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Clinical Focus

Speech-Language Pathology Management for Adults With COVID-19 in the Acute Hospital Setting: Initial Recommendations to Guide Clinical Practice

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Purpose: This document outlines initial recommendations for speech-language pathology management of adult patients with COVID-19 in the acute hospital setting.
Method: The authors initially developed these recommendations by adapting those developed for physical therapists working with patients with COVID-19 by Thomas et al. (2020). The recommendations then underwent review by 14 speech-language pathologists and rehabilitation-focused academics representing seven countries (Belgium, Brazil, Canada, Ireland, Japan, New Zealand, the United States). The authors consolidated and reviewed the feedback in order to decide what should be included or modified. Applicability to a global audience was intended throughout the document.
Results: The authors had 100% agreement on the elements of the recommendations that needed to be changed/modified or added. The final document includes recommendations for speech-language pathology workforce planning and preparation, caseload management, service delivery and documentation, as well as recommendations for the selection of appropriate personal protective equipment and augmentative and alternative communication equipment in the acute care hospital setting.
Conclusions: Speech-language pathologists play a critical role in the assessment, management, and treatment of patients with COVID-19. Several important considerations need to be made in order to meet the needs of this unique patient population. As more is learned about the impact of the virus on swallowing and communication, the role of the speech-language pathologist on interdisciplinary care teams will remain paramount.

COVID-19 is a new strain of coronavirus that infects the mucosa of the upper airway, with the viral load likely being greatest in the mucosa of the nasal cavities, nasopharynx, oropharynx, and oral cavity (Woelfel et al., 2020). Current evidence suggests that human-to-human transmission of COVID-19 occurs through contact with respiratory droplets generated by coughing and sneezing, infected secretions (such as saliva and sputum), and contaminated surfaces (Canada, 2020).

Speech-language pathologists (SLPs) undertake a number of clinical procedures that involve contact with the mucous membranes of the upper airway, as well as exposure to body fluids such as saliva and respiratory droplets. In addition, some speech-language pathology procedures may trigger release of airborne particles (aerosols). As such, the following preliminary document is intended to guide speech-language pathology practice when working in acute health care settings with patients with COVID-19. This preliminary document is not intended to replace recommendations or mandates from other practice authorities, such as licensing boards, national associations, departments/ministries of health, or accrediting bodies. It has been developed, taking into consideration the Physiotherapy Management for COVID-19 in the Acute Hospital Setting: Clinical Practice Recommendations document (Thomas et al., 2020); SLP suggestions and recommendations from Speech Pathology Australia (n.d.), the (American Speech-Language-Hearing Association (2020), Speech-Language and Audiology Canada (2020), and the Royal College of Speech and Language Therapists (n.d.); as well as the best available evidence. It has also been reviewed by 14 frontline SLPs, academics studying speech-language pathology, and/or those who work

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closely with SLPs in the acute care setting, representing seven countries.

Scope

This document focuses on the adult acute hospital setting. The recommendations for SLPs are outlined below within eight tables that include information on workforce planning and preparation, caseload management, service delivery, documentation, appropriate personal protective equipment (PPE), and provision of augmentative and alternative communication (AAC) options for patients with COVID-19. It is recognized that speech-language pathology practices vary across the world. When using these recommendations, the scope of practice within the local context should be considered.

Method

Two clinically trained academic SLPs came together on March 31, 2020, to discuss the urgent need for worldwide acute care speech-language pathology guidance in relation to COVID-19 after reviewing the physiotherapy guidelines for COVID-19 that were published on March 26, 2020 (Thomas et al., 2020). Efforts were quickly prioritized to adapt the physiotherapy guidelines in order to develop specific guidance for SLPs working in acute care settings.

The AGREE II framework (Brouwers et al., 2010) was used to guide development, recognizing that the expediency of this work required pragmatic and transparent reporting. This framework allows one to assess the quality and reporting of practice guidelines. Through an Internet search and personal files, recently developed guidelines and recommendations for COVID-19 management were identified from international agencies (e.g., the World Health Organization) and professional societies or groups (e.g., Speech Pathology Australia) up to April 10, 2020. The primary source of COVID-19–related literature was https://plus.mcmaster.ca/COVID-19/. This is a database created by the McMaster Health Knowledge Refinery. Articles are continuously selected from the current medical literature via a critical appraisal process that identifies studies and systematic reviews that are scientifically strong; articles that meet their scientific criteria are then rated by frontline clinicians for relevance and newsworthiness through the McMaster Online Rating of Evidence system. The database is updated every weekday as evidence reports are published in all journals included in MEDLINE. Documents used within the physiotherapy guidelines (e.g., Australia and New Zealand Intensive Care Society, Society of Critical Care Medicine/European Society of Intensive Care Medicine) were also reviewed. These guidelines were used to inform the recommendations adapted from the physiotherapy guidelines in conjunction with expert opinion of the authors. Key international documents related to the current guidance can be found in the Appendix.

A priori it was decided that the authors would first develop draft recommendations that would then be circulated to frontline and academic SLPs, as well as clinician scientists working closely with SLPs, representing a variety of countries. This was done to develop consensus and help ensure that the recommendations would be applicable to a wide range of clinicians in acute care settings across the globe. These individuals were recruited through personal professional networks and/or recommended by national speech-language pathology organizations in their home country. On Friday, April 10, 2020, the first draft was sent to a single reviewer (N. S.), an SLP and board-certified specialist in swallowing, to ensure clarity and completeness and help resolve any discrepancies between the two authors in terms of necessary content. Comments were returned to the authors on Sunday, April 12, 2020, and were reviewed and integrated into the recommendations on Monday, April 13, 2020. This resulted in the second draft of the recommendations. On Monday, April 13, 2020, the first author (A. N. M.) circulated the second draft of recommendations to an additional 17 SLPs, one physiotherapist (who was also involved in the development of therapy physiotherapy guidelines), and two physicians, representing a total of seven countries. Ten SLPs representing five countries (Brazil, Canada, Ireland, New Zealand, and the United States), the physiotherapist (representing Canada), and the physicians (representing Japan and Belgium) returned comments to the lead author. The first author collated all comments and identified themes, including when reviewers suggested that a recommendation needed to be changed or adjusted. The lead author then integrated the recommendations within a third draft of the document. On Thursday, April 16, 2020, the first author sent the collated comments and the third draft of the document to the second author for review. All recommendations were discussed during teleconferences on April 18 and 19, 2020. Both authors agreed 100% on which changes should be implemented from the comments, which resulted in the creation of the final recommendations on April 20, 2020.

Strengths and Limitations

This document has several strengths. It responds to an urgent need for clinical guidance for acute care SLPs worldwide. Guidance was based on the most recent and relevant COVID-19 clinical practice guidelines and recommendations from highly respected organizations, national speech-language pathology associations, and peer-reviewed studies. These sources have been cited and acknowledged throughout the recommendations. The authors and reviewers represent an international group of SLPs, with extensive clinical experience in the acute care setting. They are also academic SLPs with experience in the leadership, conduct and execution of rigorous systematic reviews, and clinical studies.

There are also some limitations. Given the recent presentation of COVID-19, clinical guidance may change as we learn more about the natural history of this disease and its impact on human physiology and performance. Recommendations were extrapolated based on best evidence for current management of acute care patients. No patient was included in the author or reviewer group. A more

rigorous consensus process could have been employed in order to develop more specific recommendations. Furthermore, the short timeline in producing the document is a limitation. With more time, we may have been able to gather additional evidence related directly to service delivery to patients with COVID-19. While the recommendations apply to speech-language pathology management of swallowing and communication in the acute care setting, longer term follow-up of survivors is needed to further inform these initial recommendations.

This is a preliminary document, intended to summarize suggestions for speech-language pathology practice in the face of the COVID-19 pandemic. Given the evolving health care crisis and the constant emergence of new information, the potential for omission of information is possible. As such, this document should not be viewed as the end-all document on this topic. Since new research will continue to present itself over the coming months, we plan to conduct a formal, scoping review of the COVID-19 literature, as it relates to speech-language pathology practice in 6 months of time (i.e., November 2020). This will allow for a comprehensive update that will highlight new, significant, and relevant research relating to speech-language pathology practice and COVID-19 that continues to emerge. Working closely with the *Journal*'s editorial team, the authors also plan to rerun the search a second and final time after an additional 6 months (i.e., May 2021). The hope is that these three iterations (the current preliminary recommendations, the first scoping review, and the updated review) will allow for a solid understanding of best practice for SLPs working with adults in acute care during a pandemic or similar situation, such as a major outbreak or epidemic.

Main Messages

1. Contact and droplet precautions "should be implemented consistently" when entering the room of a patient with COVID-19, and aerosol-generating procedures (AGPs) will not be performed (Canada, 2020). This means proper donning of gloves, a long-sleeved gown, a surgical mask, and a face shield.
    - In the rare circumstance that SLPs do not have access to adequate PPE after conducting a point-of-care risk assessment, they should advocate for appropriate PPE in order to carry out their jobs in a comprehensive manner given their important role on the multidisciplinary team. During these exceptional circumstances, SLPs should also have the option of providing indirect methods of assessment through discussion with the medical team and/or using telepractice to assess, manage, and/or treat the patient to avoid direct patient contact that would result in unsafe exposure for both the patient and clinician.
2. SLPs and speech-language pathology assistants need to perform a point-of-care risk assessment to determine the required PPE for each activity they will be engaging in, thoroughly review their individual facility's policies and procedures, and advocate for appropriate PPE when necessary.
3. Airborne precautions should be implemented when performing AGPs (Centers for Disease Control and Prevention, 2020). A respirator (N95 or FFP3 mask or powered air-purifying respirator) and face/eye protection should be used by all health care professionals present in a room where an AGP is being performed on a patient under investigation or confirmed to have COVID-19 infection. Whenever possible, AGPs should be performed in an airborne infection isolation room. In cases where an airborne infection isolation room is unavailable, consider performing AGPs in another isolated room.
4. AGPs that SLPs may be involved in include (but are not limited to; Centers for Disease Control and Prevention, 2020)
    - management of patients with laryngectomies,
    - management of patients with tracheostomies,
    - management of patients using noninvasive (e.g., BiPaP and CPaP) and positive pressure ventilation,
    - management of patients using high-flow oxygen (e.g., high-flow nasal oxygen delivery including single and double O_2 setups),
    - management of patients with nasogastric tubes, and
    - endoscopic evaluations of voice and swallowing (e.g., fiberoptic endoscopic evaluations of swallowing, videostroboscopy, manometry; Royal College of Speech and Language Therapists, 2020).
5. AGPs that SLPs should be aware of in order to ensure use of proper PPE include (but are not limited to)
    - airway suctioning, other than inline suctioning;
    - breaking closed mechanical ventilation system, intentionally (e.g., open suctioning) or unintentionally (e.g., patient movement resulting in disconnection from mechanical ventilation);
    - nebulizer/airway treatments;
    - active cycle of breathing techniques; and
    - cardiopulmonary resuscitation.
6. SLPs' activities that have the potential to be AGPs through triggering of a sputum-inducing cough reflex include (but are not limited to)
    - oral care,
    - oral mechanism exams,
    - gag reflex testing,

Table 1. Speech-language pathology workforce planning and preparation recommendations.

	Recommendations
1.0	Plan for potential increase in the required speech-language pathology workforce. In some areas and specific to acute care settings, the overall volume of referrals for patients who are non–COVID-19 may decrease with subsequent impact on the overall staffing needs of the department. In contrast, the increase in referrals of COVID-19 or PUIs require additional time for assessment/follow-up interventions. The following are offered should increased staffing be needed: • allow additional shifts for part-time staff; • offer staff the ability to electively cancel previously approved leave time; • recruit a pool of on-call staff; • recruit academic and research staff, staff who have recently retired or who are currently working in nonclinical roles; • work different shift patterns (e.g., 12-hr shifts, extended evening shifts; create work teams to cover alternate days of the week).
1.2	Identify potential additional staff who could be deployed to areas of higher activity associated with COVID-19 admissions, such as the infectious disease ward, intensive care unit (ICU), and/or high-dependency unit and other acute areas. Prioritize staff for deployment who have previous cardiorespiratory and critical care experience. As needed, provide a modified competency/skills training program to staff.
1.3	SLPs need to have specialized knowledge, skills, and decision-making abilities to work within ICUs. SLPs with previous ICU experience should be identified, and hospital leadership should facilitate their return to ICU (Australian and New Zealand Intensive Care Society [ANZICS], 2020).
1.4	SLPs who do not have recent critical care or cardiorespiratory speech-language pathology experience should be identified by hospital leadership (e.g., department head) to support other speech-language pathology services. For example, staff without acute hospital or ICU training may facilitate rehabilitation, discharge pathways, long-term care, outpatient clinics, specialized teams (e.g., ALS, movement disorders) or hospital avoidance for patients without COVID-19. Note: Depending on geography and caseloads, the speech-language pathology team should be prepared for a hospital inpatient caseload comprising up to 95% patients with COVID-19.
1.5	Staff with advanced ICU speech-language pathology skills should be supported to determine the appropriateness of referrals and the need for direct assessment of patients with COVID-19 and provide junior speech-language pathology ICU staff with appropriate supervision and support, particularly with decision making for complex patients with COVID-19. Hospitals should identify appropriate speech-language pathology clinical leaders to implement this recommendation.
1.6	Identify existing learning resources for staff who could be deployed to the ICU or other isolated units for patients with COVID-19. For example, • an eLearning package for clinical skills development for SLPs and critical care management (e.g., Brodsky et al., 2019); • local speech-language pathology staff ICU orientation (Brodsky et al., 2019; Zuercher et al., 2019); • PPE training/review (e.g., Canada, 2020); and • review of available evidence for clinical swallowing evaluations (e.g., Daniels et al., 1997; Rangarathnam & McCullough, 2016; Riquelme, 2015), consequences of aspiration (e.g., Nativ-Zeltzer et al., 2018), and predictors of aspiration (e.g., Langmore et al., 1998) to improve decision making at the bedside.
1.7	Keep staff informed of plans. Communication is crucial to the successful delivery of safe and effective clinical services. Department leadership must keep all speech-language pathology staff abreast of the latest evidence on advancement/spread of the virus, how the facility is addressing this data, and latest facility recommendations on PPE usage for seeing patients who are COVID-19 positive or PUIs.
1.8	When planning staffing and rosters, some people may be at higher risk of developing more serious illness from COVID-19 and should avoid exposure to patients with COVID-19. As per the Centers for Disease Control and Prevention (2020), this includes, but is not limited to, staff who • are pregnant; • have significant chronic respiratory illnesses; • are immunosuppressed; • are older, e.g., > 60 years of age; • have severe chronic health conditions, such as heart disease, lung disease, and diabetes; and • have immune deficiencies, such as neutropenia, disseminated malignancy, and conditions or treatments that produce immunodeficiency (ANZICS, 2020).
1.9	It is recommended that staff who are pregnant avoid exposure to COVID-19. It is known that pregnant women are potentially at increased risk of complications from any respiratory disease due to the physiological changes that occur in pregnancy (Longman & Johnson, 2007). Presently there is insufficient information available about the impact of COVID-19 on the pregnant mother or their baby (Chen et al., 2020).
1.10	Workforce planning should include consideration for pandemic specific requirements, such as additional workload/time required from donning and doffing PPE, and the need to allocate staff to key nonclinical duties such as enforcing infection control procedures (ANZICS, 2020).

(*table continues*)

Table 1. *(Continued).*

	Recommendations
1.11	If possible, consider organization of the workforce into teams that will manage patients with COVID-19 versus those who are noninfectious. Minimize or prevent movement of staff between teams. Liaise with local infection prevention and control services for recommendations. Caution: As the percentage of admissions that are COVID-19 positive or PUI increase, this may not be possible. The number of non–COVID-19 patients may be minimal. In cases where patients with COVID-19 are in the minority, consider bundling care by seeing all patients with COVID-19 at the end of the working day so there is reduced risk of spread to noninfected patients.
1.12	Be aware of and comply with relevant international, national, provincial/state/territorial, and/or hospital guidelines for infection prevention and control in health care facilities, for example, the World Health Organization (2020) "Guidelines for Infection Prevention and Control During Health Care When Novel Coronavirus Infection Is Suspected." Above all, follow the guidelines required by your facility. Consult infection prevention and control services and/or your leadership with concerns or questions. Advocate for the need for PPE when required.
1.13	Senior SLPs should be involved in determining the appropriateness of speech-language pathology interventions for patients with suspected and/or proven COVID-19 in consultation with senior medical staff and according to a referral guideline and best practice procedures. Speech-language pathology teams should also consider meeting several times per week to review management of patients seen. This will allow the team to problem-solve clinical or operational situations, as well as learn from each other. In efforts to maintain social distancing, these meetings may take place via virtual venues or phone conference calls.
1.14	Identify hospital-wide plans for allocation/cohorting of patients with COVID-19. Utilize these plans to prepare resources that may be required.
1.15	Identify additional physical resources that may be required for speech-language pathology assessment and management and how the risk of cross-infection can be minimized (e.g., low-tech and high-tech augmentative and alternative communication [AAC] devices; rehabilitation equipment; equipment storage).
1.16	Identify and develop a facility inventory of physical resources, such as AAC, exercise, and rehabilitation equipment, and determine process of equipment allocation as pandemic levels increase (i.e., to prevent movement of equipment between infectious and non-infectious areas).
1.17	It should be recognized that staff will likely have an increased and/or varied workload with a heightened risk of anxiety both at work and at home (ANZICS, 2020). Staff should be supported during and beyond the active treatment phases (e.g., via access to employee assistance programs, counseling, facilitated debriefing sessions).
1.18	Consider and/or promote debriefing and psychological support; staff morale may be adversely affected due to the increased workload, anxiety over personal safety and the health of family members (ANZICS, 2020).

Note. Adapted from *Journal of Physiotherapy*, Vol. 66, No. 2, Peter Thomas et al., "Physiotherapy Management for COVID-19 in the Acute Hospital Setting: Clinical Practice Recommendations," 73-82, Copyright © 2020, with permission from Elsevier. PUI = patient under investigation; SLP = speech-language patologist; PPE = personal protective equipment.

Table 2. Initial speech-language pathologist (SLP) involvement with confirmed COVID-19 and patients under investigation (PUIs): caseload management, service delivery, and documentation.

	Recommendations
2.1	Direct speech-language pathology interventions (assessment, treatment, management) should only be provided when there are adequate clinical indicators, so that staff exposure to patients with COVID-19 is minimized. Unnecessary contact with patients with COVID-19 within their isolation room/areas will also have a negative impact on PPE supplies, as well as added exposure for the patient.
2.2	SLPs should meet regularly with senior medical staff to determine indications for SLP assessment in patients with confirmed or suspected COVID-19 and determine need for speech-language pathology services according to set/agreed-upon guidelines. The noted high incidence of patients with altered mental status and fluctuating recovery impacts patient selection on a daily basis. Very often, and at the onset of the disease, the patient's mental status will vary throughout the day, meaning that the patient may be alert at the time the consult request was placed but may be difficult to arouse at time of the SLP's visit.
2.3	Initial determination of the appropriateness of the referral should be completed indirectly. This initial screening (ASHA, n.d.; Swigert et al., 2009) might take one of three forms: (a) request for a consult by a member of the multidisciplinary team during multidisciplinary rounds + a phone/video call or in-person discussion with nurses and/or respiratory therapists; (b) background review only: medical chart review + a phone/video call or in-person discussion with members of the medical team; or (c) background review + results of screening by other member of the team. This latter approach to screening would include medical chart review + phone call or in-person discussion with members of the medical team (e.g., physician, nurse) + collaboration with medical team to perform a standardized dysphagia screening protocol on all patients to determine readiness/need for SLP assessment. Direct assessments by the SLP, at the patient's bedside, should be performed only if patient readiness has been determined. Regardless of method of assessment (direct or indirect), patient and/or health care proxy consent should be established, per facility policies, at all stages of the care plan.
2.4	In units outside the intensive care unit (ICU), SLPs should conduct clinical swallow evaluations on patients with COVID-19 that have sufficiently stable vital signs, acceptable respiratory status, and where their body positioning allows for a valid and reliable assessment of current functioning to be conducted. In this patient population, stability appears to often be determined by review of respiratory rate, oxygen saturation, and overall alertness. More specific parameters are presently being explored but difficult to ascertain, per the broad range of ages, comorbidities, and severity of symptomatology. When patients are in the ICU, it is important that SLPs are present to help with communication and swallowing even when patients are not stable. In some more severe cases, patients may need to temporarily rely on tube feeds in order to satisfy their nutritional requirements when they are medically unstable. This decision should be made in consultation with the interprofessional team.
2.5	SLPs should remain aware of the duration of close contact to help limit contact unless absolutely necessary and maximize distance (at least 2 m when possible) when not directly assessing patients. For example, when gathering case history information the clinician does not need to stand beside the patient.
2.6	During direct clinical swallow evaluations, SLPs should avoid testing a volitional cough and the gag reflex. SLPs should also minimize the number of medical devices and other reusable equipment that are exposed to infected patients during assessments, unless they are deemed absolutely necessary (Buonsenso et al., 2020). In the absence of adequate PPE, such as N95 masks, rather than conducting direct oral mechanism exams, observe patient during speech production when possible and conduct intraoral examination from afar, as needed and possible. SLPs should also allow patients to self-feed whenever possible. If patients cannot self-feed, SLPs should consider stepping away after the bolus is administered and/or standing to the side with their face as distant from the patient as possible in case of coughing, which can be an AGP. It is important that the SLP also establish any changes in taste and smell associated with COVID-19 as part of the case history, which may impact oral intake.
2.7	SLPs should work with nursing staff, as per usual practice, to establish and carry out an oral care plan for all patients with COVID-19 to reduce risk of aspiration pneumonia (Langmore et al., 1998; Quinn et al., 2014).
2.8	In the absence of adequate PPE (i.e., N95 masks or the equivalent), SLPs may consider the use of telepractice to facilitate direct clinical swallow evaluations (Malandraki & Kantarcigil, 2017), as needed and available. This may not be a typical form of service delivery in this setting but may offer a temporary option in the rare event that the need arises. For example, using tablet computers or other monitors, have a camera inside the patient's room with another health care professional who may already be attending to the patient. The SLP can then remain outside the room directing the patient, with another health care professional assisting the patient inside. This approach can be used for both dysphagia (E. C. Ward et al., 2013) and communication assessments (E. Ward et al., 2009).

(*table continues*)

Table 2. *(Continued).*

	Recommendations
2.9	SLPs should undertake a point-of-care risk assessment to determine need and appropriateness for videofluorscopic swallowing studies (VFs). There is a high risk of eliciting a sputum-induced cough during this assessment, and there is also a high risk of transmission of the virus while moving the patient to the radiology suite. Furthermore, all equipment will require decontamination. As such, only perform a VF when the direct clinical swallow evaluation at the bedside is inconclusive, the patient appears to be a candidate for the exam, and there is a high risk to pulmonary safety and/or malnutrition due to the presenting dysphagia (i.e., if patient's nutritional status can be maintained without the VF, consider postponing the VF until a later time). When a VF is necessary, establish a protocol in order to minimize contact with the patient, consequently minimizing risk of spreading infection, and a protocol for decontamination of the radiology suite before and after the exam.
2.10	Given that it is an AGP, SLPs should avoid performing all SLP-led endoscopic procedures, including FEES, videostroboscopy, and manometry, on patients with confirmed COVID-19 unless absolutely necessary. If these procedures are deemed necessary, SLPs should follow local infection prevention and control policies and can consult resources from the Royal College of Speech and Language Therapists for guidance and/or suggestions (Royal College of Speech and Language Therapists, 2020). Ideally, clinical decisions should be made using the results of indirect screenings, the patient's case history, and after consultation with the health care team. This can be done alongside a direct clinical swallow evaluation when necessary.
2.11	SLPs should clean all equipment after each use with facility-designated disinfectant wipes and/or designated disinfectants. SLPs should minimize use of adjunct tools and techniques, such as stethoscopes, Iowa Oral Performance Instruments, thermo-tactile stimulation, and neuromuscular electrical stimulation. Disposable spoons and cups should be used during direct swallowing assessments. SLPs should follow hospital protocols for disinfecting and storing equipment, including toothbrushes and other supplies required for oral care. If a protocol does not yet exist, one should be established in conjunction with the hospital's infection prevention and control team to determine the best methods for disinfecting and storing equipment.
2.12	SLPs should reevaluate their approach to service delivery and perform a point-of-care risk assessment for every patient interaction, as circumstances may change from day-to-day.
2.13	If any clinical procedures are modified as part of a risk management approach to the COVID-19 pandemic, document this clearly in the health record.

Note. Developed by Namasivayam-MacDonald and Riquelme.

Table 3. Active speech-language pathologist (SLP) involvement with confirmed COVID-19 and patients under investigation: caseload management, service delivery, and documentation.

	Recommendations
3.1	**Patients with possible dysphagia** post**extubation**. Many patients who present with severe forms of COVID-19 will also present with acute respiratory distress syndrome (ARDS; Cascella et al., 2020), requiring intubation and mechanical ventilation. Following extubation, SLPs should assess the integrity of the swallowing mechanism via a clinical swallow examination at the bedside. In some cases, an instrumental exam may be required and will provide physiologic information to guide treatment (Marvin et al., 2019). In the absence of instrumental examination, swallow screening tools with robust diagnostic accuracy (e.g., 3-ounce water swallow test; Suiter & Leder, 2008) may be insufficient or unreliable. This is due to the high variability of clinical symptomatology this population presents with. The clinical swallow evaluation must then serve as sufficient to guide impressions and recommendations during the initial stages of dysphagia management. Typical management may not be possible here; therefore, the SLP may need to proceed cautiously with bolus trials and associated recommendations. It may be necessary to rely on nonoral feeding for longer than would be typical/best practice. Use of a free water protocol (Gillman et al., 2017) where a clean oral cavity can be maintained may be one option that could be considered when supporting the resumption of oral intake. Gradual advancement and team collaboration work best in this scenario, integrating principles of neuroplasticity and exercise physiology (Burkhead et al., 2007; Kleim & Jones, 2008). Anecdotally, combining the use of alternate means of nutrition, such as a small bore nasogastric/nasojejunal feeding tube, while initiating limited oral intake also presents potential benefits.
3.2	**Patients with possible dysphagia in the presence of respiratory compromise**. Prepandemic evidence in patients with respiratory compromise, such as those with chronic obstructive pulmonary disorders, suggests that aspiration may be common due to impaired coordination between respiration and swallowing (Coelho, 1987; Good-Fratturelli et al., 2000; Gross et al., 2009; Robinson et al., 2011; Shaker et al., 1992). In addition, some facilities are not using open-system respiratory support equipment such as BiPAP on patients with COVID-19. In its place, non-rebreather masks are often being utilized for this patient population. Patient oxygen requirements and oxygenation are being explored as potential determinants of readiness for oral feeds; however, there is no conclusive data available yet. SLPs should consider respiration patterns, rates and oxygen saturation levels, as well as fraction of inspired oxygen (FiO_2), the need for high-flow nasal cannula therapy, etc., when determining appropriateness of dysphagia assessments and treatments for this patient population.
3.3	**Patients with possible dysphagia upon decompensation**. Patients who are actively fighting the COVID-19 virus may become decompensated and develop protein and energy malnutrition and/or dehydration. As such, they may require temporary supplemental nutrition (e.g., nasogastric tube), at which time a direct clinical swallow evaluation should be considered as soon as the patient is sufficiently alert and is more stable to assess the patient's ability to take anything by mouth. The examination may be conducted with the nasogastric tube in situ, given decision-making guidance informed by available evidence (Pryor et al., 2015; Suiter & Leder, 2008). It is critical that SLPs lean on best practice and use critical thinking due to the fluctuating nature of the illness and varying medical stability.
3.4	**Patients who show signs of cognitive difficulties and inability to communicate basic needs.** COVID-19 can compromise oxygenation (e.g., via ARDS; Cascella et al., 2020) and induce encephalopathy (Filatov et al., 2020), which means some patients may develop hypoxic brain damage. Severity, duration, and recovery of symptoms vary across patients, not following standard clinical patterns. In addition, the influence of comorbidities cannot be underestimated. As such, it is essential that SLPs assess each patient's cognition and ability to communicate their basic needs once stable.
3.5	**Patients who require augmentative and alternative communication (AAC) equipment.** Patients who require mechanical ventilation will not be able to use their voice for speech, leaving them unable to talk about their treatment, end-of-life decisions, direct their care, or report their symptoms (Bergbom-Engberg & Haljamäe, 1993). AAC enables people who are communication vulnerable to communicate with their care providers and families. Consider single-patient, low-tech devices that the nursing team can implement quickly, as needed.
3.6	**Patients with tracheostomies with/without mechanical ventilation.** Management of tracheostomies should be conducted as part of an interprofessional team, and tasks should be bundled and coordinated in order to reduce exposure and preserve PPE whenever possible. The protocol for bedside/clinical swallowing evaluations in this context should not differ due to COVID-19 status. Swallowing assessments should be conducted when necessary with the appropriate PPE. SLPs should discuss the need for any invasive procedures or AGPs (e.g., cuff deflation, which will aerosolize the room) with the medical team to determine urgency of the matter before seeing the patient. Tube changes and cleaning should be avoided unless deemed urgent. The use of speaking valves should be weighed and discussed with the interprofessional team. Risk and benefits should be prioritized, taking into consideration benefits to airway management, phonation, and swallow physiology. When choosing to go ahead with opening the circuit and using a speaking valve, the open tracheostomy may be covered with a surgical mask.
3.7	**Patients with laryngectomies with/without mechanical ventilation.** The number of tracheoesophageal prosthesis procedures should be kept to a minimum. It is important for the SLP to communicate with the patient and/or medical team to determine urgency of the matter before seeing the patient. SLPs should consider the use of telepractice to promote self-management of laryngectomy issues (e.g., valve leakages; E. Ward et al., 2009).
3.8	**Patients who require end-of-life care.** SLPs should work with the patient to help them communicate their goals for end-of-life care to the interprofessional team (Bajwah et al., 2020; Leong et al., 2004). Communication and dysphagia consults should reflect these goals to ensure all services are aimed at maximizing quality of life (Pollens, 2012).
3.9	When rehabilitation cannot take place due to limited or lack of in-person rehabilitation options during the pandemic and/or when deconditioning may impact the swallow, SLPs should consider providing swallowing maintenance exercises to patients, as appropriate, to minimize long-term effects of a swallowing impairment. This is typical practice for SLPs; however, data do not exist yet for response to treatment with this approach for patients with COVID-19.
3.10	SLPs should consider using telepractice to provide rehabilitation to outpatients with swallowing and/or communication impairments, when possible (Malandraki & Kantarcigil, 2017; Mashima & Doarn, 2008; Palsbo, 2007).
3.11	If any clinical procedures are modified as part of a risk management approach to the COVID-19 pandemic, document this clearly in the health record.

Note. Developed by Namasivayam-MacDonald and Riquelme. PPE = personal protective equipment; AGP = aerosol-generating procedure.

Table 4. Transmission-based precautions: personal protective equipment (PPE) for care of patients with COVID-19, patients under investigation, and patients on droplet precautions.

PPE	Entry to cohort area–no patient contact	Entry to patient room	Aerosol-generating procedures (any setting)
Disposable gloves	No	Yes	Yes
Gown	No	Yes	Yes
Surgical/medical mask	Yes	Yes	No (unless used to cover N95 mask)
Filtering face piece (N95/FFP3 mask/powered air-purifying respirator)	No	Yes	Yes
Face shield/eye protection	No	Yes	Yes (always if wearing an N95/FFP3 mask)

Note. Based on information Royal College of Speech and Language Therapists (n.d.) and the Toronto University Health Network (2020) recommendations, updated on April 7, 2020. Disclaimer: This will vary by facility.

- cough reflex testing,
- bolus trials,
- videofluoroscopy swallowing studies, and
- upper esophageal sphincter dilation with a balloon catheter.

7. SLPs should triage, prioritize, and/or modify their services as is necessary and follow hospital guidelines for AGPs.
8. Where possible, gather collateral information, use telephone or virtual care (telepractice) to gather history, and observe status if safe to do so.
9. Prior to engaging directly with the patient, SLPs should ensure they determine the appropriateness of the referral and plan how they will minimize patient contact.
10. Try to maintain physical distancing and work with the most easily cleaned and appropriate equipment or aids to ensure patient safety.
11. Collaborate and coordinate with interprofessional partners. Consider bundling and coordinating procedures requiring two or more people to preserve PPE (e.g., if the nurse will be needed to help position the patient for your evaluation, complete your evaluation while the nurse is already in the patient's room for another reason).
12. If any clinical procedures are modified as part of a risk management approach to the COVID-19 pandemic, document this clearly in the health record.

Recommendations for Speech-Language Pathology Workforce Planning, Preparation, and Initial Assessment

COVID-19 is placing significant demands on health care resources around the world. The following tables present recommendations on how to prepare and manage the care of patients with COVID-19 in acute care settings. Table 1 outlines recommendations to assist the speech-language pathology workforce to plan and respond to the demand of caring for patients with COVID-19. Table 2 provides recommendations on prioritizing the speech-language pathology caseload and best practices for screening and assessment of patients with COVID-19 in the spirit of minimizing use of PPE and

Table 5. Transmission-based precautions: personal protective equipment (PPE) for patients without or with low probability of COVID-19, no precautions.

PPE	Entry to cohort area–no patient contact	Entry to patient room	Aerosol-generating procedures (any setting)
Disposable gloves	No	Yes	Yes
Gown	No	No	No
Surgical/medical mask	Yes	Yes	No (unless used to cover N95 mask)
Filtering face piece (N95/FFP3 mask)	No	No	Yes
Face shield/eye protection	No	No	Point-of-care risk assessment outside patient's room

Note. During the pandemic, patients not identified as COVID-19 or patient under investigation may not yet present symptoms but may indeed have the virus. Thus, these precautions are needed. Adapted from the Toronto University Health Network recommendations, updated on April 7, 2020.

Table 6. Possible augmentative and alternative communication (AAC) solutions for patients with COVID-19 and patients under investigation in isolation, without mechanical ventilation and/or physical and/or language difficulties.

Patient needs	AAC solutions	Communication partner training for frontline health care practitioners (HCPs)
To get attention of bedside nurse	Call bell or cell phone preferred. Attention getting device if no call bell system in intensive care unit.	Ensure physical access to call bell, cell phone or another device.
Communication opportunities to report symptoms, direct their care, ask questions, and be socially close to family and caregivers	Remote access through video or instant messaging to HCPs to facilitate more frequent interactions without HCP having to be physically present in patient area.	Bedside nurse to be familiar with process of remote access with patient and responsive to communication from patients. Training in psychosocial impacts of communication isolation.
Support for any hearing loss	Hearing amplifiers dedicated for COVID-19 patients.	Training in use of hearing amplifiers.
Support for patients who are deaf	Remote video link to sign language translators outside the room. OR Free speaking software (text or symbol-based communication with speech generation). OR Secure remote messaging system. In this case, patients can use their own phone or tablet to communicate with staff outside of the room and they can receive written messages from HCP outside the room.	Use of surgical masks with transparent screen in the mouth region to allow for lipreading/ speech reading.

Note. Developed by Fiona Campbell, MSc, SLP(c), Reg. CASLPO.

reducing risk of transmission. Table 3 provides recommendations for determining whom SLPs should treat when patients have confirmed or suspected COVID-19 based on available resources. It is important to note that some of the recommendations mirror regular practice (i.e., nonpandemic/outbreak situations). Despite this, they have been included in order to paint a comprehensive picture of the SLP's role with patients with COVID-19.

PPE for SLPs

It is imperative that SLPs understand the measures in place to prevent transmission of COVID-19. Tables 4 and 5 provide recommendations for this. The available evidence can also help inform considerations for the appropriate PPE required for a clinical encounter. Droplet precautions are required for particles above 5 μm, and airborne precautions are required for particles below 5 μm. Oberg and Brosseau (2008) demonstrated that surgical masks do not exhibit adequate filter performance against aerosols measuring less than 5 μm in diameter. Furthermore, droplets of less than 1 μm in size represent 97% of the total number of measured droplets contained in cough aerosol (Zayas et al., 2012). The use of face shields can substantially reduce the short-term exposure of health care workers to larger infectious aerosol particles and can reduce contamination of their respirators. However, they are less effective against smaller particles, which can remain airborne for extended periods and can easily flow around a face shield to be inhaled. Thus, face shields can provide a useful adjunct to respiratory protection for workers caring for patients with respiratory infections. However, face shields cannot be used as a substitute for respiratory protection when it is needed (Lindsley et al., 2014). Therefore, in the presence of a potentially cough-generating procedure, such as a clinical swallow evaluation, filtering face pieces (e.g., N95 masks) combined with face shields or powered air-purifying respirators will provide clinicians with the best-known protection from cough aerosols. It is also critical that SLPs follow hospital policy for documentation regarding tracking when patients with COVID-19 are seen and what type of patient care was performed (i.e., if there was an AGP involved).

Of interest, a recent study by Bahl et al. (2020) reviewed the evidence for horizontal distance traveled by droplets and the guidelines issued by the World Health Organization, the Centers for Disease Control and Prevention, and the European Centre for Disease Prevention and Control on respiratory protection for COVID-19. They concluded that "the weight of combined evidence supports airborne precautions for the occupational health and safety of health workers treating patients with COVID-19." Therefore, it is critical that SLPs recognize that many of their duties involve AGPs and will require adequate PPE. In the rare circumstance that adequate PPE is unavailable, SLPs will need to advocate for appropriate PPE in order to carry out their jobs in a comprehensive manner, given their important role on the multidisciplinary team.

AAC Solutions for Patients With or Suspected to Have COVID-19

The following three tables (see Tables 6, 7, and 8) outline AAC solutions and associated training for health

Table 7. Possible augmentative and alternative communication (AAC) solutions for patients with COVID-19 and patients under investigation in isolation and on mechanical ventilation.

Patient needs	AAC solutions	Communication partner training for frontline health care practitioners (HCPs)
To get attention of bedside nurse	Call bell or cell phone preferred. Attention getting device if no call bell system in intensive care unit (ICU; such as light or sonic alarm).	Ensure physical and environmental access to attention getting device, cell phone, or call bell.
Use of AAC and communication opportunities to report symptoms, direct their care, ask questions, and be socially close to family and caregivers	Low-tech communication systems used with pointing. Examples include: • white board and marker • ICU Talk Communication book (MacAulay et al., 2002) • AEIOU Alphabet Board (Kopsky et al., 2014) • If English is a second language, use translated communication board (available in 23 languages) High-tech communication using patient's own phone or tablet. Examples include: • Grid Player TEXT TALKER (Smartbox Assistive Technology) free app downloadable from iTunes for patients with their own iPhones/iPads for text to speech communication; • Windows tablet download 60-day trial version of Grid 3 speaking software (Smartbox Assistive Technology) from thinksmartbox.com/product/grid-3/; • Speech Assistant AAC (ASoft) downloadable for free from Google Play store for Android phones or tablets.	Ensure no physical, environmental, or opportunity barriers to use of AAC tools. Enable remote and face-to-face communication methods. Educate HCP in the pitfalls of using lipreading as only method of understanding patient. HCP will respond to text to speech communication using AAC software either face-to-face or using remote video capabilities or remote messaging. HCPs will need to anticipate the extra time it takes to communicate using AAC. HCP to ensure high-tech equipment is charged and stays in patient room. Equipment will be cleaned with virus grade wipes and end of hospital stay and will go home with the patient as it is owned by them.
Support for any hearing loss and for patients who are deaf	Hearing amplifiers dedicated for patients with COVID-19.	HCPs to request sign language interpreter services for deaf patients.
AAC for support during end-of-life discussions	Physician Ordered Scope of Treatment (POST; Hickman et al., 2010) communication book and/or Physician Orders for Life-Sustaining Treatment (POLST) forms (Bomba et al., 2012). A POLST form is a document in which the patient and physician document some specific details of how the patient will and will not be treated during serious, potentially life-ending situations. POLST forms are also referred to as Medical Orders for Life-Sustaining Treatment, Medical Orders on Scope of Treatment, POST, or Transportable Physician Orders for Patient Preferences.	Patient inclusion in end-of-life discussions will not be bypassed because patient has no voice as they can use other methods to communicate.

Note. Developed by Fiona Campbell, MSc, SLP(c), Reg. CASLPO.

Table 8. Possible augmentative and alternative communication (AAC) solutions for patients with COVID-19 and patients under investigation in isolation plus physical and or language difficulties.

Patient needs	AAC solutions	Communication partner training for frontline health care practitioners (HCPs)
To get attention of bedside nurse	Use adapted cell phone or call bell where possible. If no cell phone or call bell, adapted access to sonic or light alarm.	HCPs to ensure no physical or environmental barriers to use of attention getting system.
Use of AAC and communication opportunities to report symptoms, direct their care, ask questions, and be socially close to family and caregivers.	Use existing patient's own AAC system where possible. Patient's equipment to stay in isolation room. Equipment will be decontaminated after patient recovers and will go home with the patient.	AAC team to teach HCP how the patient's AAC system works. Partner Assisted Scanning and eye gaze techniques to be taught to HCPs by AAC team.
	Use Partner-Assisted Spelling with patient. Selections of letters using their unique "YES" signal AND use Partner-Assisted Scanning of ICU Talk Communication book with patient. Selections of phrases using their unique "YES" signal.	HCPs to be made aware of patient's unique way of answering yes/no. HCPs will be trained to give more time for people using AAC to communicate and to use supported conversation techniques.
	Use photographic communication book with fewer items per page for people needing simpler language system to express themselves (e.g., people with aphasia).	HCPs to support understanding of language by using photographic or symbol supports or writing of key words.
	Yes and no symbols with word to be placed on strip so patient looks to their right for "YES" and to their left for "NO" for people only able to eye gaze.	HCPs to use communication boards translated into 23 languages for patients who do not understand English when they communicate to the patient and when the patient communicates to them
AAC for support during end-of-life discussions	Partner-Assisted Scanning of Physician's Ordered Scope of Treatment (Hickman et al., 2010) communication book and/or Physician Orders for Life-Sustaining Treatment (POLST) forms (Bomba et al., 2012).	Patient inclusion in end-of-life discussions will not be bypassed and HCP uses AAC to support communication.

Note. Developed by Fiona Campbell, MSc, SLP(c), Reg. CASLPO.

care practitioners according to patient needs for patients with or suspected to have COVID-19. Given that the majority of these patients remain in isolation while in acute care, without easy or regular access to loved ones or hospital staff, it is imperative that they are provided a means of communication. Furthermore, a subset of these patients also require mechanical ventilation, which complicates their ability to communicate when needed. Table 6 provides solutions for these patients who are in isolation but do not require mechanical ventilation and do not have any physical and/or language difficulties. In contrast, Table 7 outlines AAC solutions when these patients are in isolation and require mechanical ventilation but do not have any physical or language difficulties. Finally, Table 8 provides AAC recommendations for patients with or suspected to have COVID-19 who also have physical limitations and/or a language impairment. It is important to note that patients with COVID-19 may present with cognitive impairments resulting in language difficulties that need to be addressed with AAC. Many of the suggestions within these tables may reflect best practices and are not necessarily specific to COVID-19. However, the solutions presented should serve as important reminders during the pandemic to minimize direct contact with the patient when possible, implement single-patient solutions where possible, use the patient's own devices if available, and provide appropriate training to all members of the medical team.

Conclusion

In conclusion, SLPs are essential frontline workers, as evidenced during the COVID-19 pandemic, who are able to assess, manage, and treat patients with both swallowing and communication impairments. Given their important role within the acute care setting, it is critical that they are provided with the necessary information to manage this unique patient population; understand how to prioritize their caseload; establish a sense of the types of patients they may see and how to best approach assessment, management, and treatment; reduce risk of virus transmission; conserve PPE; and provide adequate communication support to those in isolation. This document has collated all of this information and provides a series of recommendations based on best practice, with the intention of supporting SLPs working with adults with COVID-19 in the acute care setting. It is important to highlight that this information may

also extend to future outbreaks, epidemics, and pandemics and for all highly communicable illnesses and diseases.

Author Contributions

Ashwini Namasivayam-MacDonald: Conceptualization (Primary), Data curation (Equal), Formal Analysis (Equal), Methodology (Primary), Project administration (Primary), Resources (Equal), Writing—Original Draft (Equal), Writing—Review and Editing (Equal). **Luis F. Riquelme:** Conceptualization (Supporting), Data curation (Equal), Formal analysis (Equal), Methodology (Supporting), Project administration (Supporting), Resources (Equal), Validation (Equal), Writing—Original Draft (Equal), Writing—Review and Editing (Equal).

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Appendix

Key International Documents Related to This Document

American Speech-Language-Hearing Association: ASHA guidance to SLPs regarding aerosol-generating procedures. 22 April 2020. https://www.asha.org/SLP/healthcare/ASHA-Guidance-to-SLPs-Regarding-Aerosol-Generating-Procedures/

Australian and New Zealand Intensive Care Society (2020): ANZICS COVID-19 guidelines. Melbourne: ANZICS V1. 16 March 2020. https://www.anzics.com.au/coronavirus/

Canadian Society of Otorlaryngology—Head & Neck Surgery: Recommendations from the CSO-HNS Taskforce on post-operative care following tracheotomy during the COVID-19 pandemic V2.0. 20 April 2020. https://www.entcanada.org/wp-content/uploads/Recommendations-CSO-HNS-Taskforce-V2.0-Sommer-04-20-20.pdf

Irish Association of Speech & Language Therapists: IASLT COVID-19 Updated guidance for IASLT members. 9 April 2020. https://www.iaslt.ie/attachments/IASLT%20COVID%20Guidelines%209th%20April%202020Final.pdf

Journal of Physiotherapy: Physiotherapy management for COVID-19 in the acute hospital setting: Clinical practice recommendations V1.0. 30 March 2020. https://www.sciencedirect.com/science/article/pii/S183695532030028X

Royal College of Speech and Language Therapists: RCSLT guidance on personal protective equipment (PPE) and COVID-19. 3 April 2020. https://www.rcslt.org/-/media/docs/Covid/RCSLT-PPE-guidance-3-April-2020_FINAL.PDF?la=en&hash=BD9532BE5695A2BBF36CC549912BF73BC8C69395

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