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# Pediatric behavioral telehealth in the age of COVID-19: Brief evidence review and practice considerations

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Considerable efforts over the last decade have been placed on harnessing technology to improve access to behavioral health services. These efforts have exponentially risen since the outbreak of the Coronavirus disease 2019 (COVID-19), which has prompted a move to novel systems of care, largely based on telehealth delivery. This article aims to provide a broad review of evidence for telehealth assessment and treatment of externalizing disorders and internalizing disorders in children and discuss practice considerations and established guidelines for telehealth delivery. Existing literature supports the promise of behavioral health interventions including behavioral parent training and combination approaches for externalizing disorders as well as cognitive-behavioral based interventions for internalizing disorders.

There is a scarcity of work on assessment via telehealth compared with the available treatment literature. While treatment may be most pressing given the COVID-19 circumstances to continue delivery of care, movement toward establishing evidence-based assessment via telehealth will be of increased importance. Lastly, practice guidelines have been set forth by national associations, professional societies, and supported by the development of national Telehealth Centers of Excellence. These guidelines and practice considerations are discussed within the context of COVID-19.

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**B**ehavioral health challenges are highly prevalent and amongst the most widely reported concerns for pediatric populations. Recent data from the Centers for Disease Control and Prevention estimate that one in six children in the United States (US) have a diagnosed mental, behavioral, or developmental disorder.<sup>1</sup> Despite increasing prevalence rates, up to 80% of youth with behavioral health challenges do not have adequate access to services.<sup>2</sup> Not surprisingly, considerable efforts over the last decade have been placed on harnessing technology to improve access to services, improve delivery of care, and reduce unmet mental health needs, particularly for rural and traditionally underserved communities. The focus of this article will be on telehealth services that involve the delivery of clinical care by providers via

videoconferencing in “real time” or synchronous format. The American Telemedicine Association (ATA) defines Telemental Health as the “videoconferencing-based practice of mental health specialties at a distance”.<sup>3</sup>

The outbreak of the Coronavirus disease 2019 (COVID-19) has impacted individuals, families, communities, and entire systems of care around the globe and poses the potential to increase existing rates of behavioral health challenges and exacerbate rates of unmet mental health need. Emerging work on the impact of COVID-19 suggests that families impacted by multiple hardships associated with the pandemic (e.g., job loss, social isolation, financial hardship) are more likely to report increases in both child and parent-related mental health concerns<sup>4</sup> and have higher rates of risk for child maltreatment.<sup>5</sup> Specifically, high rates of anxiety, depression, and post-traumatic stress have been documented in children and adolescents.<sup>6</sup> These increases in behavioral health challenges are coupled with significant changes in service delivery as the vast majority of behavioral health services have moved to remote delivery due to national recommendations for social distancing.

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Despite the dismal consequences of COVID-19, one of the few silver linings of this national public health crisis is that it has launched a move to novel systems of care that were desperately needed.

Almost overnight, providers and families alike have had to navigate virtual services while health care institutions and insurance companies have needed to adjust to the changing landscape of service delivery models and billing requirements. While emerging evidence exists for behavioral telehealth services, the science on the efficacy of telehealth has not had a chance to catch up with the widespread use of telehealth across all aspects of behavioral health. It is critical to review the existing evidence for assessment and treatment of childhood mental health disorders and determine future directions for the science of telehealth in pediatric populations. Additionally, it is also imperative to discuss practice considerations in light of existing evidence as well as discuss existing guidelines that have been set forth within the context of COVID-19.

The aims of this article are to:

1. Provide a broad review of evidence for telehealth assessment and treatment of externalizing disorders
2. Provide a broad review of evidence for telehealth assessment and treatment of internalizing disorders
3. Discuss practice considerations and guidelines for telehealth

Of note, given the complexity of assessment and treatment of neurodevelopmental disabilities such as autism spectrum disorder, these were deemed outside the scope of the current article. Previous literature on telehealth assessment, treatment, and coordination of care for autism spectrum disorder in children<sup>7</sup> and developmental-behavioral pediatrics more generally<sup>8</sup> offers a more comprehensive review of this topic. Additionally, the focus of this paper was on behavioral health within clinical child and adolescent psychological science outside of traditional pediatric psychology. Traditional pediatric psychology focuses on mental health services as it relates to physical health (e.g., chronic illness, pain management, sleep disorders, feeding disorders). See Nelson and Patton<sup>9</sup>

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for a more thorough review of telehealth practices for pediatric psychology.

## **Telehealth evidence review for externalizing disorders**

Externalizing disorders are one of the most common mental health referrals for pediatric populations. Attention-Deficit/Hyperactivity Disorder (ADHD) is present in about 9.4% of children ages 2–17<sup>10</sup> and co-occurs with Oppositional Defiant Disorder (ODD) in up to one-half of cases.<sup>11</sup> From an assessment perspective, early identification of externalizing disorders is key in preventing many of the functional outcomes associated with externalizing disorders such as impairments in academic achievement, behavioral adjustment, and social and cognitive functioning.<sup>12–15</sup> Additionally, if left untreated, externalizing disorders are predictive of negative long-term outcomes that are often costly to individuals, families, and communities.<sup>16–18</sup> Thus, efforts have been placed on the assessment and treatment of externalizing disorders via telehealth<sup>19</sup> in an effort to improve access to services for this population and reduce the likelihood of costly public health outcomes.

## **Assessment of externalizing disorders via telehealth**

Evidence-based methods for diagnosing externalizing disorders, such as ADHD, include symptom-based rating scales for caregivers and teachers based on the Diagnostic and Statistical Manual of Mental Disorders-5th Edition (DSM-5) criteria, clinical interviews, impairment measures, and behavioral observations.<sup>20</sup> Many of these assessment methods are conducive for remote delivery, making telehealth diagnosis of externalizing disorders feasible. Only one study to our knowledge has investigated diagnostic certainty of ADHD diagnoses derived via telehealth.<sup>21</sup> This study documented 95–100% adherence to the American Academy of Pediatrics (AAP) ADHD assessment guidelines<sup>22</sup> for diagnoses made via telehealth. However, further work is needed examining telehealth assessment using the revised AAP guidelines<sup>23</sup> as

well as the Society for Developmental and Behavioral Pediatrics' guidelines for complex ADHD.<sup>24</sup>

To our knowledge, no studies have investigated diagnostic certainty of other externalizing disorders or disruptive behavior problems more generally via telehealth. However, many broadband caregiver rating forms (e.g., Behavioral Assessment System for Children-3rd Edition<sup>25</sup>; BASC-3) as well as more specific instruments (e.g., Eyberg Child Behavior Inventory<sup>26</sup>; Conners-3rd Edition<sup>27</sup>) are available for remote administration making them appropriate measures for use during telehealth evaluations for disruptive behavior. Future work is needed examining psychometric properties of behavioral rating scales administered remotely.

Outside of formal diagnostic assessments for externalizing disorders, there has been a recent increase in mobile health technologies (mHealth) for monitoring symptoms of ADHD.<sup>28,29</sup> Although mHealth tends to be asynchronous and outside the scope of telehealth services covered in this article, these sorts of applications may be useful for functional behavioral assessments and treatment planning. Rismo-Olsen and colleagues<sup>28</sup> provide a substantive review of mHealth applications and web services (e.g., myADHDportal.com) for compiling behavioral data.

## Treatment of externalizing disorders via telehealth

Evidence-based treatments for externalizing disorders, such as ADHD and disruptive behavior problems (e.g., oppositionality, aggression), are primarily categorized into behavioral, pharmacological, and combined approaches.<sup>30</sup> See Table 1 for a summary of existing evidence for telehealth treatments for externalizing disorders.

### Behavioral intervention

Behavioral parent training (BPT) is an evidence-based approach for treating externalizing behavior problems in children and empower parents as agents of change through didactic methods and coaching sessions based in behavioral principles.<sup>30,31</sup> The goals and structure of BPT programs lend themselves well to telehealth delivery as parents may be able to engage with sessions in more convenient and naturalistic settings. Literature is emerging on the use of telehealth across several well-regarded parent training programs.

Parent Child Interaction Therapy (PCIT) is amongst the most well-established behavioral parent training

**TABLE 1.** Telehealth Treatments for Externalizing Disorders (Exclusively Videoconferencing Approaches).

Population	Intervention	Target Age	Supporting Studies	Outcomes
Disruptive Behavior Disorders (ODD, DBD-NOS, CD)	i-PCIT	2–7	RCT- Comer 2017 <sup>37</sup>	-improved child behaviors -improved parenting skills -higher levels of “excellent responders” in i-PCIT group
ADHD	Group Triple P	6–10	Open Trials- Reese et al., 2012 <sup>39</sup> ; Reese et al., 2015 <sup>40</sup>	-improved child behavior -improved parent distress
	Barkley's Defiant Children (Group)	6–14	Pilot RCT- Xie et al., 2013 <sup>41</sup>	-telehealth comparable to in person delivery for parent skills and child behaviors
	STAND (Supporting Teens' Autonomy Daily)	11–16	Open Trial- Sibley et al., 2017 <sup>43</sup>	-improved ADHD symptoms
	CATTS Study: Medication consultation, psychoeducation, & caregiver behavioral training	5–12	RCT- Myers et al., 2013 <sup>57</sup> Vander Stoep et al., 2013 <sup>60</sup> Myers et al., 2015 <sup>55</sup> McCarty et al., 2015 <sup>56</sup> Rockhill et al., 2013 <sup>62</sup> Tse et al., 2015 <sup>58</sup> Rockhill et al., 2016 <sup>61</sup> Vander Stoep et al., 2017 <sup>59</sup>	-improved ADHD symptoms -improved functional outcomes
Newly diagnosed ADHD	Bootcamp for ADHD (BC-ADHD)- Group	5–11	Open Trial- Fogler et al., 2020 <sup>42</sup>	-used treatment fidelity as tool to guide tele-adaptation

**Note.** ADHD = Attention-Deficit/Hyperactivity Disorder, ODD = Oppositional Defiant Disorder, DBD-NOS = Disruptive Behavior Disorder-Not Otherwise Specified, RCT = Randomized Controlled Trial, CATTS = Children's ADHD Telemental Health Treatment Study, i-PCIT = internet delivered Parent-Child Interaction Therapy

programs<sup>32–34</sup> and is particularly conducive to telehealth.<sup>35,36</sup> Traditional PCIT already harnesses technology to coach parents with separation from the therapist using a “bug-in–ear” device, which can be further extended through telehealth delivery by using Bluetooth technology to coach families over video instead of via a one-way mirror.<sup>35</sup> A randomized trial of internet delivered PCIT (i-PCIT) not only documented improvements across child behaviors and parenting skills, but also revealed higher levels of “excellent responders” in the internet delivery group, further highlighting improved generalization of outcomes for treatments delivered in naturalistic environments.<sup>37</sup> The growing research base for i-PCIT is also coupled with efforts from PCIT International, making it an effective dissemination model amidst the pandemic. Specifically, PCIT International organized efforts to develop structured materials (online courses for providers, videos, webinars, handouts) to ensure the responsible application of PCIT via telehealth.

Another well-established parent training program that has an expansive research base is Triple P (Positive Parenting Program).<sup>38</sup> In addition to Triple P’s multi-level system of prevention and intervention supports, some work has been geared towards further improving cost-efficacy by testing group-based Triple P via telehealth. Open trials demonstrate improvements across parent and child outcomes in parents of children with ADHD after completing Group Triple P via videoconferencing.<sup>39,40</sup> Also geared toward ADHD in school-aged children, Barkley’s Defiant Children was tested in a group format pilot randomized controlled trial (RCT) and deemed comparable to in-person group delivery across parent and child outcomes.<sup>41</sup> One study investigated a brief group parent training program for children newly diagnosed with ADHD, Bootcamp for ADHD (BC-ADHD), and utilized fidelity measures as tools to guide tele-adaptation during COVID-19.<sup>42</sup> Notably, these studies include remote delivery of the parenting interventions to a group of parents meeting at a more accessible location (e.g., regional medical

center) with a remote therapist. Although this improves access for a number of families concurrently, the utility of this approach is limited during COVID-19 due to social distancing guidelines and stay at home orders.

Further work is needed on expanding group interventions delivered in family’s own homes to maintain cost-efficacy while increasing generalization to natural environments.

One behavioral intervention for teens with ADHD, Supporting Teens’ Autonomy Daily

(STAND)<sup>43</sup> has been examined via telehealth. In a preliminary investigation, improvements in teen’s ADHD symptoms were documented along with improvements in organization, time management and planning.<sup>43</sup>

Lastly, some parenting programs combine videoconferencing with asynchronous approaches. For instance, the Tantrum Tool,<sup>44</sup> designed for children between 3 and 9 years old with ODD, combines 8 asynchronous online modules containing didactic information on behavior management with 3 teleconferencing sessions. Similarly, Project PEAK (Promoting Engagement for ADHD in Pre-Kindergartners), designed for children 5–11 at risk for ADHD, included one in-person session with self-paced subsequent sessions.<sup>45</sup> Completely asynchronous programs also exist and are often prevention based programs, such as the Triple P Online,<sup>46</sup> Triple P TV series,<sup>47,48</sup> Incredible Years Computer-Based Version,<sup>49</sup> Play Nicely,<sup>50</sup> Internet-Parent Management Training,<sup>51</sup> and Parenting Wisely.<sup>52</sup> See Breitenstein, et al.<sup>53</sup> for a review of telehealth asynchronous parenting interventions.

### *Combined treatment approaches*

Results of the Multimodal Treatment of ADHD Study<sup>54</sup> suggested that the combination of medication management and behavioral intervention yields optimal outcomes in the treatment of ADHD in school-aged children. The Children’s ADHD Telemental Health Treatment Study (CATTS)<sup>55</sup> is the largest study to date examining telehealth intervention for children with ADHD. This 5-year RCT tested a telehealth delivery model including medication treatment,

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psychoeducation, and caregiver behavioral training through a community agency with remote supervision. Improvements in ADHD symptoms and functional impairments were documented in the telehealth condition when compared with standard care.<sup>55</sup> Specifically, the CATTS trial demonstrated that short-term telepsychiatry visits are superior to augmented primary care (i.e. one-time consultation with a psychiatrist) at reduction of ADHD-related symptoms through effective medication titration. A breadth of research has emerged from the CATTS study<sup>56–59</sup> on a host of additional topics, such as methodological considerations,<sup>60</sup> psychiatrist medication strategies<sup>61</sup> and additional outcomes.<sup>62</sup>

## Telehealth evidence review for internalizing disorders

Internalizing disorders including anxiety disorders, depression, post-traumatic stress disorder (PTSD), and eating disorders are common with increasing age in pediatric populations.<sup>63</sup> Considering the most common internalizing disorders, 7.1% of children aged 3–17 in the US have a diagnosis of anxiety and 3.2% have diagnosed depression. Internalizing disorders can be pervasive if untreated and are associated with a host of functional impairments including social dysfunction and persistent school refusal.<sup>64</sup>

## Assessment of internalizing disorders via telehealth

Although literature exists to support the use of telehealth for psychological assessment within adult samples,<sup>3,65,66</sup> scarce information is available on psychological assessment with children, especially as it relates to internalizing disorders. One study found 95% diagnostic concordance between childhood psychiatric assessments conducted via telehealth and in-person evaluations along with high levels of patient and provider satisfaction.<sup>67</sup> Although promising, this study included a wide array of psychiatric diagnoses, was not limited to internalizing disorders, and did not include direct examination of the various evidence-based clinical tools for diagnosing internalizing disorders (e.g., clinical ratings scales, structured and semi-structured interviews). A similar study,<sup>68</sup> also indicated favorable outcomes for general psychiatric assessments via telehealth and documented

comparable demographic variables between children diagnosed in outpatient clinics and those diagnosed over telehealth.

As with externalizing disorders, electronic administration exists for measures of internalizing symptoms in children, including broadband rating scales that measure multiple internalizing domains (e.g., BASC-3<sup>25</sup>; Beck Youth Inventories<sup>69</sup>) and more specific instruments (e.g., Child Depression Inventory-2nd Edition,<sup>70</sup> Multidimensional Anxiety Scale for Children-2nd Edition<sup>71</sup>). Future work is needed comparing the psychometric properties of electronic administrations to traditional pencil-and-paper administrations of measures for both internalizing and externalizing disorders in child samples.

## Treatment of internalizing disorders via telehealth

### *Cognitive behavioral therapy*

Cognitive Behavioral Therapy (CBT) is amongst the most well validated treatment approaches for treating depression and anxiety disorders in childhood.<sup>72</sup> Telehealth delivery of CBT for children, although limited, has followed downward extensions of Tele-CBT studies for adults.<sup>73</sup> A randomized controlled trial of Tele-CBT for childhood depression documented decreases in depressive symptoms comparable across Tele-CBT and in-clinic CBT.<sup>74</sup> A further step in the downward extension of CBT involves Family Based-CBT, which incorporates parents into CBT for aid with implementation of behavioral components of treatment. Telehealth delivery of family-based CBT has been effective across randomized clinical trials in reducing symptoms of Obsessive-Compulsive Disorder (OCD) and clinical global improvement ratings<sup>75</sup> as well as functional outcomes for children with early-onset OCD.<sup>76,77</sup> Lastly, a multiple baseline-design study found considerable treatment response to telehealth family-based CBT for childhood anxiety maintained at follow-up.<sup>78</sup> See [Table 2](#) for a summary of existing evidence for videoconferencing-based treatments for internalizing disorders.

Trauma-focused CBT (TF-CBT)<sup>79</sup> has emerged as a leading treatment for childhood PTSD with considerable evidence in reducing behavioral and psychological post-traumatic stress symptoms.<sup>80</sup> One large community based open trial of 70 trauma-exposed

**TABLE 2.** Telehealth Treatments for Internalizing Disorders (Exclusively Videoconferencing Approaches).

Population	Intervention	Target Age	Supporting Studies	Outcomes
Depression	CBT	8–14	RCT- Nelson et al., 2003 <sup>74</sup>	-decreases in depressive symptoms comparable for Tele-CBT versus in-clinic CBT
OCD	Family based CBT	7–16	RCT- Storch et al., 2011 <sup>75</sup>	-Telehealth superior to waitlist on reduction in OCD symptoms and clinical global improvement ratings
	Family based CBT for Early Onset OCD	4–8	Pilot RCT- Comer et al. 2017 <sup>77</sup> Case series- Comer et al. 2014 <sup>76</sup>	-Reductions in anxiety symptoms -comparable improvements in functional outcomes across groups
Anxiety	Family Based CBT	7–14	Multiple Baseline- Carpenter et al., 2018 <sup>78</sup>	-Significant proportion were treatment responders -maintained 3 month follow up
	PCIT CALM for Early Childhood Anxiety	4–8	Case Study- Cooper-Vince et al., 2016 <sup>87</sup>	-reduction in anxiety symptoms
PTSD	Trauma Focused CBT (TF-CBT)	7–16	Pilot open trial- Stewart et al., 2017 <sup>82</sup> Large community open trial- Stewart et al., 2020 <sup>81</sup>	-Reduction in PTSD symptoms -feasibility in underserved communities
Eating Disorders (Anorexia)	Family Based Treatment (FBT)	13–18	Case Series- Anderson et al., 2017 <sup>90</sup>	-Increases in BMI -decreased eating disorder symptoms

Note. CBT = Cognitive Behavioral Therapy, OCD = Obsessive Compulsive Disorder, PTSD = Post-Traumatic Stress Disorder, BMI = Body Mass Index, RCT = randomized controlled trial.

children demonstrated reduction in PTSD symptoms after receiving telehealth delivered TF-CBT.<sup>81</sup> Telehealth delivered TF-CBT is also supported by smaller open trials<sup>82</sup> and case series documenting its efficacy with Hispanic/Latinx youth.<sup>83</sup>

### *Parent/caregiver led treatment approaches*

The CALM Program (Coaching Approach behavior and Leading by Modeling) is an adaptation of PCIT for young children with anxiety disorders<sup>84,85</sup> and led to significant treatment response for young children (4–8) in a pilot open trial.<sup>86</sup> One case study is currently available on internet-delivered CALM (i-CALM)<sup>87</sup> and Comer and colleagues have recently completed a waitlist-controlled randomized trial evaluating i-CALM ([https://clinicaltrials.gov/ct2/history/NCT03255122?V\\_4=View](https://clinicaltrials.gov/ct2/history/NCT03255122?V_4=View)).

Although RCTs have demonstrated efficacy for the use of Tele-CBT for bulimia in adults,<sup>88</sup> the treatment of eating disorders in children and adolescents requires a more parent-led approach. Family Based Treatment (FBT) is one of the leading treatments for eating disorders.<sup>89</sup> One case series of 10 adolescents with anorexia nervosa demonstrated increases in body

mass index and reductions in eating disordered symptoms after receiving FBT via telehealth.<sup>90</sup>

## **Psychopharmacological interventions in telehealth**

The prescription of psychoactive medication through telehealth approaches, sometimes called telepharmacotherapy, can occur in a variety of models. Prescribers may communicate directly with the patient (direct care model), conduct brief consultation with a primary care or mental health provider (consultation-care model), or provide an interactive, shared decision-making process with a primary care or mental health provider (collaborative-care model). Each model of telepharmacotherapy has its unique strengths and weaknesses that may be relevant for different clinical settings.<sup>91</sup>

Research on telepharmacotherapy approaches have largely consisted of feasibility studies regarding the model of care, with reported outcomes such as patient and clinician satisfaction and financial impact. These studies have often been broad with respect to psychopathology and generally do not

separate internalizing and externalizing disorders. Descriptive studies have demonstrated successful application of telepharmacotherapy for pediatric patients in various settings, including juvenile justice facilities,<sup>92</sup> daycare centers,<sup>93</sup> and schools.<sup>94</sup> Retrospective analyses of outcomes for patients who received medication teleconsultation by subspecialists have demonstrated improvements in child mental health by caregiver report.<sup>95</sup> Other than the CATTS study referenced above, RCTs comparing telepharmacology to in-person care have largely been conducted in adults.<sup>96</sup> Overall, telepharmacotherapy has been shown to be equally efficacious to in-person care for adults,<sup>97</sup> including those living in rural areas<sup>98</sup> and of low income backgrounds,<sup>99</sup> as well as veterans with depression<sup>100</sup> and PTSD.<sup>101</sup> Despite increasing calls for the adoption of telepharmacotherapy, the field has been slow to generally adopt the practice. A literature review in 2019 demonstrated broadly that medical and psychiatric providers were more likely than patients and families to view telemedicine in an unfavorable light due to concerns about safety, efficacy, and liability.<sup>102</sup>

## Practice considerations and guidelines for telehealth

### *Considerations for future work*

Although the body of literature for behavioral telehealth is growing significantly, a myriad of questions remain unanswered about evidence-based practice for telehealth in pediatric populations. The overnight shift to telehealth due to COVID-19 has forced most providers to adapt and tailor their practices significantly based on a relatively small evidence base and a large reliance on anecdotal recommendations from experts in the field. While we have reviewed some evidence-based therapies in this article, many approaches do not yet have substantial evidence to answer certain empirical questions. Specifically,

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***Given the diversity of factors that impact remote delivery, it is imperative to determine child, parent, familial, community, and systemic factors that impact engagement and effectiveness of telehealth, especially for traditionally underserved populations.***

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information about moderators of treatment outcome for telehealth delivery remain unanswered.

Given the diversity of factors that impact remote delivery, it is imperative to determine child, parent, familial, community, and systemic factors that impact engagement and effectiveness of telehealth, especially for traditionally underserved populations.

These advances would allow for growth of telehealth initiatives and potential development and evaluation of stepped care models that incorporate telehealth practices.

### *Ecological validity of telehealth interventions*

The delivery of treatments in the home setting inevitably increases the ecological validity of treatments, creating greater opportunity for maintenance and generalization of skills outside of the clinic. For treatments that provide parents and caregivers with behavioral strategies to practice between sessions, presenting and practicing these skills in the target setting during telehealth sessions is increasingly useful. Indeed, studies examining internet delivered PCIT have documented greater rates of “excellent response” to telehealth when compared to clinic-delivered PCIT,<sup>37</sup> which may partially speak to the ecological validity of the treatment. As the evidence for telehealth delivered treatments continues to grow, future work on generalization of treatment skills is needed.

### *Access barriers to technology*

Access to services is particularly challenging for families in rural areas. In addition to logistical issues including time off work, child-care arrangements, and transportation concerns, families in rural communities often need to travel significant distances to access services, which leads to added costs and stressors. Families living in closer proximity to clinics also experience access issues including provider shortages and increasingly long waitlists for services. The rise of telehealth has improved access for families in rural areas and traditionally underserved communities by



reducing physical distance to services. However, significant barriers to technology continue to play a large role in unmet mental health needs for a number of reasons. First, access to reliable forms of internet connection is not readily available for up to 10% of individuals in the US.<sup>103</sup> Lack of access to internet connection may be impacted by economic hardship and/or connectivity concerns in rural areas. Greater supports are needed to reach individuals with limited connectivity. Local grants that provide resources for families may be increasingly important in aiding with access to devices and internet connectivity. For instance, the Medical University of South Carolina offers internal grants through the South Carolina Clinical and Translational Research Institute for telehealth pilot grants and technology development awards. These may be utilized to mail out devices to aid with access to telehealth.

Secondly, even when individuals have access to internet connectivity, technological literacy may play a role in telehealth engagement. Challenges with technological literacy may be especially important to consider for older individuals and families from linguistically diverse backgrounds accessing telehealth platforms that are not designed in their native language. Efforts have been placed on improving tele-literacy through programs such as the Telehealth Literacy Project, a multisite videoconferencing education program which yielded positive outcomes for improving use of telehealth and satisfaction.<sup>104</sup> The Vanderbilt School of Medicine also took a similar initiative and implemented a program staffed by medical student volunteers which was effective in preparing patients for virtual visits.<sup>105</sup>

### *Reimbursement challenges and COVID-19 legislature*

While telemedicine has been largely reimbursable for physicians, psychologists and other mental health professionals had not been historically able to bill for services delivered via telehealth in a number of states (e.g., South Carolina).

The advent of COVID-19 has significantly changed the landscape of billing practice across private and public health insurance.

Specifically, many insurance companies have implemented

emergency telehealth coverage mandates across states. These mandates prohibit insurers from refusing to cover services that would otherwise be covered if delivered in person. Similarly, Centers for Medicare and Medicaid Services (CMS) have granted flexibility in many states for psychologists to be reimbursed for services delivered via telehealth. The American Psychological Association has compiled a resource on telehealth reimbursement guidelines by state during COVID-19 (<https://www.apaservices.org/practice/clinic/covid-19-telehealth-state-summary>). An additional consideration arises due to state lines as it relates to licensure and credentialing. Typically, providers are constrained to provide telehealth services in states where the patient resides or is seen due to licensure requirements, which sometimes creates additional barriers for providing care to families across state lines. Great variability exists across states' legislation as it relates to permitting endorsement from another state for telehealth delivery and consultation exceptions for telehealth. The Center for Telehealth and E-Health Law offers comprehensive information on state laws regarding telehealth delivery and licensure ([www.ctel.org/](http://www.ctel.org/)).

In addition to the concerns for psychotherapy and psychological assessment, legal barriers have also historically prevented widespread application of telepharmacology. For example, the medical treatment of externalizing disorders, like ADHD, often requires the use of psychoactive substances which are classified as Schedule II by the Drug Enforcement Administration. The Ryan Haight Online Pharmacy Consumer Protection Act of 2008 has historically required that the prescription of any controlled substance be predicated on an initial in-person assessment, limiting the breadth of telehealth possibilities. However, due to the declaration of a public health emergency secondary to COVID-19, medical providers are now allowed to issue controlled substances to patients they have not met in person provided that certain conditions are met (e.g., prescription is issued for a legitimate medical purpose by a practitioner acting professional practice,

communication is conducted using an audio-visual, real-time communication system). Similarly, CMS released a statement that allowed for patients to be seen directly in their homes, rather than having to travel to another location. The

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***The advent of COVID-19 has significantly changed the landscape of billing practice across private and public health insurance.***

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combination of these developments has allowed for the increasing adoption of telepharmacology in a direct-care model, where prescribers interface directly with patients and families in their homes. As this is an entirely novel clinical practice, data on its efficacy as well as best practice recommendations are desperately lacking. The American Academy of Child & Adolescent Psychiatry has a dedicated resource page with general guidance and recommendations for telepsychiatric practice during the age of COVID-19 that is updated with changes in federal guidelines (<https://www.aacap.org/coronavirus#telepsych>).

### Guidance frameworks for telehealth practice

Given the rise of telehealth services in the last decade, guidelines have been established to aid providers in the responsible provision of telehealth at the national level. The American Psychological Association set forth telepsychology guidelines in 2013 defining competency criteria, ethical and professional standards of care, informed consent and confidentiality considerations, safeguards for protected health data, and testing considerations. Similarly, practice guidelines for videoconferencing-based telemental health have also been set out by the ATA<sup>3</sup> as well as guidelines specific to children and adolescent telemental health.<sup>106</sup> Specific to the outbreak of COVID-19, experts in the field commented on implications for clinical psychological science in a publication by the American Psychological Association.<sup>107</sup>

Ideally, with the growth of telehealth research, empirically derived guidelines will be developed to support current guidelines based on expert consensus.

Some professional organizations have also set forth guidelines for specific interventions. For instance, PCIT International set forth initiatives to ensure the responsible delivery of PCIT via telehealth during COVID-19 including webinars, online training modules, and continuous discussion boards. Similarly, guidelines for telehealth with trauma-exposed youth have been specified for use within existing community outreach programs.<sup>108</sup>

Lastly, the Health Resources and Services Administration (HRSA) named two National Telehealth

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***Ideally, with the growth of telehealth research, empirically derived guidelines will be developed to support current guidelines based on expert consensus.***

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Centers of Excellence (COE) in 2017, the Medical University of South Carolina (MUSC) and the University of Mississippi Medical Center (UMMC). These centers support ongoing regional and national collaborations and proactive dissemination of telehealth resources. The use of these resources is

increasingly important as the field attempts to both expand the literature on telehealth and consolidate existing knowledge to improve systems of care to fit the needs of the changing behavioral health landscape.

In sum, considerable work has documented the promise of evidence-based treatment for externalizing and internalizing disorders via telehealth. While more work is needed on the validation of telehealth-based practices for assessment, the advancement of telehealth has exponentially risen since the outbreak of COVID-19. As the field moves towards novel systems of care, it will be important to expand on work examining factors that impact telehealth delivery at all levels (i.e., individuals, families, communities, systemic).

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