these, 30 patients (28%) screened positive on the PHQ-9, indicating that they were experiencing symptoms consistent with a diagnosis of depression at the time of screening. More than half of these patients were either African American or Hispanic.

As part of the quality improvement incentive program of the Louisiana Public Health Institute in collaboration with the National Committee for Quality Assurance, the NOCHP clinic was recently awarded recognition as a medical home, one of the first mobile programs in the country to be awarded this designation.

A representative case study is shown in Box 4.

#### **Box 4: Case study #3**

Pam is a 12-year-old girl referred by her school to the mobile medical clinic for immunizations. The pediatrician completed a full checkup because she had not had one for several years. During the visit, the patient completed the depression screening and GAPS questionnaires, as per protocol, revealing a long history of suicidal ideation. She was immediately referred to the mental health team for further evaluation and was diagnosed with major depressive disorder and initiated on antidepressant medication. Subsequently, Pam was admitted to a collaborating psychiatric inpatient facility for further management. After discharge from the inpatient facility, she continued to be treated at its outpatient psychiatric clinic and was reported to be doing well, functioning at a high level in school and with family.

## SUMMARY

There is a long-standing shortage of child and adolescent mental health professionals in the United States, which contributes to serious problems accessing care for children in need of services. Several strategies have emerged in response to this situation, including expanding the role of pediatric PCPs to better identify and manage psychosocial problems. Collaborative efforts to integrate mental health and pediatric primary care is another strategy for addressing access to mental health services. These efforts are consistent with the medical home model of care, which emphasizes comprehensive, coordinated, continuous, and family-centered services. The enhanced medical home model is designed for medically underserved populations and adds facilitated access to mental health and other needed specialty services. The integrative mental health-primary care model is a crucial part of the enhanced medical home model. It functions in a way that is practical and amenable to families, and facilitates communication between medical and mental health providers. Families and children are able to receive needed mental health and psychosocial services immediately on-site, eliminating many barriers that frequently interfere with access to mental health services. These barriers may include transportation problems, difficulty finding a provider, language limitations, and the stigma that some families perceive regarding mental health care. As such, the integrated team approach described here may serve as a model for others working with similar underserved populations.

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