Global Utilization of Free Communication Tools for COVID-19: Resource Sharing for Emergency Response and Preparedness

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Communication Barriers:
A Problem for Patients and Healthcare Systems

Of the **35.1M** hospitalized patients in the U.S., **3.6M** can't summon help or communicate with caregivers.

Studies reveal that between **33%** and **50%** of conscious ICU patients face communication barriers.

These patients are **three** times more likely to experience a preventable hospital acquired condition (**HAC**) that negatively impacts their outcome.

Imagine waking up in the intensive care unit. You are on a ventilator and you can't move. You want to know where you are and what is going on?

How would you get someone's attention and once you got their attention, how would you communicate with them.

Over 11% of patients in US hospitals are unable to communicate with their caregivers. For some the inability to communicate is short term while for others the loss will be permanent.
A study by Zubow & Hurtig (2013) found that as many as 33% of conscious ICU patients are unable to access the nurse call system or effectively communicate with their caregivers.
Similarly, Happ et al. (2015) found that 50% of their mechanically ventilated patients met their criteria for needing communication assistance.

The Bartlett et al. study (2008) reported that patients who experience communication barriers are at a heightened risk of experiencing a preventable adverse medical outcome.

Effective Patient-Provider Communication in Acute Care

Patient	Provider
• Summon help • Communicate needs • Participate in care & decision making • Maintain personal identity & personality	• Respond to summons for help • Understand patient needs • Engage patient in care & decision making • Treat patient, not only the disease

Historically patient-provider communication has been seen as a one directional exchange of information from the care provider to the patient.

This more paternalistic mode of communication has hopefully evolved into a more bidirectional one in order to have patients more actively engaged in their care and thereby achieve better outcomes.

Thus, the patients are becoming partners in care and providers shift from just treating diseases to treating the particular patient with the disease.

The Joint Commission's U.S. hospital accreditation standards mandate that hospitals address patients' communication barriers.

Of the communication protocols that are in place, many leave patients, who have limited use of their hands and who cannot speak, still facing barriers to communication.

Assistive Technology in Acute Care Reduces HACs

AHRQ Report Comparison	Chi-Squared	p value
2019 Goal	5.6154	<0.02
2019 Higher Risk Estimate	8.9444	<0.03

Hurtig, R.R., Alper, R., Altschuler, T., Gendreau, S., Gormley, J., Marshall, S., Santiago, R. & Scibilia, S. (2020) Improving Outcomes for Hospitalized Patients Pre- and Post-COVID-19. Perspectives of the ASHA Special Interest Groups Vol.5, 1577-1586. https://doi.org/10.1044/2020_PERSP-20-00144

To specifically address the access and communication needs of patients in acute care, Voxello developed the noddle smart switch that can detect small intentional gestures and enable patients to summon help and to control the noddle-chat communication device.

Voxello's NIH supported clinical trial revealed that the patients who received assistive technology did not experience any HACs during the course of their hospitalizations.

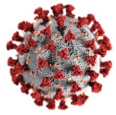
The comparisons of the clinically observed incidence with the AHRQ expected incidence for the population as a whole and for those facing communication barriers were statistically significant.

Cumulative Covid -19 Cases and Deaths as of April 3, 2023

https://covid19.who.int/table

	Cases	Deaths
Global	761,402,282	6,887,000
Europe	274,567,136	2,206,630
Americas	191,459,091	2,942,263
Western Pacific	201,764,561	232,264
South-East Asia	60,798,293	789,007
Eastern Mediterranean	28,297,489	350,034
Africa	9,514,948	175,328

It is more than evident that the pandemic has put a huge strain on healthcare around the world. As of early June, over ½ billion people have contracted the Sars-Cov2 virus and well over 6 million have perished.



Covid-19 Cases for Countries with >20 Million as of April 3, 2023

https://covid19.who.int/table

USA	102,697,566
China	99,238,143
India	44,707,525
France	38,677,413
Germany	38,338,298
Brazil	37,204,677
France	28,733,287
Japan	33,421,785
South Korea	30,773,460
Italy	25,673,442
United Kingdom	24,286,411
Russian Federation	22,603,646

This slide provides the WHO COVID-19: case counts for the countries that reported over 20 million cases as of April of this year.

Covid-19 Pandemic Related Barriers to Communication

Infection Control Practices 	Limited equipment allowed in rooms. Need communication supports to be: • Disposable • For single-patient use • Easily sanitized.
Visitor Restrictions 	Hospitals changed visitor policies. • Limited “FaceTime” connections with loved ones. • Care partners were not allowed at the bedside
Staffing and Workflow Changes 	• Less frequent visits from nurses between cares. • Reduced access to in-person language interpreters. • Increased challenges with set-up or adjustment of communication materials.

The Covid-19 pandemic introduced more communication barriers on top of the already existing barriers.
Hospitals needed to impose more stringent infection control and visitor policies as well as make staffing and workflow changes that in sum left patients more isolated and unable to speak due to their need for mechanical ventilation.

This isolation made headlines in the media and was a major topic across the social media platforms.

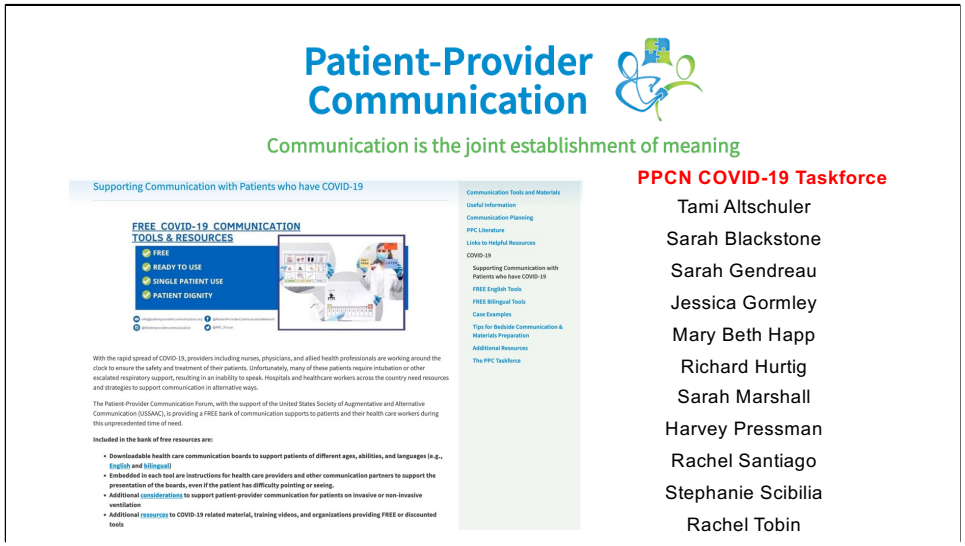
PPE a Barrier to Effective Communication

Retrieved from Twitter, 4/8/20

Impact on Audibility of Provider Speech: • Added difficulty for Hearing Impaired Patients or patients who use sign language.
Impact on Audibility of Patient Speech: • Occlusive Effect of PPE on Caregivers' Ability to Understand their Patients
Impact on Recognition of Caregivers by the Patient: • No identifiable facial features • No visible ID
Availability of PPE Limited the Number & Duration of Bedside Interactions

The need for staff to use Personal Protective Equipment when treating Covid-19 patients has further complicated patient-provider communication.
PPE has made it harder for patients, particularly those with hearing impairment or who rely on sign language, to understand their care providers.
Likewise, the use of PPE has made it harder for staff to make out what the patient may be saying.

Especially early in the pandemic, the limited availability of PPE restricted the number and duration of bedside interactions. That together with, PPE obscuring the providers face and no visible ID added to great isolation of the patient.
The picture on this slide shows a creative solution that some staff produced to help patients recognize who they were.



PPCN COVID-19 Taskforce

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In early March of 2020 as the pandemic spread and it became apparent that hospitals could not implement many of the communication tools and strategies that had been part of standard practice.

I reached out to colleagues at the Patient-Provider Communication Network to see if we could quickly develop and distribute low-tech communication tools and strategies that could be used in hospitals treating Covid-19 patients.

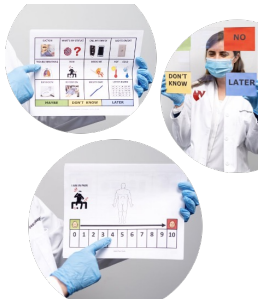
The PPCN task force included clinicians from Boston Children's Hospital, Massachusetts General Hospital, NYU Langone Hospital, Ohio State University College of Nursing, Wisconsin Health- Waisman Center, the University of Nebraska Medical Center and my Voxello- University of Iowa Healthcare team.

The task force used their collective years of experience addressing the communication needs of pediatric and adult patients to develop a set of communication tools that could be quickly and easily deployed in Covid-19 ICUs.

By later in the third week of March, these tools were made available on the PPCN website and announcements were posted on social media and to various speech-language pathology and nursing listserves.

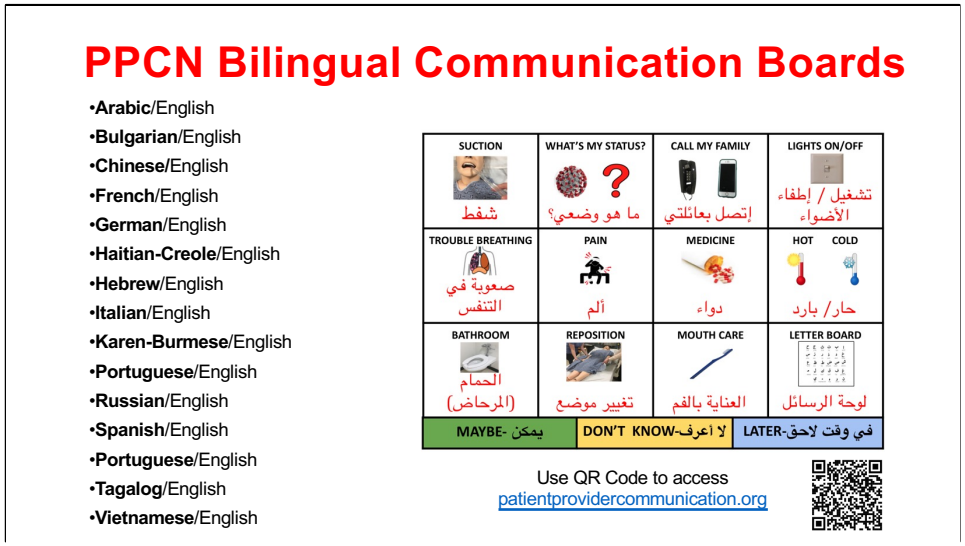
Patient-Provider Communication Network
Covid-19 Communication Tools

- Pain scales
- Yes/no
- Letter Boards
- General Needs - Adults
- General Needs - Pediatrics
- Medical Decision Making
- Serious Illness
- Create Your Own
- How to use instructions



Use QR code to access
patientprovidercommunication.org

The free Covid-19 communication tools were designed to be downloaded and used right in the ICUs. These included a range of tools from simple pain scales and yes/no response options to tools that allowed patients to make their needs known and participate in medical decision making.
In addition, the task force also created simple instructions on how to use and implement the communication tools.



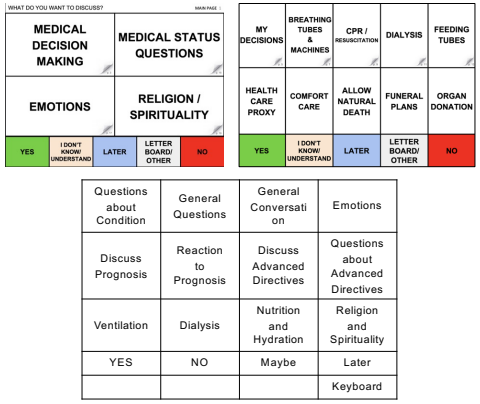
Many of the Covid-19 infection protocols limited who could be at a patient's bedside. This left patients who had limited English proficiency even more isolated and unable to participate in their care. While the use of remote interpreter services were made available at some facilities, the interpreters could support the provider-to-patient communication for patients who were able to speak.

But for intubated patients, there was no way for the interpreters to communicate the patient's intentions to their care providers.

At Voxello, I had developed a bilingual version of the noddle-chat communication device to support bidirectional communication for patients with Limited English Proficiency. I worked with the taskforce to produce low tech communication boards that would allow the ICU staff and non-English speaking patients to effectively communicate. We are grateful to the U.S. Society for Augmentative and Alternative Communication for the funding to have certified interpreters translate all of the words and phrases used.

Supporting Medical Decision Making

- Have a range of communication templates for the patient to indicate their preferences and solicit information a particular treatment.
- Make it easy for patients to demonstrate an understanding of the consequences of certain decisions about their care.
- Ensure that their expressed wishes on medical and spiritual issues are as unambiguous as possible.

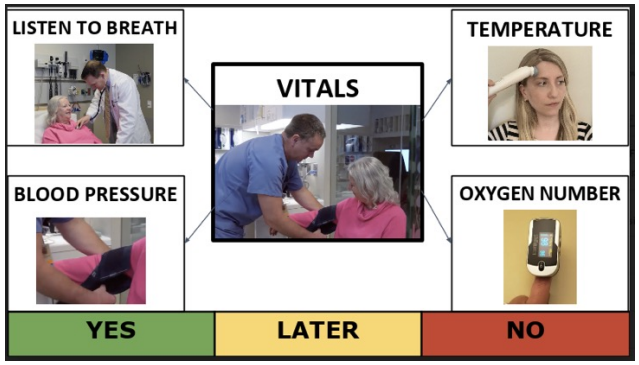


Part of my lab's and Voxello's efforts with funding from NIH/NINR have been directed to creating communication tools to allow patients to be actively engaged in medical decision making.
Part of that involves providing a tool that would support extended conversations that not only allow the patient to solicit information but to also make informed decisions.
To achieve this,

1) We provided communication templates so that a patient could indicate preferences and solicit information for a particular treatment
2) We made it easy for patients to demonstrate and understanding of the consequences of certain decisions about their care
3) We ensured that the patient's expressed wishes on medical and spiritual issues are as unambiguous as possible.

It is often difficult for non-speaking patients to demonstrate that they are competent and can participate in medical decision making.
However, the tools we developed enabled patients to demonstrate that they understand and can make decisions about their care.

Comprehension Support Tools



Our clinicians appreciated that communication tools can also be used to support patients' comprehension of what they are being told. Visual aids have been found to be effective for patients with limited health literacy and limited proficiency in the language of the caregiver. The tools, like the one illustrated on this slide , were created to support patients with transient or chronic comprehension deficits.

Worldwide PPCN Website Access

Continent	Users	% of Total Users
Global	134,165	
Africa	2,409	1.8%
Oceania	5,755	4.29%
Asia	8,748	6.52%
Europe	17,208	12.83%
Americas	99,629	74.26%

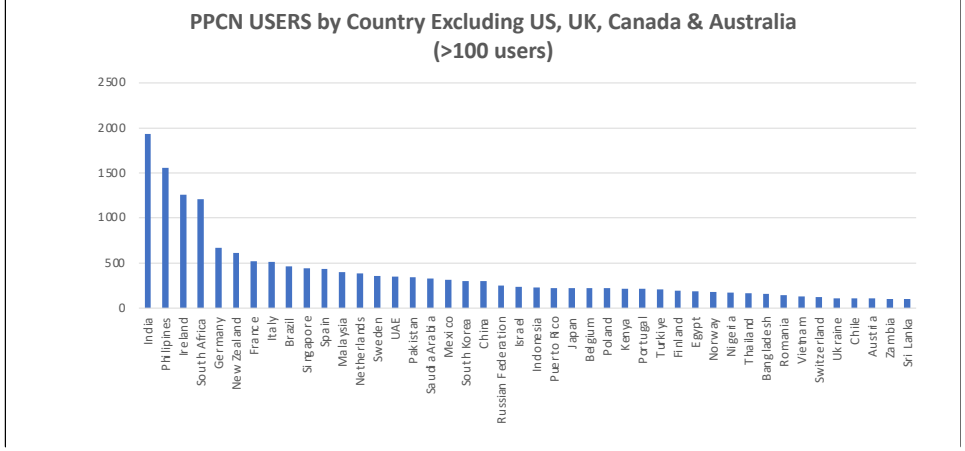
As of April 3, 2023, 134,165 individuals from 193 identifies countries accessed the PPNC website for a total of 386,999 pageviews. This slide shows the breakdown based on the Google continental classification. It is worth noting that 87% of the users were from Europe and the Americas.

Top 10 Countries: PPCN Website Access

Country	PPCN Users	% of Total Users
USA	91,948	68.5%
UK	10,885	8.1%
Canada	9,789	7.3%
Australia	5,154	3.8%
India	2,108	1.6%
Philippines	1,576	1.2%
Ireland	1,296	1%
South Africa	1,251	0.9%
Germany	686	0.5%
New Zealand	654	0.5%

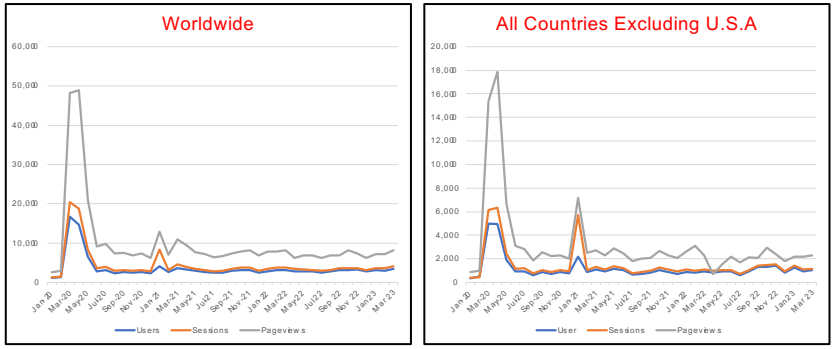
As of April 3, 2023, 68.5% of the 134,165 website users came from the USA. The table on this slide shows the number of users and percent of total users for the top ten countries based on PPCN website usage.

Worldwide PPCN Website Access



Australia, Canada, the UK and the USA accounted for 87% of all users. This slide illustrates the user counts for the 44 countries that had over 100 users of the PPNC website.. The number of users ranged from 1931 for India to 101 for Sri Lanka.

PPCN Website Usage By Month

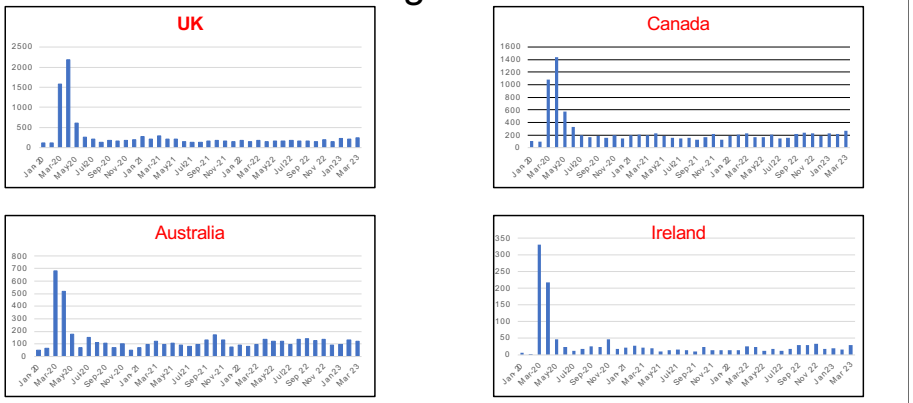


As of April 3, 2023,
139,398 individuals from 193 identifies countries accessed the PPNC website for a total of 384,579 pageviews.

As I mentioned earlier the Patient Provider Communication Network posted communication tools in late March of 2020.
The figure on the left shows the number of worldwide users, sessions and pageviews by months from January 2020 through the end March 2023. You can see that the website usage dramatically increased once the Covid-19 tools were made available. It is worth noting that the website continued to attract new users each month at rates significantly higher than those seen pracademic.
The figure on the right presents the website usage data excluding access from the USA. It is worth noting that a similar usage pattern is seen with a more pronounced second peak seen in January 2021.

Exemplar PPCN Website Usage Pattern

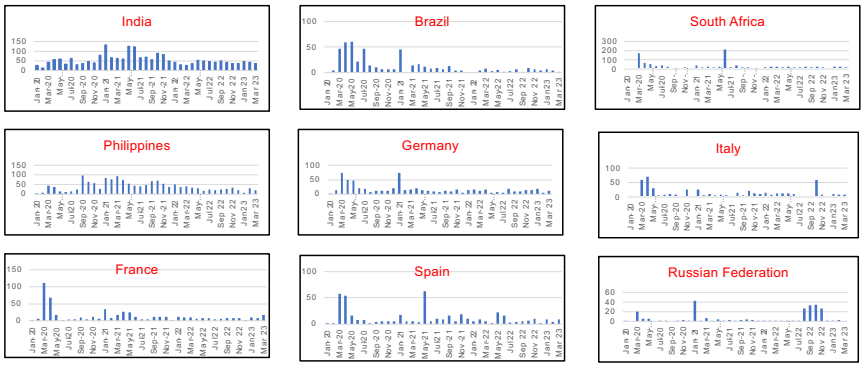
Single Peak



This slide illustrates one pattern of website usage rate that showed a significant single peak shortly after the communication tools were posted and then a fairly steady usage rate through March 2023.

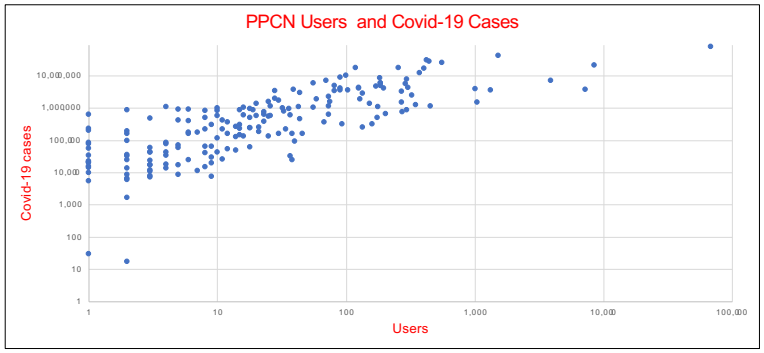
Exemplar PPCN Website Usage Pattern

Multiple Peaks



By contrast some countries showed multiple peaks that seemed to correspond to cases surges attributed to variant strains of the virus. Unlike most countries that had their highest peak of website usage at the onset of the pandemic, India which had the fifth highest website usage did not reach its highest usage peak until 2021. This probably reflects differences in when countries saw their peaks in reported Covid19 cases.

Worldwide Covid-19 Case Rates and PPCN Website Usage

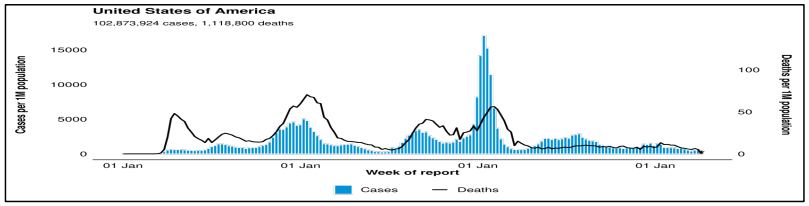


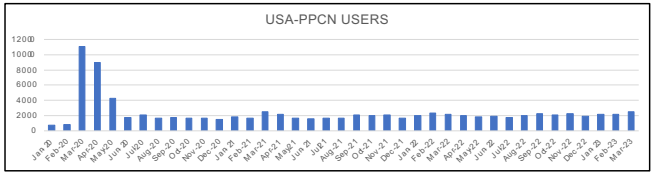
Cases from 183 countries: Multiple R= 0.599, F=101.39,df 1,50, p<.0001

We were interested in the relationship between covid-19 case rates and utilization of the PPCN website. This slide plots PPCN users against the WHO reported covid-19 case rates..
We performed a regression analysis on the data for 183 countries for whom we had both website usage data and WHO reported cases rates. We also performed a regression analysis for the 48 countries with 100 or more website users. Both analyses revealed significant positive relationships that accounted for 36 percent of the variance in the data.

Note: WHO does not report cases for Taiwan, Hong King and Macau so analysis is on. 183 countries that had PPCN users and cases reported to WHO

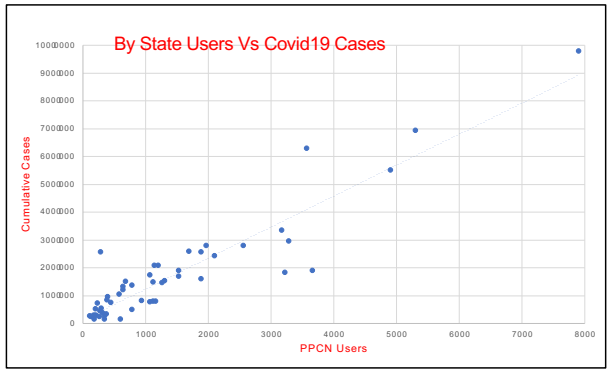
USA Covid-19 Cases and PPCN Usage





The two figures on this slide illustrate the pattern of the weekly case and death rates in the USA, as reported to the WHO and the monthly PPCN website usage.
It is worth noting that the peak in users occurred shortly after the PPCN Covid19 materials were made available and there have been nearly 2000 website visitors over the ensuing months.

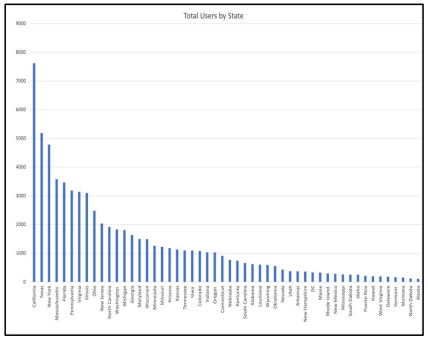
USA Covid-19 Cases and PPCN Usage

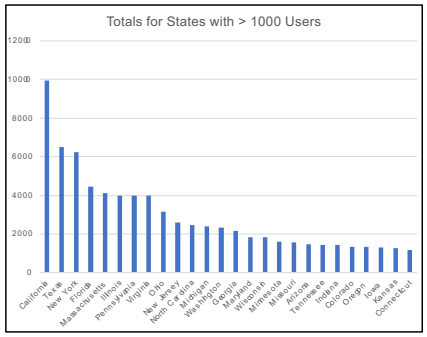


Multiple R= 0.92 F=287.2 p<.0001

The figure shows the relationship of PPCN users from the USA and the WHO Covid-19 case reports. The regression analysis revealed a string positive relationship that accounts for 85% of the variance.

U.S.A. PPCN Website Access: By State

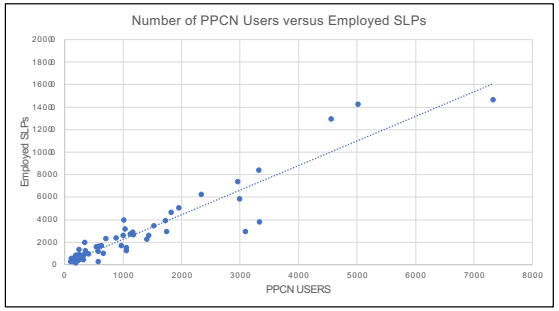




This slide shows the breakdown in PPCN usage by state. The figure on the left shows the number of PPCN users for all 50 states as well as Washington D.C. and Puerto Rico. The figure on the right shows the website user rates for the the states with >1000 users; ranging from a high of 9938 for California to 1175 for Connecticut.

Number of PPCN Users versus Employed SLPs

By State (Including Washington DC & Puerto Rico)



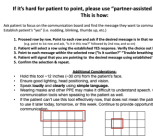
Multiple R= 0.94

F=382.1, df 1,50, p<.0001

As the bulk of the PPCN participants are Speech-Language Pathologists we were interested in whether there was a relationship between the access to the website and the number of Speech-Language Pathologists employed in each state. The figure on this slide shows a plot of PPNC users by state employment data obtained from the US Bureau of Labor Statistics.

The regression analysis showed a strong positive relationship that accounts for 88% of the variance.

Best Practice Recommendations

Communication Partner Training  	• Provide “tips for bedside communication” • “On the spot” training with bedside staff • Bedside signage • Virtual training with family/loved ones • Partner Assisted Scanning Instructions • Handouts with QR codes which may direct providers to video demos
Emergency Preparedness  	• Identify patient-provider communication champions (RNs, MDs, RTs, etc.) • Ongoing education/training with staff on communication access • Create your own “ready-made” context specific communication tools

Our collective experience in supporting bedside communication in Covid-19 ICUs leads is to make some practice recommendations.
No matter how simple the communication tool is, getting a high-fidelity implementation will require communication partner training.
We recommend providing,

- “tips for bedside communication”
- “On the spot” training with bedside staff
- Bedside signage
- Virtual training for family/loved ones
- Instructions non how to use Partner Assisted Scanning
- Handouts with QR codes which may direct providers to video demos

The Covid-19 pandemic and the evolving protocols have highlighted the importance emergency preparedness. If a hospital has established a “culture of communication” it will be easier to:

- Identify patient-provider communication champions (RNs, MDs, RTs, etc.)
- Ongoing education/training with staff on communication access
- Create your own “ready-made” context specific communication tools

Conclusion: Prioritize Communication

Communication tools improve patient outcomes.

Communication tools can be implemented even during a time of crisis.

When working in Covid-19 care units:

- **Provide tools that allow patients to go beyond expressing basic needs and wants**
- **Minimize additional noise in environment**
- **Wear clear masks when able**
- **Use personal voice amplification**
- **Consider virtual visits as an alternative when possible**

Communication access is a legal and moral obligation

Our experiences working with critically ill patients before, during and after the pandemic and during the pandemic have taught us many lessons. We see better outcomes when patients can effectively communicate. Patient and staff stress is reduced when barriers to communication are reduced or eliminated. The added restrictions in Covid-19 care units have identified strategies we should consider to support our critically ill patients. These include:

- Providing communication tools that allow patients to go beyond expressing basic needs and wants and allow patients to more actively participate in their care
- Minimizising additional noise in environment in order to ensure that patients and providers can understand each other
- Using personal voice amplification to enhance audibility when using PPE
- Wearing clear masks when able in order to promote better patient engagement and comprehension
- Considering virtual visits as an alternative when possible

We should never forget that it is our legal and moral obligation to help our patients overcome barriers to communication.

PROJECT: MUSIC HEALS US

Fight Patient Isolation: Utilizing Existing Telehealth Technology

From April 2020 through June 2023
Over 15,000, Individual Patient Concerts Given

https://www.pmhu.org/vital-sounds

The restrictions on who could be at the bedside of Covid-19 patients, limited who patients communicated with and exacerbated their feelings of isolation. These patients did not have visits from the wide range of staff who are responsible for all the “non-medical” aspects of their care.

Pre-pandemic, the non-profit organization PROJECT: MUSIC HEALS US (PMHU) provided inspiration, education and healing through live music performances and interactive programming to marginalized communities across the United States. As the pandemic progressed, many hospitals eventually began permitting patients to connect virtually with staff as well as with family and friends via smartphones and tablets. This opened things up for a wider range of activities from music therapy and pastoral care.

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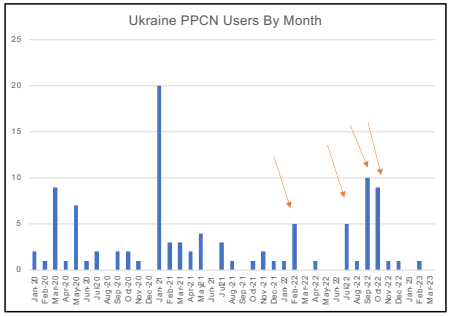
During the pandemic, **PROJECT: MUSIC HEALS US** began offering one-on-one concerts via their “Vital Sounds Initiative” video livestream to the most isolated and vulnerable: patients with Covid!9 hospitalized across the country. From April 2020 to the beginning of June 2023, the Vital Sounds Initiative has given over 15,000 individual patient concerts. Feedback from clinicians has noted the positive impact of the music on both the physical and

psychological state of their patients.

Postscript:
Responding Crisis Induced Communication Barriers



A listing of links to a range of bilingual tools can be found at:
https://www.patientprovidercommunication.org/ukraine-supports/communication-tools/

The figure on the left shows the PPCN usage by users from the Ukraine. It is noteworthy that during the first month of the Russian invasion there was a spike in PPCN website access that was followed by increases in usage in the summer and early fall of 2022.

The experience of needing to develop and deploy free downloadable communication tools to meet the needs of patients with Covid-19, has made it possible to quickly pull together communication tools to address the linguistic barriers faced by pediatric and adult patients fleeing war torn Ukraine. Shortly after the war broke out many adult and pediatric patients in Ukrainian hospitals were being evacuated to hospitals in countries across Europe. While some of the patients were evacuated with family members who were fluent in the languages spoken at the host facilities, many, including children, found themselves alone and even more isolated by linguistic barriers.

While the carnage of Russia's war on Ukraine, has killed and maimed thousands of Ukrainian children and adults, the European medical community has stepped up to treat these victims of war. It is some solace that the bilingual communication tools have helped patient-provider communication in these cases.

Take Away Message

- **Open access to shared communication tools & resources are essential** in dealing with the impacts of natural disasters, pandemics and war.

- **Communication resources**;
  - support effective patient-provider communication
  - have positive impact on healthcare outcomes.

The pandemic, natural disasters and war have demonstrated that having open access to shared communication tools & resources is essential.
These communication resources support effective patient-provider communication and have positive impact on healthcare outcomes.

How you can play a role and contribute resources.

Patient-Provider Communication
Communication is the joint establishment of meaning

Join and participate in the Patient-Provider Communication Network (https://www.patientprovidercommunication.org/the-ppc-forum/how-to-become-a-participant/ (it's free!)

Let others know about the available communication tools and how to use them

You can play a role and contribute resources by,

1) Joining and participating in the Patient-Provider Communication Network (https://www.patientprovidercommunication.org/the-ppc-forum/how-to-become-a-participant/ (it's free!)
2) Let others know about the available communication tools and how to use them

References-1

Contact: richard-hurtig@uiowa.edu

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- **Hurtig, R.R., Alper, R.M., Bryant, K.N.T., Davidson, K.R, & Bilskemper, C.** (2019) Improving patient safety and patient-provider communication. *Perspectives of the ASHA Special Interest Groups Vol.4 1017-1027, October 2019.* doi.org/10.1044/2019_PERS-SIG12-2019-0021.
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Thank you for taking the time to hear my presentation. This slide and the next provide you with a list of our publications related to today's talk, as well as my contact information.

References-2

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I hope you have found the information in today's presentation useful.
Please, be well and stay safe.