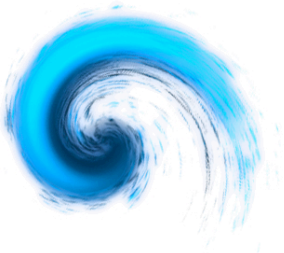

Mind & Body Works, Inc.

How Telemedicine Can Change the Patient Care Paradigm

Integrating Pediatrics and Mental Health Care By Decentralizing and Distributing Expertise

David E. Roth MD, FAAP, FAPA

Plan for Pediatric Hospitals and Medical Centers

Telemedicine offers specialists and specialized medical centers a chance to change the model of service delivery. The implicit and explicit costs of providing care can be reduced for the patient, family, school, specialist, and medical center without shifting the burden to any of the stakeholders. It will enable specialists to provide routine and urgent care in the youth and family's natural ecology including homes, schools, PCP's offices, and community settings. It will enhance the specialist's understanding of each youth's unique strengths, struggles, supports, and symptoms so they can give more specific recommendations and develop more individualized family-goal congruent treatment plans.

Most hospitals currently provide specialized medical services in a traditional model "brick and mortar" model. Hospitals collect the employed and contracted specialists in one central site and the youths travel to the hospital for evaluations and treatments. This has many logistical advantages for the providers and the hospital, but it has many drawbacks. Bringing children to the hospital demands time, effort, and financial resources from the families. This increases the rate of late arrivals, no shows, early discontinuation of medical treatment plans, and subsequently decreased utilization of the provider's time at the clinical site. This model inadvertently keeps the provider's treatment plans more generalized rather than individualized for the youth's home, school, and community ecology because the children are seen in an office where the provider is comfortable and not in a natural setting where the children are comfortable.

Until recently this was the most cost effective way to deliver specialized care to a large population in a large geographic diaspora. It is inefficient for providers and support staff to make house calls, visit schools, and consult with less specialized community providers. The patient homes are not set up for medical examinations, a lot of time is wasted driving between homes, some patients live in areas that are unsafe for strangers to visit, and many families and professionals are uncomfortable with care provided in homes and community settings. Visiting schools for classroom observations, clinical consultations, participation in IEP meetings, and treatment is impractical since most schools have few students who need specialized care at any given time. It is hard to justify the cost of

sending the provider to the school campus when they cannot effectively bill medical insurance for the time they spend with each youth, the school team, and travelling.

Lastly, most specialized centers are in large urban areas because the specialized providers often want to live in metropolitan areas that give them access to good housing, good schools, good restaurants, and the arts. They do not want long commutes to work, and they may need to co-locate close to where their (likely professional) spouse or partner works, and near to their children's schools.

Adopting a model of care built around telemedicine will allow the specialists to remain in the centralized hub or a satellite site. The specialists will work out of sites where they are comfortable, well supported, and well connected to the specialized resources and ancillary staff they need to do their job well. By filling their schedule with telemedicine patients and consultations, they can efficiently work and bill for their professional services. Management can continue to support and monitor their work by direct supervision, remote monitoring technology, and quality assurance reviews of the electronic health records. When the management team develops and implements a telemedicine program with well defined workflows, provider training, and competitive reimbursements, the providers adapt well to the new technology.

Medical students and other trainees will be easily observed over the telemedicine platform as they provide treatment. They and can easily observe and learn from patient encounters and classrooms that are miles away from where they are embedded for their rotation. The children and their families will be able to remain at their home, school, or community setting instead spending time and effort traveling to the specialized center. This will increase the rate of completed appointments, and decrease the frequency of late appointments, missed appointments and early treatment discontinuation. Telemedicine will create more opportunities to keep patients well, decrease their suffering and the burdens these conditions place on their families. Telemedicine technology puts them in the room with primary care providers and Emergency Department physicians when special needs children are being seen. This will improve the quality of the care they receive and decrease the utilization of costly Emergency Department admissions, hospital admissions, and hospital transfers for ICU care. The telemedicine-trained specialist can use telemedicine technology to deliver more focused and targeted interventions earlier in the disease exacerbation episode and recognize a problem before it becomes more serious or life-threatening. Even if these urgent care, sick visits,

and consults are paid above market-rate for these consultations, the savings will be significant compared to the current utilization of Intensive Care Units, Emergency Departments, and medical transports to tertiary care centers.

Medically complex youth spend six or more hours a day in school. This greatly impacts treatment logistics for families of chronically ill children. Most special education teachers, schools, school districts have limited funding and expertise to accommodate the disabilities that impact the youth's education. Teachers, special education aides, school-based mental health providers, school nurses, and administrators often feel overwhelmed by the co-morbid psychological, developmental, behavioral, and medical conditions. Although they are experts in education, they usually welcome suggestions as to accommodating the more disruptive, ill, impaired, and disabled youth in the least restrictive setting and within the youth's community. Many schools are using videoconference technology to hold administrative meetings over large geographic districts. Some schools are using it to bring mental health and physical health specialists to rural and remote school locations. Using these precedents as a beachhead, medical specialists can start participating in IEPs, special education meetings, and treatment team meetings with other agencies including the Departments of Health and Developmental Disabilities so the teams can better understand the youth's capacity, disability, treatment plan, and his or her need for specific accommodations and supports.

Consulting to community providers is usually limited many of the logistical problems previously discussed. Additionally, the pediatricians, ED physicians, and family practice physicians do not need consultation on a consistent basis. Rather they need access to specialists during urgent care or crisis settings and without this consultation they have to try to stabilize and transport the youth and family to the specialized center. Expert telemedicine supervision improved adherence to resuscitation guidelines for critically ill youths. In other cases the specialist may fly or drive out to the remote site to see several youths for or with the PCP. These visits are arranged to fit the specialist's schedules and can be a burden to the family. Plus the specialist doesn't see the youth in crisis and may have an artificially positive impression on the youth's baseline functioning in their home ecology. These "doctor days" as we called them on the Island of Lanai were especially vulnerable to logistical failings. Late planes, sick physicians, forgetful parents, and sick youth would often dismantle my carefully planned schedules. These difficulties resulted in decreased reimbursement for the specialist, frustration for the guest and host medical teams, and longer gaps between youth

appointments. Providing care at the most rural and remote sites was also very expensive. The specialist needed payment for many things that were not billable to the medical insurer including his or her travel time, transportation by car, boat, and or plane, hotel accommodations, and per diem expenses.

Decreasing these barriers to accessing specialized care will allow for greater frequency of care, more specific care, care that is provided in natural settings, individualized care, better understanding of the youth and family in their ecology, better accommodations in the school settings, better PCP collaboration and referrals, less burden on the family, and it will make the chronic condition a less central focus in the youth and family's life. They will spend less time and effort engaging the medical home leaving them more time for family, school, and community activities. The youth, family, school, and primary care provider may be less reluctant to allow the youth to engage in normal youth activities knowing that specialized care is more readily available if problems arise.

Integrating mental health with telemedicine

Integrating mental health into the primary healthcare of the special needs child and their family is not about prescribing psychiatric medicines to these children or putting the families into psychotherapy treatment. It is a holistic approach to emotionally and psychoeducationally supporting the child and family so that they can sustain themselves in their native ecology and promote the wellness and functioning of their special needs child. Decreasing the effort, time, and money the family has to devote to their special needs child will enhance their ability to effectively raise their other children, continue their personal and professional development, earn a living, and maintain a healthy domestic partnership or marriage. By supporting the medical emotional and contextual needs of the child and their family we can reduce the morbidity and mortality of the family unit as a whole as well as improve the wellness and health status of the special needs child.

Well-adjusted happy healthy families can better support a child with special health care needs. They are more emotionally resilient and able to handle the stress and strain of recurrent infections, seizures, procedures, and medication administration. They are more supportive and able to flexibly and collaboratively shift their family and work responsibilities to meet the medical needs,

appointments and medical logistics of their special needs child, while supporting other members of the family unit to maintain professional development financial stability, and their social network.

Integrating mental health care into the primary care of the special needs child improves the capacity of the primary care provider and thereby promotes the providers ability to attend to complex medical and psychological and social issues in the community setting. When the providers have access to especially mental health care consultations they can learn how to anticipate, recognize, and triage and in many times treat common, reoccurring, social, and emotional problems that affect these children and families. This parallels the increased comfort in capacity as the primary care providers report when they receive specialty consultations from tertiary care providers regarding the treatment of children with complex medical issues. Obtaining consultation and recommendations from a child and adolescent psychiatrist on the management of an autistic child with emotional explosiveness is no different than obtaining a cardiology consult on a Downs syndrome child with hypoxia. There are many ways the primary care provider can with live or store-and-forward consultations obtain a better understanding of the child's presenting problem, triage the case, apply interventions, and determine if the child needs to see the specialist for a more intensive evaluation, or treatment.

Integrating mental health care and telemedicine into a hospital's service array will facilitate a cost-effective expansion of services because it does not require an investment into "brick and mortar" infrastructure. Instead, the technology can expand the reach of the existing clinical capacity by bringing the hospital's expertise to the primary care setting in real time and when it's most needed. This avoids some of the difficulties identified in previously published reports on embedding mental services and primary care. These limitations were logistical with appointment time and space the location of the expert the episodic need for acute consultations and the primary care provider's lack of comfort with the consultants with whom they were sending their youths.

Integrating mental health care into the medical care of youths with chronic diseases is occurring throughout the country. As part of the Obama care initiative to improve the EPSDT program nationwide, many federal and military facilities already embedding psychologists and/ or psychiatrists in primary care clinics. These professionals are being tasked with addressing a myriad of common parenting, developmental and psychosocial issues that take too much time for a primary

care physician to effectively discuss. In the neurotypical pediatric population this includes bedwetting, separation anxiety, school avoidance, toilet training, simple phobias, bullying, drug use, gender identity formation, and gang involvement. They work with the child and family to develop and implement behavior modification programs to change habits and improve the organization and completion of chores and homework.

The emotionally disabled, intellectually disabled, mentally ill, and other special needs populations rely on specialists who can provide more complicated and specialized mental health services who can effectively interface with other agencies and providers. The providers with the specialized training, experience, communication skills and rapid access to tertiary care experts are rarely available in primary care settings and are usually unavailable in rural and economically disadvantaged communities. These complex children and families are best served when the medical care and supportive services and integrated with their psychological, emotional, and mental health care. Some of the common issues facing the families with special needs kids include caregiver burnout, marital discord, depression, poverty, guilt, discipline, and difficulties obtaining services from schools and state Developmental Disabilities programs.

The mental health service array in most communities is a complex system of care that often confuses even mental health practitioners and pediatricians. Many family and child advocacy programs have grown in strength in numbers across the country in recent years to assist families with these increasingly complex systems of care. Examples in the Hawaiian community include Hawaii Families As Allies, NAMI, SPIN, TACA, and the Autism Society. Federal block grant monies are being given out to state and local programs attempting to bridge the gap between mental health and primary health care. Several states including Hawaii have grant monies and are exploring ways to provide federally qualified community health centers, community mental health centers, private practice pediatricians and family medicine physicians, and schools with consultations, education, and expert opinions from the psychologists and child and adolescent psychiatrist employed by the Department of Health. Other attempts at bridging and breaking down barriers between the system of care within each state of being supported by SAMHSA grants some of the early leaders include Arizona, Massachusetts and Hawaii. Leaders in the various institutions that serve children are working together to develop programs that integrate the resources and professional expertise of these agencies so that appropriate programs can be delivered to children

and families, even when the children have co-occurring mental health disorders and developmental disabilities. This group frequently includes children with autism spectrum disorders, children with fetal alcohol exposure, children with fetal drug exposure, and the children who have experienced profound neglect.

Attempts to embed mental health practitioners in primary care clinics are often limited by funding, provider resistance, billing and reimbursement issues, and brick-and-mortar logistical issues. Other grant funding has been used in many programs to initiate embedded mental health services, closed financial systems such as Kaiser, the military, and the Department of Education have an easier time embedding mental health practitioners because there is no difficulty paying multiple providers for the time they spent collaborating and consulting on the child and family's needs. These closed systems also have an easier time sharing protected health information to their closed electronic health records and closed intranets. There is also limited difficulty exchanging information between providers because they are on the same agency, and this removes the need for memorandums of agreement, memorandums of understanding, and a complex consent process. Another limiting factor has been the privileged nature of the psychological medical records. Even in a closed record system maintaining private information that should not be shared with all members of the healthcare organization remains a complex task and separate from the duty under HIPAA to protect the larger patient record from unauthorized and inappropriate use.

However, studies of integrating mental health and primary health care have shown that when these barriers are surmounted, the services are utilized well and with favorable outcomes for the children and families. Primary healthcare providers usually appreciate the direct service rendered by these mental providers but also the quote curbside consults" that they can receive from these practitioners during normal clinical operations. These informal consultations improve the knowledge base of the practitioners, decrease the stigma of making mental health referrals, and improve their understanding of when to obtain a mental health consultation. Many primary care providers under-refer because they view the social emotional issues as routine parenting challenges that should be resolved by the family and their extended family support network. However the modern American family has little support, family wisdom, or reliable information to guide them. Single parents and small nuclear families living in economically disadvantaged neighborhoods may have no one to turn to for evidence-informed and culturally congruent parenting advice.

Middle class and wealthy families are not safe from parenting problems either. Often they are overwhelmed by the amount of information and conflicting advice he received from family and friends their own childhood experiences, books, blogs, TV shows and internet experts. They often appreciate advice coming from a medical expert with whom they already have a relationship or who has a relationship with their child's primary care provider.

These issues are even more pressing when the parents are raising a special needs child. Families with a special needs child suffer from a higher rate of couples conflict and divorce than the general population. The neurotypical siblings have a greater incidence of adjustment reactions to the affected child's medical condition, and sometimes resent the greater amount of attention that child receives from their parents. The parents often endure financial hardship caused by the cost of caring for their child that is compounded by lost earnings and the opportunity cost incurred when one or more parents interrupt their professional career development to attend medical appointments, educational meetings and other important activities. Many families suffer from a form of anxiety where they worry about their child excessively and feel that they are more fragile than they really are. Some families grieve for many years over the loss of their idealized child, and tragically many families blame themselves for the spontaneous events and accidents that cause their child's special needs or developmental disabilities. Add these issues to the normal stress and challenges of raising children including the neurotypical siblings and you can readily see these children and families merit a great deal of our attention, compassion and medical system resources. The irony is that these parents are already spending so much time engaged with the medical system for their child's needs that they have little time to attend to their own needs.

Another psychological barrier to the families receiving services is weakness. The families must maintain a great amount of effort, diligence, vigilance, and stubbornness while advocating intriguing for their child. They can't allow themselves to be weak or distracted. Over time many of these parents come to identify their role in life as an advocate or as a caregiver and it swallows up the rest of their life. They often instinctually know that if they stopped to re-examine their life and what it has become in response to their children's needs, that they might get depressed and be unable to carry on.

It is rare that a family does not fall into the trap of making a special needs child the center point in their lives. They often lose sight of all other personal professional financial and family goals in the attempt to care for this child. When one family member does not give up on the goals and the other one does sacrifice himself for the child it can lead to resentment, couples conflict and divorce. This drives a high percentage of these families into poverty and robs them of financial, familial, and emotional support. It is for all of these reasons that telemedicine needs to be a part of integrating mental health care into pediatric care. Caring for these children has to become easier for the families and support them well has to become easier for the providers and hospitals.

Telemedicine is not just medicine with a camera. It is a paradigm shift in patient care. Clinicians and hospitals will use telemedicine to move the practice of medicine from a centralized brick and mortar paradigm to something new. This technology has the potential to decentralize the practice of medicine and create a new paradigm that blends the best of the traditional home visit with the ability to connect, collaborate, and learn from each other in ways that were impractical just a few years ago.

Bibliography

1. Buckley D, Weisser S. Videoconferencing could reduce the number of mental health patients transferred from outlying facilities to a regional mental health unit. *Aust N Z J Public Health*. 2012;36(5):478-482.
2. Chipps J, Ramlall S, Mars M. Practice guidelines for videoconference-based telepsychiatry in south africa. *African Journal of Psychiatry*. 2012;15(4).
3. Chung-Do J, Helm S, Fukuda M, Alicata D, Nishimura S, Else I. Rural mental health: Implications for telepsychiatry in clinical service, workforce development, and organizational capacity. *Telemedicine and e-Health*. 2012;18(3):244-246.
4. Chung-Do, J., Helm, S., Fukuda, M., Alicata, D., Nishimura, S., & Else, I. (2012). Rural mental health: implications for telepsychiatry in clinical service, workforce development, and organizational capacity. *Telemedicine and e-Health*, *18*(3), 244-246.
5. Fleming DA, Riley SL, Boren S, Hoffman KG, Edison KE, Brooks CS. Incorporating telehealth into primary care resident outpatient training. *TELEMEDICINE and e-HEALTH*. 2009;15(3):277-282.
6. Fleming, D. A., Edison, K. E., & Pak, H. (2009). Telehealth ethics. *Telemedicine and e-Health*, *15*(8), 797-803.
7. Frueh BC, Deitsch SE, Santos AB, et al. Procedural and methodological issues in telepsychiatry research and program development. *Psychiatric Services*. 2000;51(12):1522-1527.
8. Frueh, B. C., Deitsch, S. E., Santos, A. B., Gold, P. B., Johnson, M. R., Meisler, N., ... & Ballenger, J. C. (2000). Procedural and methodological issues in telepsychiatry research and program development. *Psychiatric Services*, *51*(12), 1522-1527.
9. Jack C. Telemedicine a need for ethical and legal guidelines in south africa. *South African Family Practice*. 2008;50(2):60-60.
10. Kim G. Cost benefits of telemedicine in child psychiatry. *AAP Grand Rounds*. 2011;25(3):29-29.
11. Kim TJ, Arrieta MI, Eastburn SL, et al. Post-disaster gulf coast recovery using telehealth. *Telemedicine and e-Health*. 2013.
12. Kim, T. J., Arrieta, M. I., Eastburn, S. L., Icenogle, M. L., Slagle, M., Nuriddin, A. H., ... & Buckner, A. V. (2013). Post-Disaster Gulf Coast Recovery Using Telehealth. *Telemedicine and e-Health*.
13. Mitchell SA, MacLaren AT, Morton M, Carachi R. Professional opinions of the use of telemedicine in child & adolescent psychiatry. *Scott Med J*. 2009;54(3):13-16.
14. Mitchell, S. A., MacLaren, A. T., Morton, M., & Carachi, R. (2009). Professional opinions of the use of telemedicine in child & adolescent psychiatry. *Scottish medical journal*, *54*(3), 13-16.
15. MPH,James P.Marcin, MD, PhD JE, MD RM, MD EN, MPH,Thomas S.Nesbitt, MD, MD aRJD,. Using telemedicine to provide pediatric subspecialty care to children with special health care needs in an underserved rural community. . 2004.
16. Spaulding R, Belz N, DeLurgio S, Williams AR. Cost savings of telemedicine utilization for child psychiatry in a rural kansas community. *Telemedicine and e-Health*. 2010;16(8):867-871.
17. Szeftel R, Mandelbaum S, Sulman-Smith H, et al. Telepsychiatry for children with developmental disabilities: Applications for patient care and medical education. *Child Adolesc Psychiatr Clin N Am*. 2011;20(1):95-111.
18. TELEMEDICINE ; research findings from S.K. Mishra et al update understanding of telemedicine. *Telemedicine Week*. 2009:227.
19. Vargas BB, Channer DD, Dodick DW, Demaerschalk BM. Teleconcussion: An innovative approach to screening, diagnosis, and management of mild traumatic brain injury. *Telemedicine and e-Health*. 2012;18(10):803-806.
20. Wilcox ME, Adhikari N. The effect of telemedicine in critically ill patients: Systematic review and meta-analysis. *Crit Care*. 2012;16(4):R127.
21. Wilcox, M. E., & Adhikari, N. K. (2012). The effect of telemedicine in critically ill patients: systematic review and meta-analysis. *Crit Care*, *16*(4), R127.
22. Wynchank S, Fortuin J. Telepsychiatry in south Africa–present and future. *South African Journal of Psychiatry*. 2010;16(1).
23. Yang C, Hunt E, Shilkofski N, Dudas R, Schwartz J. 562: Can telemedicine improve adherence to resuscitation guidelines for critically ill children at community hospitals? A randomized controlled trial using high fidelity simulation. *Crit Care Med*. 2012;40(12):1-328.

24. Yang, C., Hunt, E., Shilkofski, N., Dudas, R., & Schwartz, J. (2012). 562: Can Telemedicine Improve Adherence to Resuscitation Guidelines for Critically Ill Children At Community Hospitals? A Randomized Controlled Trial Using High Fidelity Simulation. *Critical Care Medicine*, *40*(12), 1-328.
25. Young, Thomas, MD, PhD., Ireson CR. Effectiveness of school-based telehealth care in urban and rural elementary schools. . 2003.
26. Yurkiewicz IR, Lappan CM, Neely ET, et al. Outcomes from a US military neurology and traumatic brain injury telemedicine program. *Neurology*. 2012;79(12):1237-1243.

