

Effects of an AAC Partner Training to Support Child Choice-Making during an Inpatient Stay

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“Communication is the most common ‘procedure’ in medicine.”
(Levetown & the Committee on Bioethics, 2008, p. e1441)



The problem

- A severe communication disability can **negatively impact** the quality of life, health outcomes, and participation of individuals with complex communication needs in medical encounters (Blackstone, Beukelman, & Yorkston, 2015)
- Adults with communication disabilities experience **3 times more preventable adverse medical events** (Bartlett et al., 2008)
- Reducing communication barriers with this population in acute care facilities could prevent over 600,000 adverse events annually (**projected savings of \$6.8 billion**) (Hurtig, Alper, & Berkowitz, 2018)
- Children with complex communication and medical needs often experience **frequent and/or extensive hospitalizations** (Burns et al., 2010)



Children with Complex Communication Needs



- Rely on augmentative and alternative communication (AAC) strategies to communicate
- Experience multiple challenges communicating with hospital staff (Shilling et al., 2012)
- Often play passive roles during healthcare interactions (Hemsley et al., 2013)
- Have expressed a desire to more actively participate in healthcare interactions (Hemsley et al., 2013)



In Inpatient Environments

Children with CCN may:

- Have **restricted communication with adults**
- Have **limited access to toys**
- **Interact with a large number of unfamiliar partners**
- Have **limited linguistic input** in a mode they can easily produce
- Have **existing or newly acquired neurological conditions** that make communication and language learning challenging

(Gormley & Light, 2019b&c)



Hospital providers who work with these children report:



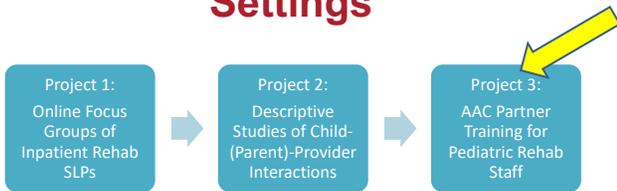
- **Time constraints** as a critical barrier to effective communication (e.g., Hemsley & Balandin, 2014)
- **Limited training** to effectively communicate with individuals with complex communication needs (e.g., Finke et al., 2008)
- Supporting the child's communication in hospitals is **not part of their role** on the interdisciplinary team (Sharkey et al., 2016)
- **Prioritizing other aspects of care** (e.g., feeding) above communication (Hemsley et al., 2014)



So where do we start for AAC training?



Understanding and Improving AAC Services in Inpatient Settings



(Gormley & Light, 2019a) (Gormley & Light, 2019b & c) (Gormley & Light, 2019d)



So where do we start for AAC training?

- Consider **efficient and effective** methods to train:
 - a **large number** of communication partners,
 - across a **variety of settings and locations**,
 - for potentially **short durations** of time.
- Provide **consistent opportunities** for the **child to actively control aspects of the interaction**
- Train health care providers and parents to be **responsive to child communication attempts with diverse linguistic input**



Research Questions

1. What is the effect of the training on the **percentage of rehabilitation providers who offer a child with CCN a choice** during routine interactions?
2. What is the effect of the training on **rehabilitation providers' accuracy** implementing the steps of the procedure with children with CCN during routine interactions?
3. What is the **perceived value** of the training based on rehabilitation providers' self-report?



Why Teach Communicating Choices?

- Promotes **child control** and **active participation** in medical encounters (Palazzi et al., 2015)
- **Early developing skill** exhibited by children in the intentional and early symbolic levels of communication (Siegel & Cress, 2002)
- Can be used:
 - with children who use a **variety of AAC techniques** (e.g., eye gaze)
 - across a **variety of activities**



Just-in-time Training

(e.g., Branzetti et al. 2017; Mangum et al., 2017)

- Brief** • 15-minutes in duration
- Portable** • Housed on a tablet
- Task-Driven** • Focused on procedural learning of a single, well-defined task (i.e., choice-making)
- Multimedia Elements** • Video cases, audio narration, and text used to explain and demonstrate content
- User-driven & Instructor-driven** • Instructor pre-programmed pause points & explanation
• User controlled the rate of completion and navigation



COMMUNICATING CHOICES

- OFFER A CHOICE**
 - Pick 2 objects
 - Ask a question
 - Show and name
- WAIT FOR A RESPONSE**
 - Watch the child
 - Remain silent
- RESPOND TO THE CHILD**

| If the child... | Say | + | Do |
|-------------------|------------------------------|---|----------------------------|
| Picks an item | "You want ___" | | give the item to the child |
| Rejects the items | "You don't want ___" | | present different items |
| Does not respond | "I don't know what you want" | | repeat the same items |



Table 2-4: Video example characteristics

| Section | Video Case | Number of Pause Points | Provider Role | Activity | Child Communication Mode | Child Communication Behavior |
|-----------------------|------------------------|------------------------|-----------------------|---------------------------|----------------------------|---|
| Introduction | Worked example - Allie | 4 | Nurse | Soothing | Reaching with arm | Makes a selection |
| Video case examples | Case 1 - Finn | 2 | Respiratory therapist | Vitals | Speech and pointing | Makes a selection |
| | Case 2 - Josh | 2 | General provider | Rounding | Pointing | Makes a selection |
| | Case 3 - Josh | 2 | General provider | Snack | Pointing and grabbing item | Initially rejects items |
| | Case 4 - Allie | 2 | Nurse | Night rounding | Reaching and grabbing item | Initially does not respond |
| | Case 5 - Addie | 2 | Aide | Snack | Eye pointing | Makes a selection |
| Practice and feedback | Practice 1 - Josh | 6 | Therapist | Play | Pointing | Initially rejects items |
| | Practice 2 - Josh | 4 | Physical therapist | Dressing | Reaching and grabbing item | Makes a selection |
| | Practice 3 - Allie | 5 | Therapist | Dressing | Leg and finger pointing | Initially does not respond or response is unclear |
| | Practice 4 - Addie | 2 | Nurse | Medication administration | Shakes head "no" | Initially rejects items |
| | Practice 5 - Finn | 2 | Nurse | Medication administration | Speech and pointing | Makes a selection |

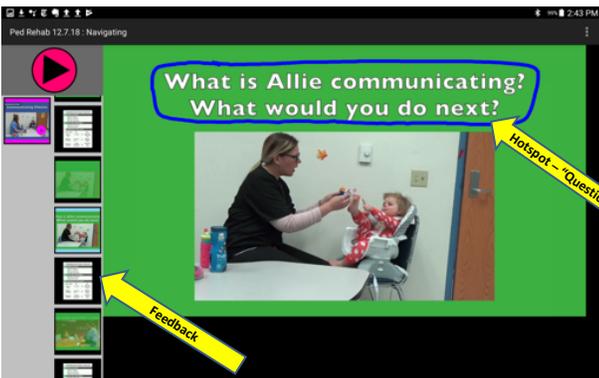


Table 2-6: Sample practice questions and explanatory feedback provided during training during

| Video Case | Provider Role | Activity | Question | Explanatory Feedback |
|-------------------|--------------------|----------|--|--|
| Practice 1 - Josh | Therapist | Play | What items could you use to offer a choice? | The speech therapist picked 2 toys from the table that are important to the activity and toys that she thought Josh will want to play with. |
| | | | In the next clip, what is Josh communicating? | Josh is pointing away from the initial choices. |
| | | | How should you respond? | Since Josh rejected the initial items, the therapist did a nice job presenting different items for Josh to choose from |
| Practice 2 - Josh | Physical therapist | Dressing | You are getting Josh ready to put his hat and coat on for physical therapy today. What question would you ask him? | Since participating in dressing is not optional, it is advised to ask what Josh wants to do first |
| | | | What is another choice she could offer in this dressing activity once he picked the hat? | Since Josh picked to put on a hat first, the provider did a nice job offering another choice about which hat he would like to wear |
| | | | Do you remember how long you should wait? | The provider should wait as long as the child needs to make a choice. In this case, Josh quickly responds. But in other cases, you may need to wait 3-5 seconds, depending on the child. |



Adult Participants (n = 28)

- Nurse (n = 6)
- Certified Nursing Assistant (n = 4)
- Respiratory Therapist (n = 6)
- Speech-Language Pathologist (n = 3)
- Occupational Therapist (n = 4)
- Physical Therapists (n = 3)
- Recreational Therapists (n = 2)



Jacinta

- 17 months old
- Septic shock syndrome resulting in multiple amputations

Gerome

- 16 years old
- Anoxic brain injury, previously typically developing

Adriana

- 16 years old
- Rare chromosomal disorder, in ICU for 1 year prior to admission to rehab facility



Study Procedures

| Group | Time 1 | | Time 2 |
|--------------------|--------------------------------|--|---------------------------------|
| Treatment (n = 14) | 2 Child Interactions (Pretest) | Training + Checklist Social Validity Questionnaire | 2 Child Interactions (Posttest) |
| Control (n = 14) | 2 Child Interactions (Pretest) | | 2 Child Interactions (Posttest) |



Dependent Variables

| Variable | Description |
|--|--|
| Percentage of providers who offered a choice | The total number of providers in each group that offered at least one choice/(the total number of providers in the group) X 100 |
| Accuracy of procedure implementation | The total number of procedure steps accurately implemented by the provider during child interaction 1 + child interaction 2 |
| Child responses to choices offered | The total number of interactions that a child accepted or rejected a choice in each time point/(total number of interactions in each time point) X 100 |



Data Coding

- Prior to coding, two research assistants completed a training of the operational definitions
- Child-provider interactions were coded using the operational definitions of each dependent variable
 - Research assistant was blind to group assignment and pre-post condition.
- A second research assistant, also blind to group assignment and condition, coded:
 - 25% of the child interaction videos to achieve interobserver reliability and procedural fidelity
 - 21% of the training videos to determine procedural fidelity



Data Analysis

- Descriptive statistics were completed to calculate:
 - The percentage of healthcare providers who offered a choice across each group and time point
 - The accuracy of procedure implementation by providers across each group and time point
 - The percentage of interactions when the children (a) selected an item, (b) rejected both items, or (c) did not respond to the provider when offered a choice
- The Kruskal-Wallis test was used to investigate the effects of the training on the accuracy of procedure implementation between groups
- Eta-squared was calculated to measure the clinical significance of these effects



Results: Providers who Offered a choice

| Group | Pretest Interactions | Posttest Interactions |
|--------------------|----------------------|-----------------------|
| Treatment (n = 14) | 0% (n = 0) | 71% (n = 10) |
| Control (n = 14) | 14% (n = 2) | 7% (n = 1) |



Results: Accuracy of Procedure Implementation

Pretest Performance

| Group | Mean Pretest Score | Median Score | U | P | Partial Eta Squared |
|-----------|--------------------|--------------|-------|------|---------------------|
| Treatment | 0 (0) | 0 | 84.00 | 0.15 | 0.07 |
| Control | 2.0 (5.6) | 0 | | | |

Not significant

Gain Scores (Posttest – Pretest)

| Group | Mean Gain Score (SD) | H(1) | P | Partial Eta Squared |
|-----------|----------------------|--------|---------|---------------------|
| Treatment | +11.6 (8.9) | 12.597 | 0.001** | 0.44 |
| Control | -1.4 (6.3) | | | |

Significant



Sample Pre-test Interaction



Sample Post-test Interaction



Table 2-9: Number of days after the training that providers completed posttest interactions

| Provider | Number of days after training completion | |
|---------------------------|--|-------------|
| | Posttest 1 | Posttest 2 |
| 1 | 2 | 20 |
| 2 | 2 | 34 |
| 3 | 2 | 48 |
| 4 | 0 | 1 |
| 5 | 4 | 8 |
| 6 | 0 | 0 |
| 7 | 7 | 10 |
| 8 | 6 | 7 |
| 9 | 0 | 18 |
| 10 | 0 | 0 |
| 11 | 7 | 8 |
| 12 | 0 | 4 |
| 13 | 1 | 1 |
| 14 | 3 | 3 |
| Mean (Standard deviation) | 2.4 (2.6) | 11.6 (14.2) |



What choices did the providers offer?

Examples:

- Toys
- Favorite kinds of music
- Food
- Order of activities (e.g., medicine vs shots)



COMMUNICATING CHOICES

OFFER A CHOICE

- Pick 2 objects
- Ask a question
- Show and name

WAIT FOR A RESPONSE

- Watch the child
- Remain silent

RESPOND TO THE CHILD

| If the child... | Say | + | Do |
|-------------------|------------------------------|---|----------------------------|
| Picks an item | "You want ___" | + | give the item to the child |
| Rejects the items | "You don't want ___" | + | present different items |
| Does not respond | "I don't know what you want" | + | repeat the same items |

Did the providers forget any of the steps?



How long did it take to implement the training?



How long did it take to implement the training?

On average, 47 seconds
(Range = 5-251 seconds,
SD = 68 seconds)



Table 3-7: Percent accuracy (frequency) with which providers demonstrated each procedural step across interactions where a choice was offered ($n = 16$)

| Procedure Step | Percent | Frequency |
|--|---------|-----------|
| Offer a choice | | |
| Pick two objects in the room | 100% | 16 |
| Ask the child a question* | 88% | 14 |
| Present the first object | 100% | 16 |
| Say the first object's name* | 81% | 13 |
| Present the second object | 93% | 15 |
| Say the second object's name* | 75% | 12 |
| Objects presented close enough for child to select | 100% | 16 |
| Wait for a response | | |
| Remain silent | 93% | 15 |
| Look expectantly toward the child | 88% | 14 |
| Respond to the child | | |
| Linguistic Response* | | |
| Name the object selected | | |
| Say "you don't want ___ or ___" | 93% | 15 |
| Say "I don't know what you want" | | |
| Behavioral Response | | |
| Give the child the item | 100% | 16 |
| Present different items | | |
| Repeat presentation of the same items | | |

*= Step that required a linguistic response



What were the providers' perceptions about the value of the training?



Results - Social Validity

| Question | Mean (Range) |
|---|--------------|
| Use of a mobile device (i.e., tablet) was effective to teach the communicating choices procedure. | 4.7 (3-5) |
| I would recommend others learn the communicating choices procedure. | 4.8 (3-5) |
| I thought that the mobile training was easy to use. | 4.94 (4-5) |
| The length of time needed to complete the training was appropriate for my work setting. | 4.82 (4-5) |



"You can use it anytime with kids"

"Choices are always good for kids to make them think they are in control"

"It gives clinicians a standardized communication method to attempt with a variety of patients to optimize their performance and comfort with what is happening during the hospital stay"

"It is sometimes difficult to break down choices into an object for representation"



Limitations

- Although improvements were observed in the treatment group, a small number of providers still did not offer a choice following the training and may need additional training and/or a different training mode
- Due to time constraints on the unit, maintenance of the target skill was unable to be fully measured
- The training only addressed one interaction skill
- Potential that participant improvements may be attributed to reactivity



What about the "non-responders"?

Table 4-1: Demographic and interaction variables for individuals who did not respond to the treatment

| Provider | Highest Degree | Role | Shift | Inpatient experience (Years) | AAC training or experience | Child Partner during posttest |
|----------|----------------|------|-------|------------------------------|----------------------------|-------------------------------|
| 6 | Associates | CNA | Night | 2.5 | No | Adriana, Gerome |
| 12 | Associates | RT | Day | 5 | No | Adriana |
| 13 | Associates | RT | Day | 9 | No | Adriana |
| 14 | Masters | RT | Night | 3.5 | No | Adriana, Gerome |



"Take-aways"

Following training completion (total of 15 minutes):

- more healthcare providers offered more choices to a child after completing the training
- inpatient providers completed the "Communicating Choices" procedure with increased accuracy
- children with CCN consistently communicated their choices, when given the opportunity to do so

The training may be an effective and efficient intervention approach to support children with CCN to communicate their preferences in the inpatient setting



Future Directions

- Decrease the time required to complete the trainings
- Possibly integrate face-to-face coaching to:
 - Improve "responders" implementation of the trained procedure
 - Help "nonresponders" to offer a choice, etc.
- Expand to different skills
- Expand to different hospital units



Thank you!

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Questions & Discussion

Please contact me!! ☺

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