

Supplemental Material S3. Barriers that hinder effective communication in the ICU from providers' perspectives.

Theme	Sub-Theme	Number of participants [Participant #]	Percentage (N = 52)	Quote
Patients unable to speak	Breath support	14 [4, 10, 11, 13, 14, 19, 22, 23, 24, 26, 38, 40, 44, 45]	26.9%	C level SCI on a vent. Unable to speak due to endotracheal tube. I have had many patients who attempt to communicate messages through, mouthing technique, however due to various lines, tubes and poor articulation, I was not able to understand despite best efforts made. Pt then becomes frustrated and discontinues attempts of communication.
	Medical condition	3 [13, 24, 31]	5.8%	Deficits s/p CVA or long-term ICU admission.
Patients unable to write or difficult for providers to decipher patients' handwriting	Weakness/motor issues/cognitive issues/medical conditions	15 [4, 7, 8, 10, 13, 14, 17, 24, 26, 30, 31, 40, 44, 48, 52]	28.8%	Unable to hold pen/marker to write. They may try to use a white board or regular pen and paper, but either they can't focus enough on writing, or they physically cannot really do it. Lack of concentration and therefore inability to complete written communication. Not being able to talk and not being able to write makes it very difficult to confirm what the patient is trying to communicate. If they are somewhat sedated and I try to have them write on a dry erase board, they usually can't write legibly or make sense.

				Impaired coordination making handwriting illegible.
	Restraints	2 [14, 23]	3.8%	Unable to write due to restraints.
Patients unable to point		2 [22, 48]	3.8%	Often, they can't really point to what they need either because of sedation or generalized weakness.
Patients unable to type		1 [26]	1.9%	Unable to type text due to decreased fine motor skills.
Delirium or confusion after Sedation		12 [3, 4, 5, 7, 17, 22, 23, 24, 30, 36, 38, 48]	23.1%	Patients are on too many sedatory medicines. Often, they can't really point to what they need either because of sedation or generalized weakness. They are too tired/sedated to try to communicate. They are too sedated or delirious to get their point across.
Weakness		5 [1, 22, 30, 31, 38]	9.6%	Too weak to write or gesture.
Vision issues		1 [7]	1.9%	Unable to see to use communication boards.
Limited literacy skills		1 [24]	1.9%	Low literacy (cannot spell/read)
Emotional distress	Frustration	6 [6, 7, 30, 38, 44, 47]	11.5%	Some patients give up their attempts at communication due to frustration. Patient frustration when yes/no questions are not effective. They get frustrated and stop trying. Frustration with the inability for us to fully understand what they wanted/needed, giving up because of frustration with miscommunication, us deferring trying to figure out what they wanted because it's too complicated to understand.

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	Fear	1 [24]	1.9%	Fear
Difficult to read patients' lips		8 [1, 2, 9, 22, 38, 45, 47, 52]	15.4%	Hard for them to use their lips to speak. ...attempting to read patients lips, however, limited by ETT or unable fully understand.
				I have had many patients who attempt to communicate messages through, mouthing technique, however due to various lines, tubes and poor articulation, I was not able to understand despite best efforts made. Patient then becomes frustrated and discontinues attempts of communication.
				Difficulty reading patient's when they attempt to soundlessly mouth words.
Difficult to understand patients' gestures		2 [2, 30]	3.8%	Most [patients] attempt to mouth words or provide gestures. I am not always able to understand.
Yes/no questions not effective		3 [7, 10, 29]	5.8%	I usually with intubated patients that are too weak to write will verbally state several common things that patient may be needing until I reach the correct nod, which I am not always successful with. If you can anticipate a patient's needs/questions like the ones I listed and ask them yes/no questions like "Are you in pain?" is about the only way to meet their

				needs. Sometimes it is one of those common questions and you can help them, but if it's anything else you're not likely to be successful.	
Limited access to communication materials	Low-tech (e.g., communication boards)	5 [1, 13, 32, 36, 41]	9.6%	At least in the MICU it is always hard to find communication board. Not having communication boards readily available. Time is usually a barrier, as well as not knowing where I can access resources such as picture, or communication board.	
				Lack of alternative communication tools.	
	High-tech (e.g., communication devices and applications)	3 [5, 11, 32]	5.8%	Sometimes they [patients] don't have access to devices that could be used to communicate. Resource limitations for funding and equipment acquisition (unable to obtain AAC methods).	
	Not specified	2 [24, 28]	3.8%	No access to alternate modes of communication.	
Language barrier				Lack of alternate communication resources.	
			7 [3, 9, 14, 19, 23, 24, 35]	13.5%	Unable to get an interpreter. ...at times patients preferred language unknown. The combination of language and verbal barriers combined (Spanish speaking tracheal patients) have been a particularly difficult barrier for me--and we have a fair amount of them in the ICU, post covid. ...not having available translator line in easy access.

Skills barrier	3 [5, 32, 51]	5.8%	Lack of experience/ education if utilizing alternative communication tools in both nursing behavior and patient role.
Resources barrier	2 [32, 51]	3.8%	Resource limitations for SLP staff (we do not currently have adequate staff or processes to systematically or routinely evaluate and recommend most appropriate methods or strategies).
Policy barrier	1 [32]	1.9%	...limited interdisciplinary staffing and training. Lack of site/network policies and processes (e.g. currently SLPs are unable to consider ventilated patients for Passy Muir Valve (PMV) network-wide due to lack of established interdisciplinary processes, trach weaning is inconsistent among teams thereby unnecessarily limiting use of PMV)...Patient acuity in the ICU (many patients who want to communicate are not candidates for any sort of complex training second to altered mental status (AMS), etc.)
Time limit	2 [2, 41]	3.8%	Available time is also a constraint unfortunately. Time is usually a barrier.