Recommendations/Guidance for Teleneuropsychology (TeleNP)
in Response to the COVID-19 Pandemic

Executive Summary

- The Inter Organizational Practice Committee (IOPC) convened a workgroup to provide rapid guidance about teleneuropsychology (TeleNP) in response to the COVID-19 pandemic.

- This document provides links to resources and established guidelines for telepsychology and offers specific recommendations about how extensions of these practices may apply to TeleNP.

- Existing literature indicates that TeleNP may offer reliable and valid assessments, but the clinician needs to consider many potential limitations, develop new informed consent procedures, report clearly how standard procedures have been modified and how these may limit diagnostic conclusions and recommendations.

- Specific concerns are raised about how limitations of TeleNP may impact assessment of older adults, younger children, individuals with limited access to technology platforms, and individuals with other individual, cultural, and/or linguistic factors. There are many circumstances where TeleNP is not feasible and/ or contraindicated given the complexities of patient characteristics and circumstances, and referral questions.

- Recommendations for billing TeleNP services are offered given the best available information as of 3/28/2020, with reservations that clinicians must verify procedures independently.

- Guidance about technical issues and "tips" for how to develop and implement TeleNP procedures are provided.

- The Recommendations/Guidance for TeleNP may be revised in the context of evolving circumstances. Additional material and updates will be continuously updated at IOPC.online.

Goals of the Teleneuropsychogy Recommendations and Guidance

An advocacy team was established by the Inter Organizational Practice Committee (IOPC)[1] to help provide rapid recommendations and guidance about the use of teleneuropsychology to the community of clinical neuropsychologists in response to the global novel coronavirus (COVID-19) pandemic. Teleneuropsychology (TeleNP) is defined here as the application of audiovisual technologies to enable remote clinical encounters with patients to conduct neuropsychological (NP) assessments. These guidance recommendations aim to consider how TeleNP currently aligns with existing practice standards and guidelines. It must first be acknowledged that, so far, the evidence base is limited (see updated

[1] The Inter Organizational Practice Committee (IOPC) is a committee of the practice chairs of the American Academy of Clinical Neuropsychology/ American Board of Clinical Neuropsychology, the National Academy of Neuropsychology, Division 40 of the American Psychological Association, the American Board of Professional Neuropsychology, and the American Psychological Association Services, Inc. (APAS) tasked with coordinating advocacy efforts and improving the practice climate for Neuropsychology.

references on the IOPC website). The available evidence supports concurrent validity, including robust within-person, across-modality correlations for a variety of tests, but for many others data are lacking. So far the evidence supporting application of TeleNP in pediatric populations is limited to pilot investigations, and there is currently sparse evidence validating use of TeleNP in under-represented minority or limited English proficient populations. The current crisis has caused an unprecedented disruption of the usual face-to-face interpersonal contact that characterizes the conventional NP exam. These recommendations necessarily extrapolate from existing evidence, in ways that are believed to be justified in some but not all clinical circumstances by the current crisis. It is hoped that this provisional guidance can serve as a framework for future formal TeleNP guidelines for use in general practice in the future. Given the rapid evolution of impacts associated with the COVID-19 pandemic and the active response of the clinical neuropsychology community to address these challenges, we expect to update these recommendations and guidance when appropriate. Please check for updates on IOPC.online.

Disclaimer

These recommendations are an effort to offer help to those providing neuropsychological assessment service under physical distancing constraints. They are not meant to supplant typical practices and guidelines under normal circumstances. That is, when it becomes safe and feasible to resume in-person services, these recommendations should not override existing practice standards. Further, no recommendation provided here should be followed if it contradicts federal, state, or local laws overseeing the practice of psychologists providing assessment services. It is assumed that all psychologists will adhere to respective federal and state rules and regulations, the American Psychological Association's Ethical Guidelines, and the Standards for Educational and Psychological Testing. The difference between accommodation and modification of tests should be understood, considered and, if applicable, reported. Consult the technical manual of tests used for further information. Finally, note that the information provided herein is considered temporary for use during the COVID-19 crisis with an unknown expiration date.

This guidance is intended to allow some continuity of care and services provided during this unprecedented time in cases where clinically appropriate. There are many circumstances where TeleNP is not feasible and/ or contraindicated given the complexities of patient characteristics and circumstances, and referral questions. Nothing in this document should be interpreted as a requirement to conduct assessment via Tele-NP. Telemedicine practices in psychology and neuropsychology are complex, and the evidence base for equivalence of cognitive and other interactional measures in a remote, online format compared to a traditional, face-to-face format is extremely nascent. This guidance represents the best, current, available knowledge and opinions of IOPC member organizations. IOPC.online aims to serve as a repository of continuously updated research and resources for Tele-NP practice.

Challenges Posed by the Current COVID-19 Pandemic

January 15th, 2020 marked the first case of COVID-19 in the US. At the writing of these recommendations (3/27/2020), there were more than a hundred thousand cases in the US spanning all 50 states, and the count continues to rise daily. This pandemic has forced the healthcare system and the regulatory

ecosystem in which we operate to adapt and evolve at a breathtaking pace. As Governors seek to flatten the curve and slow the pace of community transmission, increasing restrictions have been put into place including the prohibition of all non-essential business, and several states have mandated that businesses utilize telecommuting procedures to the maximum extent possible. This situation has thrust neuropsychologists into the challenging position of considering TeleNP as a practice option quickly, without the luxury of time to fully adapt their procedures to this new medium of patient interaction.

Kruse et. al. (2018)[2] observed that the top barriers to adopting and implementing telehealth are frequently technology-specific. TeleNP poses different challenges across the lifespan: older adults may lack familiarity with online platforms, while children and adolescents may be more attuned to navigating multiple platforms simultaneously. Those from a lower socioeconomic background may lack easy access to technological devices or high speed internet connections. Patients with lower educational levels may struggle to understand how to use the technology. Implementation of TeleNP with an interpreter for limited English proficient patient populations may exacerbate the typical challenges that exist with interpreted in-person assessment. There are situations in which the special challenges TeleNP presents may preclude testing altogether (e.g. children with significant developmental delay, cognitive impairment, and behavioral dysregulation). Furthermore, across clinical populations, the nature of the cognitive symptoms for which patients are seeking neuropsychological evaluation may be barriers to navigating remote technologies. Although the challenges are many, we believe they are neither insurmountable or prohibitive with respect to our ability to meet the needs of the current moment and ensure continuity of care for the people we serve.

Beyond Performance-Based Assessment: Breadth and Value of TeleNP

Neuropsychologists possess a wide range of competencies and knowledge that go beyond traditional face to face assessment procedures. As neuropsychologists consider providing services via telehealth, it is important to recognize the breadth of clinical services we can offer during the COVID-19 pandemic. In addition to TeleNP, practitioners can continue to offer intake assessments resulting in actionable treatment plans as well as resources to support patients and families. Neuropsychologists can additionally offer consultations for individuals previously seen, and provide support to patients and families who are struggling to cope with the current situation in the context of their developmental or acquired cognitive limitations. Such consultations might include assisting families homeschooling children with learning and developmental disabilities, assisting caregivers of patients with dementia and other memory disorders where social distancing instructions are quickly forgotten, and traditional psychotherapy as the training allows.

Gaining Competence in Telepsychology and Teleneuropsychology

Guidelines

At this time, there are no established guidelines for neuropsychologists practicing TeleNP. This will be a longer-term goal for our field. However, guidelines and best practices have been established for telepsychology and these should be considered foundational in the practice of TeleNP.

[2] Kruse C. S., Karem, P., Shifflett, K., Vegi, L., Ravi, K., & Brooks, M. (2018). Evaluating barriers to adopting telemedicine worldwide: A systematic review. *J Telemed Telecare, 24*(1):4–12.

- The American Psychology Association (APA) guidelines for the practice of telepsychology. https://www.apa.org/practice/guidelines/telepsychology

- The Association of State and Provincial Psychology Boards (ASPPB) Telepsychology Task Force Principles and Standards https://cdn.ymaws.com/www.asppb.net/resource/resmgr/PSYPACT_Docs/ASPPB_TELEPSYCH_PRINCIPLES.pdf

- The American Psychiatric Association and American Telemedicine Association have also published best practices for Best Practices in Videoconferencing-Based Telemental Health (April 2018).

Training Resources

Webinars for developing competence in telepsychology are currently available and should be considered foundational training for developing competence in teleNP. Through telepsychology training, practitioners will develop competencies in establishing telehealth platforms, regulatory issues such as HIPAA compliance, ethical issues including basic informed consent and safety procedures for vulnerable patients, addressing technical issues with patients, and social pragmatics strategies to communicate empathy over a video screen.

Training Resources for Telepsychology

- APA has a telepsychology course now being offered free of charge https://apa.content.online/catalog/product.xhtml?eid=15132

- The Trust, A Practice Guide to Providing Telepsychology with Minimal Risk. https://parma.trustinsurance.com/Workshops-Webinars/Free-CE/A-Practical-Guide-to-Providing-Telepsychology-with-Minimal-Risk

- The National Register: A Practice Guide to Providing Telepsychology with Minimal Risk https://www.nationalregister.org/npc-telepsych-video/

- Many state psychological associations have workshops and courses which may be available in webinar/podcast formats

Training Resources for TeleNP

- Please refer to the IOPC.online for continuously updated links to specific webinars and podcasts addressing TeleNP. The IOPC is currently partnering with the Trust and the American Professional Agency to produce TeleNP specific risk management webinars.

- To our knowledge there are no formal TeleNP trainings offered for application with culturally and linguistically diverse as well as pediatric populations at this time. As these become available we will provide links on IOPC.online.

In the future, competency in TeleNP will likely require that technology and assessment strategies via telehealth platforms be woven into all levels of education and practice, including professionals beyond their postdoctoral training. Specific training will be necessary to fully implement TeleNP in special populations such as pediatric as well as culturally and linguistically diverse groups.

Licensure and Billing Issues

The IOPC has been leveraging its established network of connections to vigorously advocate for expanded coverage of TeleNP during the current COVID-19 crisis with both public and private insurers. Updates will be made available on IOPC.online. Please check back regularly. It is the responsibility of the individual clinician to determine if an insurer they are billing covers TeleNP. This information does not guarantee payment from insurance carriers.

In terms of License to Practice across state lines, a temporary lifting of these restrictions was put in place in many states during the current COVID 19 crisis. Practitioners should visit the boards governing psychology in any state in which they are not licensed to clarify the rules for temporary or telehealth practice. Additional efforts are in process to ease the limitations of clinical practice across state lines. Readers are encouraged to learn more about the Psychology Interjurisdictional Compact (PSYPACT) that will allow psychologists licensed in one state to practice in other participating states. Other possible avenues for inter-state licensing are being considered.

It is important to check with individual insurers. The following sections regarding Medicare, Medicaid, and private insurers reflect information that is available at the time of this document.

Medicare

Medicare allows the following mental and behavioral health services to be provided via telehealth. APA is advocating at the federal and state level to allow psychological and neuropsychological testing via telehealth during the crisis. Updates will be available on IOPC.online.

Interview and intervention codes:

- 90791: Psychiatric diagnostic interview
- 96116: Neurobehavioral status examination (*CPT® code 96121 is currently not listed on the CMS telehealth list. APA believes that is an oversight and is actively seeking clarification.* Updates will be available on IOPC.online.*)*
- 96156: Health and behavior assessment or reassessment
- 90832 -34 -37: Individual psychotherapy
- 90785: Psychotherapy with interactive complexity
- 90846 -47: Family psychotherapy
- 90839, -40: Psychotherapy for crisis

- 90845: Psychoanalysis
- 95158 -59: Health and behavior intervention, individual
- 96164 -65: Health and behavior intervention, group
- 96167 -68: Health and behavior intervention, family with patient present
- 96170 -71: Health and behavior intervention, family without patient present

Psychologists can also bill for brief communications (known as e-Visits) with established Medicare patients. E-Visits involve a brief communication, typically initiated by the patient, and can be furnished in any location or geographic area. Additional information on these new G codes can be found at https://www.apaservices.org/practice/reimbursement/health-codes/online-assessment-management-services.

- G2061**:** Qualified nonphysician healthcare professional online assessment and management, for an established patient, for up to seven days, cumulative time during the seven days: 5-10 minutes.
    - G2062**:** cumulative time of 11-20 minutes during the seven days.
    - G2063**:** cumulative time of 21 or more minutes during the seven days.

All services provided through telehealth technology will need to include the appropriate place of service/location and other modifier codes:

- Place of Service/Location Codes: -02 (Telehealth)

The APA has provided the following recommendation for use of available CPT codes when billing Medicare during the pandemic. Updates will be available on IOPC.online.

- If the case is a DSM diagnosis case (e.g., psychiatric), use 90791-psychiatric diagnostic evaluation code. Please note that this is an untimed code. Those patients would then return at a later date to obtain their *Test Administration and Scoring* and *Testing Evaluation* services in a face-to-face situation.

- If the case is an "ICD" diagnosis case involving a *medical condition*, conduct a health behavior assessment and use code 96156. Please note that this is an untimed code and includes a health focused clinical interview, behavioral observations, and clinical decision making. This is NOT a testing code. Information on billing and coding for the new Health Behavior Assessment and Intervention codes can be found at https://www.apaservices.org/practice/reimbursement/billing/new-codes.

- If the case is an "ICD" diagnosis case involving a *neurological condition*, conduct the neurobehavioral status exam and use 96116. Those patients would then return at a later date to obtain their *Test Administration and Scoring* and *Testing Evaluation* services in a face-to-face situation. Note that the 1st hour (96116) is approved but at this point the add on code (96121) has yet to be approved.

Private Insurers and State Medicaid Carriers

Many private insurers and state Medicaid providers have indicated their intent to open up all of the neuropsychology CPT codes to be reimbursed via telehealth. We are following this closely and will update IOPC.online as details become available.

- 96116/121: Neurobehavioral status exam is completed prior to the administration of neuropsychological testing. Consider using 96116/121 to determine the potential utility of doing additional testing using TeleNP, both in terms of the technical issues and the patient characteristics.

- 96132/33: Neuropsychological testing evaluation services by physician or other qualified healthcare professional, including integration of patient data, interpretation of standardized test results and clinical data, clinical decision making, treatment planning and report and interactive feedback.

- 96136/37/38/39: Psychological or neuropsychological test administration by professional (36/37) or technician (38/39).

- 96146: Computerized psychological/neuropsychological testing. This is a single unit code used for tests administered via a computer. This does not mean TeleNP in general, but indicates a test was given in a computer-based format (e.g., computer administration of the WCST, MMPI-2RF, etc).

- Feedback - See 96132/33

There is much variation in which modifiers to use, so please check with your payer.

CARES ACT Impact on Reimbursement:

On March 27, 2020, Congress passed the Coronavirus Aid, Relief, and Economic Security Act (H.R.748). The CARES Act signals strong support for telehealth and recognition that expanding access to telehealth is critical to defeating COVID-19. Some provisions that may impact reimbursement include:

- Section 3701. Health Savings Accounts for Telehealth Services Allows a high-deductible health plan (HDHP) with a health savings account (HSA) to cover telehealth services prior to a patient reaching the deductible.

- Section 3703. Expanding Medicare Telehealth Flexibilities
    - Removes the COVID-19 Medicare telehealth waiver requirement that a provider must have seen the patient within the last 3 years.
    - Removes the definition of telehealth under the COVID-19 waiver as real-time audio/visual technology, *providing the Secretary of HHS additional authority to give flexibility* to providers to use audio-only telehealth. It is important to note that this does

not mean that phone only services are allowed yet by CMS. APA has been advocating for phone only but this has not yet occurred at the CMS level yet.

- Provides the Secretary with expanded authority to waive *additional* 1834(m) statutory restrictions on Medicare telehealth services. This is critical to ongoing advocacy efforts. Additional Medicare changes will be continuously updated on IOPC.online.

Informed Consent

APA has developed an Informed consent checklist for telepsychological services. The Trust and the American Professional Agency are developing specific TeleNP risk management webinars and documents in collaboration with the IOPC. These will be posted on their sites as well as the IOPC.online as soon as they are available. The issues in consent for telepsychology should be considered foundational for TeleNP informed consent practices. TeleNP requires additional consent regarding issues outlined below.

- It should be explained clearly and in language the patient or their representatives understand, that:
  - Standard test administration will be modified, and this may affect results in ways that are so far unknown. This has the potential to reduce confidence in the diagnostic conclusions and recommendations for treatment.
  - Involvement of a third-party in the TeleNP session (caregiver, guardian, parent, facilitator) may add additional concerns about the impact of observation on performance.
  - Error may be compounded when TeleNP procedures are used with people who come from culturally and linguistically diverse populations, require an interpreter during TeleNP, or have limited experience/comfort with the technology being employed.
  - There will be a loss of some qualitative data usually obtained during an in-person exam, and this loss may reduce the richness of the clinical data and further limit conclusions and recommendations.
  - TeleNP may pose additional risks to privacy and confidentiality.

- TeleNP consent forms should always be available in the language of your patient.

- Refer to the Special Populations section below for further consideration of factors affecting individuals' ability to participate meaningfully in the TeleNP exam.

Interviewing and Feedback in Teleneuropsychology

Conducting interviews and feedback through TeleNP, like conducting psychotherapy using telehealth methods, should aim to maximize simulation of standard, in-person practice. Use of the "Gallery" view may help engage, and enable the clinician to assess the reactions of multiple participants during interviewing and feedback processes. When private interviews or feedback conversations with specific

family members or caregivers are clinically indicated, some participants can be asked to temporarily sign off or leave the room.

Screen-sharing features may help illustrate to patients and caregivers specific test results during feedback sessions, or share with the group visualizations in the form of charts or other helpful graphical explanatory tools.

In the era of social distancing, key stakeholders in a patient's family normally included in an interview or feedback session may be in a different location. For example in a dementia evaluation, there may be adult children from several households that need to be sent video conferencing instructions in advance of the session. On a positive note, family stakeholders living out of state that might not have been able to be present for an in-person interview or feedback session due to travel limitations now have the opportunity to participate in the care of their loved one.

The typical social communication feedback loop that provides practitioners and patients with rich data from body language, facial expression, and tone of voice is often muted over telehealth platforms. Anxious and or cognitively limited patients may experience this feedback as even more difficult to access. It is important to talk about this with patients and families at the beginning of interviews and feedback sessions and discuss ways that participants might address the issue.

Development of clinical rapport over telehealth platforms may vary by generation, with adolescents and children feeling the greatest level of comfort with the technology. Older adults, individuals from low SES populations with less experience with technology, and individuals for whom the technology navigation tools may be in a second or third language, may require considerable emotional reassurance as well as technical assistance as they interact with a virtual doctors' office. Normalizing the difficulty with new technology is particularly important as we meet patients for the first time who otherwise might feel they are being judged as 'cognitively incapable' due to their difficulty with the telehealth technology. It is important that 'pre-interview' technology checks and run throughs be scheduled with support staff if possible, or in solo private practice substantial extra time for technology adjustments be built into the initial interview session.

Special considerations may be needed with unique patient populations such as those from linguistically and culturally diverse groups. There may be potential higher levels of distrust associated with compilation of personal information/data. There may also be amplified concerns about how private information may be used to identify an examinee who needs to protect their personal or family's privacy. It is essential to consider legal vs. illegal resident status in a climate where there may be increased risk of adverse legal actions (e.g., deportation). Interviewing should be conducted by a linguistically and culturally competent neuropsychologist consistent with APA Standards for Educational and Psychological Testing.

Reporting Results of TeleNP Assessment Limitations

Reports of neuropsychological assessments based on TeleNP should include clear statements about the limitations posed by non-standard administration and the potential impact this might have on diagnostic conclusions and treatment recommendations. For example:

"Due to circumstances that prevent in-person clinical visits, this assessment was conducted using telehealth methods (including remote audiovisual presentation of test instructions and test stimuli, and remote observation of performance via audiovisual technologies). The standard administration of these procedures involves in-person, face-to-face methods. The impact of applying non-standard administration methods has been evaluated only in part by scientific research. While every effort was made to simulate standard assessment practices, the diagnostic conclusions and recommendations for treatment provided in this report are being advanced with these reservations."

The same documentation of testing limitations extends to the use of interpreters, patient's educational background, computer literacy, internet connectivity, and other factors that may interact with and further limit the comparability of TeleNP with standard assessment practice.

Reports of neuropsychological assessments based on TeleNP should include specific descriptions of the platforms used and how the tests were adapted or modified, including specific administration modifications.

Telehealth and Teleneuropsychology Platforms

Choosing a Platform

Under normal circumstances, telehealth platforms must be HIPAA-compliant, have an established Business Associate Agreement (BAA), and follow any additional legal and regulatory requirements that are relevant in your state and institution.[3] During the Covid-19 pandemic, HIPPA regulations have been relaxed in many circumstances, but we recommend still using a HIPAA-compliant platform if possible[4]. (footnote to our FAQs The IOPC website has links to state-by-state information that may be helpful. If in doubt, check with your state board of psychology, and your institutional compliance, legal affairs, and/or risk management offices.

EMR Based Platforms

There are platforms "built in" to many existing institutional electronic medical records (EMRs), and some platforms use third-party or free-standing platforms. The methods built into existing EMRs have the general advantage of assuring compliance with health system regulations. Given that large health systems were mandated to deploy EMRs in 2014 as part of the Patient Protection and Affordable Care Act, these are widespread. Major platforms include EPIC, Cerner, and the VA system (which includes some proprietary systems, but also has contracted with Cerner for some of its hospitals).

[3] See https://www.hipaajournal.com/hipaa-guidelines-on-telemedicine/
[4] See https://www.apaservices.org/practice/news/psychologists-questions-covid-19

Implementation of EPIC systems varies by site, but certain features are likely available at all EPIC sites. For example, UCLA's EPIC system uses "MyChart" to enable two-way audiovisual communication with patients in a HIPAA-compliant secure portal. Consent processes, billing, and smart-phrases to document telehealth procedures have been developed although these do not automatically propagate to all EPIC sites. Cerner has a "Virtual Health" platform that supports remote access and patient care in rural areas. They have a site dedicated to COVID-19 response (https://www.cerner.com/pages/covid-19). There is a Patient Observer function that is recommended for remote interactions using telehealth audiovisual technology.

Third-Party Telecommunications Platforms

Third-party telecommunication platforms may be the only option for many practitioners who are not part of a large health system and/or do not have access to one of the large EMR platforms. These platforms may have features superior to those provided by the large EMR platforms, but clinicians must be vigilant to be sure the platform they choose is compliant with both state and federal regulations.

There are a number of telehealth platforms currently in use, such as Zoom, Doxy.Me, VSee, Theranest, and SimplePractice. Zoom is among the most widely used current platforms for teleconferencing, and in some health systems it has been approved for clinical interactions and is considered HIPAA-compliant (this may apply only for the Professional version; the free version of Zoom does not include a Business Associate Agreement (BAA) and only allows unlimited time with one-on-one use. Zoom's free multi-user conference mode is limited to 40 minutes). Zoom enables multiple participants so it works better for patient-trainee-supervisor interactions than some other platforms. Zoom includes a number of features that are helpful in conducting TeleNP assessments (and these ideas may be adapted to other platforms). A disadvantage with Zoom and some other telehealth platforms is that these require the patient to download an app. Some others (e.g., Doxy.Me) have an advantage in that patients can simply check in by clicking on a Virtual Waiting Room button that is embedded onto a website, requiring no downloads. Some telehealth platforms do not have user interfaces or capabilities to switch to different language modes.

We strongly recommend choosing a telehealth platform with a user interface in the language of your patient. It is important to familiarize yourself with the features in advance of any TeleNP sessions.

Technical Specifications

Carefully consider technical specifications prior to conducting TeleNP exams. A comprehensive guide to video platforms and technological standards is available through the National Telehealth Technology Assessment Resource Center at:
http://telehealthtechnology.org/toolkit/clinicians-guide-to-video-platforms/ and standards for audio/video can be found here:
http://telehealthtechnology.org/toolkit/desktop-video-applications-standards/.

- Bandwidth assessment: All transmissions, and particularly video transmissions, are heavily impacted by bandwidth issues. It is important to test your clinician-side internet speed, connections.
    - Two-way live video services through consumer devices should have a bandwidth of at least 384 Kbps in both downlink and uplink directions. Higher bandwidth speeds may be needed for specialty services (ATA, 2014).
    - The FCC recommends internet access at varying speeds depending on the practice setting. A list of minimum speeds is provided here: https://www.healthit.gov/faq/what-recommended-bandwidth-different-types-health-care-providers). Bandwidth considerations should include: number of users, user locations, real-time transactions, hardware, and storage technology.
    - For full functionality in healthcare applications, the FCC recommends 2 Mbps for SD videoconferencing and 10 Mbps for HD videoconferencing (FCC, 2010).
    - The FCC provides on their website mapping of broadband availability nationwide: https://www.fcc.gov/health/maps.
    - Both patients and providers should pre-test the connection before starting the session to ensure the link is of sufficient quality for the interaction (ATA, 2014)
    - Whenever possible, each party should use the most reliable connection method to access the internet (ATA, 2014).
    - The platform should be able to adapt to changing bandwidth environments without losing the connection (ATA, 2014).

- Managing patient-side connectivity: It is recommended that patients use a private wifi or hard-wired connection when engaging in TeleNP at home rather than working on a public wifi.

- Equipment specifications:
    - To the extent possible, both the professional and patient site should utilize high quality video cameras, audio devices, and related data capture/transmission equipment appropriate for the visit (ATA, 2014).
    - Devices should have up-to-date security software per manufacturer's recommendations as well as device management software (ATA, 2014).
    - All audiovisual data transmission should occur through the use of encryption (at least on the side of the neuropsychologist) that meets recognized standards (ATA, 2014).
    - Professionals should be familiar with all devices and software that they are utilizing in providing care over distances, and have taken any required specialty training, prior to providing TeleNP (ATA, 2014).
    - The National Telehealth Technology Assessment Resource Center has a resource page including information about innovative technologies as well as technical assistance for selecting appropriate technologies at: http://telehealthtechnology.org/
    - Display options: consider both your experience and that of your patient. Note that Pearson recommends a display size of at least 9.75" diagonal on the patient side.

Concrete Strategies for Using a Teleneuropsychology Platform/Walk Through of a Virtual Visit

Clear, well thought out strategies for seeing patients via telehealth in the context of psychotherapy have been worked out and should be considered foundational in setting up a virtual neuropsychology office visit. The APA Telepsychology Checklist (https://www.apa.org/practice/programs/dmhi/research-information/telepsychological-services-checklist) provides a solid starting point. Here are key points to consider in ushering patients through a TeleNP session:

Prior to Sessions

- Screen patients to make sure TeleNP is appropriate given their clinical and cognitive status. This is particularly important in patient populations referred for neuropsychological assessment with sensory, cognitive and behavioral limitations that interact directly with the utility of TeleNP. It is important to recognize that TeleNP may not be appropriate for many patients.

- Determine if your exam will require an on-site (with patient) facilitator, and clearly define the role of that facilitator in advance of the session. This may require an in depth conversation with the facilitator regarding boundaries between facilitating interacting with the TeleNP platform vs. 'hinting' or 'helping' to improve performance. Make sure you obtain appropriate consents and have a plan to manage their interactions with the patient and the technology during the assessment.

- As TeleNP may enable more access to a linguistically and culturally competent neuropsychologist within a state or across state lines it is strongly recommended that a referral is made to one of these providers before interpreters are utilized given the known limitations inherent in interpreted exams. Many states have relaxed licensure requirements for telehealth during the pandemic. Prior to referring, make sure the provider is licensed (or license requirements have been waived) in both the state where the patient will be and the state where the provider will be during the Tele-NP session.

- Anticipate variable levels of access to appropriate equipment, wireless service (e.g., data/minutes limitations), and software. Providers should be cautious about assuming patients have access. If patients do not have access, assist the patient (and facilitator if relevant) in identifying a suitable device for the evaluation including borrowing a device and/or leveraging hospital/community resources to increase access. In the context of social distancing during the pandemic, borrowing devices may be impossible. If the patient is expected to view stimuli projected from a webcam, we strongly recommend against use of smartphones as compared to computer screens.

- Clearly define the need for a private, quiet, distraction free space on the patient end to conduct the session. Be cautious about assuming patients have access to such a space. This may require negotiating with facilitators to agree to turn off household TVs, mute cell phones, remove pets

from a room, take siblings or other family members out of the house for a walk (as allowed with stay at home orders/ quarantines) or other arrangements.

- Conduct a pre-TeleNP session to share information about the structure of the upcoming session(s), begin the informed consent process (see above for discussion of DocHub or DocuSign), review billing policies, provide links to intake forms, collateral release and contact forms, and arrange back-up plans for communication of the TeleNP session is disrupted for technical reasons.

Beginning a Session

- At the start of any virtual visit, disable recording on the telehealth platform as recording poses challenges to test security, and is specifically prohibited by some vendors. Zoom has an option in "Settings" to disable recording options.

- Confirm identity of the patient, review the accuracy of call-back numbers, discuss privacy issues and prohibitions against recording, and turn off other apps/notifications.

- For pediatric populations, begin and end sessions with the parent/guardian in the room. Remind the parent/guardian that they need to remain in the house, particularly if the patient is a minor or requires onsite adult supervision. Obtain the best phone number to reach the parent/guardian at the beginning of the session in the event you need to make contact during the video session. Make sure the parent/guardian also has your best contact number.

- Assist patient and/or facilitator to scan the room for potentially distracting stimuli. Headphones connected to the videoconferencing device may assist in eliminating distractions. Ask patients to "hide self view" on the screen, so that they are not distracted by seeing their own face during testing.

- Make use of the "Breakout Rooms" feature so that patients can be in a "waiting room" while you prepare stimuli for presentation, or enabling trainees to have discussion separately with their supervisors.

- Consenting patients and facilitators on the limitations of TeleNP (see consent section above) is critical. Even if consent forms have been signed in advance during a pre-session with office staff, limitations of TeleNP should be revisited in depth at the beginning of the TeleNP session and again during the feedback session.

- Ensure the patient has all needed materials to participate in assessment, if applicable. If materials have been provided, instruct the patient and/or facilitators not to open or view materials until instructed to do so during the session. Consider including a self-addressed envelope with pre-paid postage so that materials may be returned easily and promptly.

During the Testing Process

- Track and document the following throughout:
    - Technological problems such as disconnection, video and/or audio outage, lag in video, etc.
    - Environmental interruptions and distractions including sounds, family members or pets walking in, etc.
    - Specific patient characteristics that make it difficult to engage with the TeleNP testing experience (e.g., sensory, motor, language etc.)

- Utilize the "Share Screen" feature so that you can present higher quality images of test stimulus materials, compared to for example holding stimulus materials up to the camera. Many test companies are making stimuli available in digital form for this purpose.

- The logistics of TeleNP test stimuli presentation may be facilitated by the use of specific equipment (i.e., use of wall mount monitor stands to hold tablet or laptop instead of holding booklets on a clipboard).

- Show the patient or facilitator in how to use the Shared Screen Remote Control transfer so that you can give control to the examinee when required for tests that are usually administered on a computer in the clinic. Note that examiners must be alert and return control to the examiner's computer as soon as the examinee has completed the test.

- Managing the patient-side work product: You will need to create methods to have the patient or facilitators "help" you perform certain examiner functions. For example, usually the Examiner will take patient's drawings away after the patient has produced them so that they are not visible (e.g., Visual Reproductions or Rey-Osterrieth Complex Figure Test). Patients can at the beginning of the session set up a folder or envelope into which you can observe them placing these products immediately upon completion. At the beginning of the testing session, clearly explain these procedures to the patient/ facilitator.

- Under no circumstances should you leave your computer unattended while an examinee has control over your computer. This could both incur HIPAA violations and/or pose a security risk including access to your personal or business files or data. Examiners should check with their local compliance experts to assure security and privacy guidelines are being followed.Assist the patient in arranging the camera in an optimal position to maximize viewing of the patient in order to observe the patient's work and make behavioral observations. This is likely to be limited compared to in-person assessment.

- Multi-screen options: if feasible, use a multi-screen option on the clinician side to facilitate visualization and separation of patient-facing and clinician-facing content. This helps with optimal efficiency in test administration, which is critical in certain populations such as pediatrics due to distractibility.

- At the end of the session, ask the patient to call parent/caregiver back to the room to conclude the session, if applicable. Call the parent/guardian by phone if needed.

IOPC.online has additional strategies for managing technical issues of TeleNP testing sessions.

Test Selection

The Standards for Educational and Psychological Testing (2014 Edition) specifically covers test construction, evaluation, documentation, fairness in testing, and testing applications. All of these apply to TeleNP as they do to standard assessment. The APA Multicultural Guidelines (2017) likewise apply to TeleNP as they do to standard assessment. For example, specific consideration of an examinee's primary language as well as other important cultural factors such as level of education, acculturation, country of origin, SES, etc. is important when considering test selection for TeleNP as these factors already pose challenges in traditional, face-to-face testing that is predominantly standardized with English-language samples.

Literature Review

The current literature on TeleNP, comprising 22 individual studies and 3 reviews, is compiled on the IOPC website (see https://iopc.squarespace.com/teleneuropsychology-research). A useful table originally compiled by a VA workgroup in 2018 further shows specific tests that have been studied in TeleNP dementia evaluations, including: The Boston Naming Test, Brief Visual Memory Test - Revised; California Verbal Learning Test - Second Edition; Clock Drawing Test; Delis-Kaplan Executive Function System (Proverbs Test); Digit Span; Hopkins Verbal Learning Test-Revised; Independent Living Scales (Health and Safety Subtest); Mattis Dementia Rating Scale (Memory I subtest); Modified Rey-Osterrieth Complex Figure Test (Copy, Recall and recognition); Oral Trail Making Test, Parts A and B; Repeatable Battery for the Assessment of Neuropsychological Status (Forms A and B); Rey-Osterrieth Complex Figure Test (Copy, 3" Delay); Trail Making Test, parts A and B; Test of Practical Judgement; Verbal Fluency (Semantic, Phonemic Fluency); Wechsler Memory Scale - Fourth Edition (Logical Memory I, II; Adult and Older Forms).

Familiar Tests Adapted to TeleNP

The IOPC website summary highlights that multiple familiar tests have been used successfully in a TeleNP format. The Brearly et al (2017) systematic review and meta-analysis summarized 12 studies over an age range of 34 to 88 years. The overall difference between in-clinic and TeleNP administration was small (Hedges g = -.03), an effect size that was not statistically significant and given that this reflects a difference of 1/33rd standard deviation (SD), it would not be considered clinically significant. But it should be recognized this is a summary statistic across multiple studies and methods. Given that clinical neuropsychology involves interpreting individual test results and their patterns, the results should be seen as encouraging but not adequate to generalize to the practice of TeleNP broadly. Instead, the findings may be seen as encouraging, highlighting certain moderating factors that need to be considered, and pointing to certain kinds of tests that are likely to be more easily used in TeleNP than others. Age and internet connection speed were key moderators, with results being less consistent in

patients older than age 75 and on slower connections. The TeleNP scores for untimed tasks and those allowing for repetition were within 1/10th standard deviation (SD) of in-clinic scores. Results on verbal tests including digit span, verbal fluency, and verbal learning and memory test scores were particularly close to in-clinic findings. Boston Naming Test scores were 1/10th SD below in-clinic scores. Tests involving a motor component were considered too heterogeneous to interpret.

Web-Based and Computerized Testing Platforms

Web-based and computerized testing platforms have been considered as an alternative to administering conventional paper and pencil tests using telehealth methods. Fortunately, we possess specific guidelines for computerized neuropsychological assessment devices (please refer to *Computerized Neuropsychological Assessment Devices: Joint Position Paper of the American Academy of Clinical Neuropsychology and the National Academy of Neuropsychology* (Bauer et al., 2012)).

Conceptually, it would seem reasonable to consider computerized or web-based assessments to assist with remote testing, when our patients are interacting via their own computer. Unfortunately, most of the currently deployed computerized and web-based tests have not undergone the kinds of normative and validation studies that have been used for conventional in-person assessments. Moreover, some companies conducted normative or validation studies using in-laboratory versions of the computer tests rather than remote administration, so these studies are not clearly relevant to their web-based versions. With downloadable tests (those that run on local systems), it may be difficult or not feasible to have patients installing this software on their own computers, and evaluating the security risks of this practice may be daunting. The web-based platforms may appear to resolve some of these issues and vendors of web-based products may provide reassurance that their programs are HIPAA compliant, but the potential risks to privacy and security ultimately fall on the clinician. The existing web-based systems also face the challenge of not necessarily incorporating full evaluation of patient-side system characteristics, and given the findings of the Brearly et al (2017) meta-analysis and other findings showing possible clinically significant discrepancies between scores on a fixed battery depending only on the computer software version (e.g., Roberson et al., 2018)[5]

The Disruptive Technology Initiative of the American Academy of Clinical Neuropsychology recently surveyed leading vendors of applications for TeleNP assessment, and presented results of this survey at the 2019 Annual Meeting in Chicago, IL. The slides from this presentation are available on IOPC.online. Overall, the findings from this survey revealed some promising results but generally less persuasive evidence of robust normative standards and validation data to support their immediate adoption for clinical NP in the United States. Some vendors have received "FDA Approval" for their products but it should be recognized that the standards for FDA clearance of devices is *not* the same as it is for pharmaceutical products, and the device clearance process does *not* require rigorous clinical validation of the devices (the focus is more on "comparability" to other products, and safety). The following products were identified, and for most there was not sufficient evidence available to provide a

[5] Roberson, B., Arrieux, J., Russell, K., & Cole, W. (2018). Differences in Reaction Time Latency Error on the ANAM4 Across Three Computer Platforms. Archives of Physical Medicine and Rehabilitation, 99(11), e160.

recommendation that they be used to replace conventional neuropsychological assessment, based on the criteria outlined by Bauer et al (2012): Amsterdam Cognition Scan, BrainCheck, CANTAB Mobile and CANTAB insight, CNS Vital Signs, CogniFit, Cognivue , Cogstate, Digital MOCA, Food for the Brain, Lumosity NeuroCognitiv Performance Test, NeuroTrax, Philips' IntelliSpace Cognition, TabCat, TestMyBrain. It currently remains up to clinicians to consider carefully the relevant evidence and make determinations about whether any of these tools may be useful in clinical exams. Unfortunately, there is little regulation of the advertising and promotion of these products, so clinicians should be wary of claims made on vendor websites and investigate the demonstrated validity of the product themselves. The caveats noted above, regarding the capacity to observe the patient during the examination, remain important to consider before using these products to draw clinical conclusions.

Addressing/Acknowledging Threats to Test Validity with TeleNP

It is important to recognize that TeleNP methods pose limitations on our capacity to observe and document behavior during the administration of any given test in the same way that we can in person. These limitations may be exacerbated with culturally/ linguistically diverse patients.

In response to the current crisis, some test publishers have issues permissions or statements of "no objection"[6] to use their materials in non-standard administration formats, but these continue to place responsibility on the clinician to assure the validity of assessment and integrity of the test materials. For example, the WPS Statement indicates: "All of our current individually-administered assessments ("performance tests") were standardized using in-person administration. For these tests teleassessment methods would be considered an adaptation of the standardized administration and should be taken into consideration when reporting and interpreting the results of a remote administration. The Pearson letter further states: "Before test administration, the qualified professional must obtain documented agreement from the examinee that the session will not be recorded, reproduced or published, and that copies of the materials will not be made. Further, the qualified professional may not utilize recording capabilities to record live test administrations."

Modification of Familiar Tests for Telehealth Platforms

There is not sufficient evidence to provide clear guidance about how to modify most specific tests for TeleNP, but the general guidance is to simulate in-person administration as closely as possible. Some of the individual articles listed on IOPC.online describe how specific tests were administered in research studies that obtained comparable results to in-person assessment.

Because there are insufficient data to suggest any systematic modifications of norms used to interpret TeleNP test results differently, current recommendations are to rely on normative and validity data obtained using the standard assessments, with clear documentation in the report, including a note in any test-score summary sheet that lists reference scores, percentiles, or other interpretive comments, that administration was non-standard and that the non-standard administration is likely to result in

[6] See Pearson Clinical Assessment letter of 3/20/2020 (in Appendix); WPS Statement on teleassessment, (in Appendix)

measurement error. Active studies regarding reliability, validity, and normative considerations are warranted for future regular use of TeleNP practice.

Test Vendor Resources

Major test vendors are actively in the process of facilitating access to their test materials and the appropriate application of TeleNP during the COVID-19 pandemic. A listing of tests available from MHS, PAR, Pearson, and WPS on their online assessment platforms is included as an Appendix.[7]

Managing In-Person Exams When Necessary and Feasible When There is Concern About COVID-19 Exposure

While many health systems and individual practitioners have stopped or severely limited their conduct of in-person neuropsychological examinations, there are exceptions when assessments must occur in a face-to-face fashion (e.g. presurgical evaluation). It is important for private practitioners to consider risk management issues prior to deciding to proceed with in-person assessments if they are practicing in a state that has not yet instituted strict work from home guidelines, particularly if directing employees and psychometrists to do so. Following and documenting appropriate screening for patients, as well as staff, (see below) is crucial to protect patients, staff, and your practice from the effects of exposure. Neuropsychologists who are also employers should seek legal guidance regarding specific documentation of screening and other activities prior to allowing staff to have contact with Additionally, we also need to anticipate how assessments may be modified in the future, when strict work from home orders or recommendations may be lifted but containment and mitigation strategies may persist.

In some health systems, neuropsychologists continue to be available and are providing services involving direct patient contact if necessary for emergency procedures or in other exigent circumstances. It is imperative that neuropsychologists maintain strict social distancing, exposure management, and disinfection practices as patients are being seen. Suggested practices include:

- Screening for illness, contacts with people infected by COVID-19, and/or travel within the prior 14 days to any area impacted by coronavirus (this now includes all 50 states of the United States, so questions about travel may not help screening at this point; checking with CDC and your own state and county officials may be important to get updated guidance).

- Personal protective equipment (masks, gloves) should be worn by both the examiner and the patient, and all current safety guidelines from the CDC and your practice location should be followed. If personal protective equipment is not available, the neuropsychologist should weigh the risks and benefits before deciding whether to evaluate using only behavioral precautions.

- Methods to increase distance and manage patient-clinician contacts:

[7] Special thanks to Kathryn Dunham, PsyD, ABPP, Psychological Assessment Department at the Mental Health Center of Denver, for compiling these lists.

    - Unstandardized administration modifications should be considered to maintain appropriate social distancing guidelines. Arrange testing room chairs, tables to maximize distance. Conduct as much of the exam as possible more than 6 feet from the participant
    - Choose tests that can be used at a distance
    - Use non-manipulatives when possible
    - Clean the room and materials in advance of the appointment
    - Use screen-based stimuli (that can be more easily cleaned)
    - iPad separated testing (e.g., Q-interactive)
    - Placing used (i.e., exposed) materials to a safe location in the room for disinfection later

- Disinfecting materials (e.g., cleansers, laminating materials to make these easier to use): Pearson Assessments has tips for keeping materials clean here: https://www.pearsonassessments.com/content/dam/school/global/clinical/us/assets/telepractice/disinfecting-test-materials.pdf (see Appendix). These include some practical tips about how to administer tests without patients touching materials, ensuring patients do not have latex allergies prior to offering gloves, and keeping resealable plastic bags on hand to store "dirty" materials that must be disinfected prior to reuse.

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Appendix

Not for Profit and Commercial Test Vendor Resources

- MHS Assessments (MHS): Currently lists a variety of online measures (19 for child, 6 for adult and geriatric assessments. See https://mhs.com/clinical-assessments/ for more details.

- Pearson Assessments: Pearson Assessments is offering webinars and indicates they will soon be supplementing materials already available on Q-global, including digital manuals, stimulus books. See https://www.pearsonassessments.com/professional-assessments/digital-solutions/telepractice.html?utm_medium=email&utm_source=TelepracticeNo1_LRNAS23826&utm_campaign=7010N000000PSb4&cmpid=7010N000000PSb4&mc_sid=153533527

- Psychological Assessment Resources (PAR): PAR has its PARiConnect 3.0 platform, designed specifically for online assessment. The catalog of tests available currently lists 37 instruments, most of which are questionnaires. See https://www.parinc.com/What-is-PARiConnect for more details.

- Western Psychological Services (WPS): WPS offers an online evaluation system with 12 questionnaires. See https://platform.wpspublish.com/account/login.

- NIH Toolbox; see http://www.healthmeasures.net/images/nihtoolbox/NIH_Toolbox_brochure_June_2017.pdf; NIH Toolbox® is a multi-dimensional set of brief, royalty-free measures to assess cognitive, sensory, motor and emotional function that can be administered in two hours or less across diverse study designs and settings. Not designed for clinical use but includes overlap with widely used clinical tests. The NIH Toolbox includes links to a wide range of validated and normed self-report measures (including diverse measures of emotional function/dysfunction, psychological function, quality of life, and cognitive function/dysfunction rating scales) from the PROMIS collection of measures.

- Commercial Computerized and Online Testing Offerings. See 'test selection' section above for a discussion of these offerings.
    - Amsterdam Cognition Scan
    - ANAM
    - BrainCheck
    - CANTAB Mobile and CANTAB insight
    - CNS Vital Signs
    - CogniFit
    - Cognivue
    - Cogstate
    - Digital MOCA
    - Food for the Brain

- ImPACT
- Lumosity NeuroCognitive Performance Test
- NeuroTrax
- Philips' IntelliSpace Cognition
- TabCat
- TestMyBrain
- University of Pennsylvania Computerized Neuropsychological Testing System (WebCNP)