

Date: December 4, 2012

Title: Functional communication training and treatment of problem behavior

Clinical Question:

P (Population) *Among children with severe communication deficits receiving inpatient or outpatient treatment for problem behavior*

I (Intervention) *does functional communication training**

C (Comparison)

O (Outcome) *lead to decreased aggression and self-injurious behavior?*

[Definitions for terms marked with * may be found in the Supporting Information section.](#)

Target Population for the Recommendation:

Inclusion Criteria

- Children ages 3-21 years
- Present with severe communication impairments
- May include diagnoses of autism, cognitive impairments, or developmental disability
- Receiving inpatient or outpatient treatment for severe problem behavior that includes aggression and/or self-injury

Recommendation:

It is recommended that children with severe communication deficits receive functional communication training (FCT) when treating problem behavior in an inpatient or outpatient setting in order to decrease aggression and self-injury (*Kurtz, Huete, Tarbox, & O'Conner, 2003 [4a]; Hagopian, Wilson, & Wilder, 2001 [4a]; Bowman, Fisher Thompson & Piazza, 1998 [4a]; Fisher, Adelinis, Thompson, Wordsell, & Zarcone, 1998 [4a]; Fisher, Kuhn, & Thompson, 1998 [4a]; Hagopian, Fisher, Sullivan, Acquisito & LeBlanc, 1998 [4a]; Fisher, Piazza, Cataldo, Harrell, Jefferson, & Conner, 1993 [4a]; Wacker, Steege, Northup, Sasso, Berg, Reimers, et al., 1990 [4a]; Matson, LoVullo, Boisjoli, & Gonzalez, 2008 [5a]; Kahng, Hendrickson, & Vu, 2000 [5a]).*

Note: FCT was often used in combination with additional behavioral interventions. FCT was most frequently combined with extinction* (*Kurtz, 2003 [4a]; Hagopian et al., 1998 [4a]; Fisher, Adelinis et al., 1998 [4a]; Fisher, Kuhn, et al., 1998 [4a]; Bowman et al., 1997 [4a]; Fisher et al., 1993 [4a]*), punishment (*Kurtz et al., 2003; Hagopian et al., 1998 [4a]; Fisher et al., 1993 [4a]*) or as part of a multi-component treatment package (*Matson et al., 2008 [5a]*).

Discussion/Synthesis of Evidence Related to the Recommendation:

There is a moderate body of evidence that supports use of FCT in treating children with aggression and self-injurious behavior (SIB) in the inpatient and outpatient settings (*Kurtz et al., 2003 [4a]; Hagopian et al., 2001 [4a]; Hagopian et al., 1998 [4a]; Bowman et al., 1998 [4a]; Fisher & Adelinis et al., 1998 [4a]; Fisher & Kuhn et al., 1998 [4a]; Fisher et al., 1993 [4a]; Wacker et al., 1990 [4a]; Matson et al., 2008 [5a]; Kahng et al., 2000 [5a]*). An extensive literature search revealed 10 studies that investigated the use of FCT to treat problem behavior in the inpatient and/or outpatient settings. All studies were single subject designs with sample sizes ranging from 1-30.

Multiple communication modalities were utilized to teach replacement behaviors including speech (*Kurtz et al., 2003 [4a]; Fisher, Kuhn et al., 1998 [4a]; Hagopian et al., 1998 [4a]; Bowman et al., 1997 [4a]; Hagopian et al., 2001 [5a]*), signs (*Fisher et al., 1993 [4a]; Wacker et al., 1990 [4a]*), picture cards (*Fisher, Adelinis, et al., 1998 [4a]; Kurtz et al., 2003 [4a]; Kahng et al., 2000 [5a]; Matson, et al., 2008 [5a]*), and a switch device (*Wacker et al., 1990 [4a]*).

FCT was used in combination with other behavioral procedures including extinction, punishment, differential reinforcement of other behaviors (DRO), guided compliance, and non-contingent reinforcement (NCR). FCT plus

extinction was most commonly studied, with several studies reporting a decrease in problem behavior with implementation of FCT plus extinction (Kurtz et al., 2003 [4a]; Hagopian et al., 1998 [4a]; Fisher et al., 1993 [4a]; Fisher, Adelinis, et al., 1998 [4a]; Bowman et al., 1997 [4a]). Hagopian et al. (1998 [4a]) found that FCT plus extinction reduced problem behavior by at least 90% in almost half of the subjects studied. When extinction was used alone without FCT, problem behavior did not decrease; however, FCT alone was not as effective in reducing problem behavior as FCT plus extinction (Hagopian et al., 1998 [4a]). Hagopian et al. (2001 [4a]) reported a reduction in aggression and self-injury in a young boy with implementation of FCT plus extinction plus NCR. Matson et al. (2008 [5a]) reported a decrease in aggression and self-injury with a young child when FCT plus extinction was implemented as part of a treatment package including DRO, compliance training, and parent training.

FCT plus punishment was implemented in 2 studies, most often when FCT plus extinction did not result in clinically significant reductions in problem behavior. FCT plus punishment produced the most clinically significant and consistent reduction in problem behavior when implemented throughout the day on an inpatient unit (Fisher et al., 1993 [4a]; Hagopian, 1998 [4a]). The punishment procedure in some cases consisted of implementing a 30 second or 60 second basket hold. It should be noted that when comparing FCT plus extinction and FCT plus punishment, Hagopian et al. (1998 [4a]) found that subjects had higher rates of communication when FCT plus extinction was implemented.

When implementing FCT, Kahng et al. (2000 [4a]) found that teaching children to make specific requests rather than general requests led to better outcomes over time. Overall, the research supports FCT plus additional types of behavioral techniques which may include extinction, punishment, NCR, DRO, or guided compliance. FCT was also associated with a decrease in other types of problem behavior such as verbal aggression (Fisher, Adelinis et al., 1998 [4a]), property destruction (Kahng et al., 1998 [4a]; Fisher, Kuhn, et al., 1998 [4a]; Fisher, Adelinis, et al., 1998 [4a]; Bowman et al., 1997 [4a]), disruptive or dangerous behavior (Hagopian, et al., 2001 [4a]; Fisher, Adelinis, et al., 1998 [4a]) and pica (Fisher et al., 1993 [4a]).

Reference List:

- American Speech-Language-Hearing Association. (2002). *Augmentative and alternative communication: knowledge and skills for service delivery* [Knowledge and Skills]. Retrieved from www.asha.org/policy/KS2002-00067.htm. [5]
- Bopp, K. D., Brown, K. E., & Miranda, P. (2004). Speech-language pathologists' roles in the delivery of positive behavior support for individuals with developmental disabilities. *American Journal of Speech-Language Pathology / American Speech-Language-Hearing Association*, 13(1), 5-19. [5]
- Bowman, L. G., Fisher, W. W., Thompson, R. H., & Piazza, C. C. (1997). On the relation of mands and the function of destructive behavior. *Journal of Applied Behavior Analysis*, 30(2), 251-264. [4a]
- Carr, E. G., & Durand, V. M. (1985). Reducing behavior problems through functional communication training. *Journal of Applied Behavior Analysis*, 18(2), 111-126. [4a]
- Fisher, W., Piazza, C., Cataldo, M., Harrell, R., Jefferson, G., & Conner, R. (1993). Functional communication training with and without extinction and punishment. *Journal of Applied Behavior Analysis*, 26(1), 23-36. [4a]
- Fisher, W. W., Adelinis, J. D., Thompson, R. H., Worsdell, A. S., & Zarcone, J. R. (1998). Functional analysis and treatment of destructive behavior maintained by termination of "don't" (and symmetrical "do") requests. *Journal of Applied Behavior Analysis*, 31(3), 339-356. [4a]
- Fisher, W. W., Kuhn, D. E., & Thompson, R. H. (1998). Establishing discriminative control of responding using functional and alternative reinforcers during functional communication training. *Journal of Applied Behavior Analysis*, 31(4), 543-560. [4a]
- Hagopian, L. P., Fisher, W. W., Sullivan, M. T., Acquisto, J., & LeBlanc, L. A. (1998). Effectiveness of functional communication training with and without extinction and punishment: A summary of 21 inpatient cases. *Journal of Applied Behavior Analysis*, 31(2), 211-235. [4a]
- Hagopian, L. P., Wilson, D. M., & Wilder, D. A. (2001). Assessment and treatment of problem behavior maintained by escape from attention and access to tangible items. *Journal of Applied Behavior Analysis*, 34(2), 229-232. [4a]

- Kahng, S. W., Hendrickson, D. J., & Vu, C. P. (2000). Comparison of single and multiple functional communication training responses for the treatment of problem behavior. *Journal of Applied Behavior Analysis, 33*(3), 321-324. [5a]
- Kurtz, P. F., Chin, M. D., Huete, J. M., Tarbox, R. S. F., O'Connor, J. T., Paclawskyj, T. R., et al. (2003). Functional analysis and treatment of self-injurious behavior in young children: A summary of 30 cases. *Journal of Applied Behavior Analysis, 36*(2), 205-219. [4a]
- Matson, J. L., LoVullo, S. V., Boisjoli, J. A., & Gonzalez, M. L. (2008). The behavioral treatment of an 11-year-old girl with autism and aggressive behaviors. *Clinical Case Studies, 7*(4), 313-326. [5a]
- National Joint Committee for the Communication Needs of Persons with Severe Disabilities. (1992). *Guidelines for meeting the communication needs of persons with severe disabilities* [Guidelines]. Retrieved from www.asha.org/policy or www.asha.org/njc. [5]
- Wacker, D. P., Steege, M. W., Northup, J., Sasso, G. M., Berg, W., Reimers, T., et al. (1990). A component analysis of functional communication training across three topographies of severe behavior problems. *Journal of Applied Behavior Analysis, 23*(4), 417-429. [4a]
- Yudofsky, S.C., Silver, J. M., Jackson, W., Endicott, J.; Williams, D. (1986). The Overt Aggression Scale for the objective rating of verbal and physical aggression. *The American Journal of Psychiatry, 143*(1), 35-39. [5]

IMPLEMENTATION

Applicability Issues:

- Prior to the implementation of functional communication training, a comprehensive assessment should be completed that includes evaluation of the child's cognitive and language abilities. Language assessments can include formal and informal measures and should be completed by a trained professional, typically a speech-language pathologist. The American Speech-Language Hearing Association (ASHA) states that speech-language pathologists should have the knowledge and skills to assess the relationship between communication and behavior (ASHA, 2002). Because functional communication training is often used with children who are non-verbal or have limited speech, knowledge and skills about augmentative and alternative communication (AAC) is required. When determining the appropriate type of AAC several factors should be considered including the needs, abilities, and preferences of users and their communication partners, cultural, linguistic and environmental factors, and any co-existing uses of other types of assistive technology (ASHA, 2002).
- Communication replacement behaviors should be selected based on the functions of the problem behaviors, determined by completion of a functional analysis (*Carr & Durand, 1985 [4a]*).
- In order for direct care staff to be able to reinforce and document on functional communication goals they need to have an understanding of what functional communication is and how it relates to treatment of problem behavior. Educational programs focusing on functional communication need to be available to direct care providers.
- Functional communication materials and procedures can be included in the unit intervention plan to improve consistency of implementation across staff and shifts. This requires collaboration across disciplines.

Relevant CCHMC Tools for Implementation:

No CCHMC Tools for Implementation were found.

Outcome or Process Measures:

- Documentation of communication goals and progress towards goals can be completed in a Patient Plan of Care (PPOC) note during the inpatient admission.
- Completed documentation in the staff safe handoff checklist of the existence of the specific communication materials such as patient specific communication binders or augmentative communication devices.
- The Overt Aggression Scale (OAS) is used to document whether or not an aggressive episode has occurred. The OAS is documented as either positive or negative for every patient every shift. Aggressive episodes are defined by the OAS and are categorized as one of the following: verbal aggression, physical aggression against self, physical

aggression against objects, or physical aggression against others (Yudofsky, S.C., Silver, J. M., Jackson, W., Endicott, J.; Williams, D., 1986 [5]).

SUPPORTING INFORMATION

Background/Purpose of BES Development:

When children with autism and developmental disabilities engage in problem behavior it is beneficial to target the underlying causes of that behavior (Carr & Durand, 1985 [4a]). FCT replaces problem behavior with communication, a socially acceptable equivalent (Carr & Durand, 1985 [4a]). Currently, there is variation in how the communication needs of children with severe behavior problems are addressed during an inpatient psychiatric stay on the dual diagnoses unit. There are no standard educational materials or trainings on the topic of communication skills or the importance of functional communication that are required for unit staff. There are no standard expectations in how communication needs are documented and addressed throughout a patient's day, which results in inconsistencies in the type and the quality of care provided. Teaching communication replacement behaviors should involve a team approach and should take place throughout the day so that goals can be reached more quickly. Treatment based on building skills that can then be carried over into the home and school environment may also be a contributing factor in reducing the overall number of admissions a child has.

Definitions:

Augmentative Alternative Communication (AAC): Any form of communication that does not include oral speech. AAC may include unaided communication such as sign language or aided communication such as use of picture symbols or a speech generating device (ASHA, 2002).

Functional Communication Training: Teaches children socially acceptable communication responses to replace problem behavior (Carr & Durand, 1985 [4a]).

Extinction: Problem behavior is not reinforced and does not result in a change in demands (Fisher et al., 1993 [4a]).

Search Strategy:

Databases: PubMed, PsychInfo, Medline, and CINAHL plus with full text

Search Terms: functional communication, functional communication training, autism, problem behavior, aggressive behavior, picture exchange communication system, sign language, speech-language pathology, augmentative alternative communication

Search Dates, limits, filters: 1980-2012; English language

Date Last Searched: 3/12/2012

Group/Team Members:

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Conflicts of Interest were declared for each team member:

- No financial or intellectual conflicts of interest were found.
- No external funding was received for development of this BES.
- The following conflicts of interest were disclosed:

Note: Full tables of the [LEGEND evidence evaluation system](#) are available in separate documents:

- [Table of Evidence Levels of Individual Studies by Domain, Study Design, & Quality](#) (abbreviated table below)
- [Grading a Body of Evidence to Answer a Clinical Question](#)
- [Judging the Strength of a Recommendation](#) (dimensions table below)

Table of Evidence Levels: (see note above)

Quality level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local Consensus

†a = good quality study; b = lesser quality study

Table of Language and Definitions for Recommendation Strength: (see note above)

Language for Strength	Definition
It is strongly recommended that... It is strongly recommended that... not...	When the dimensions for judging the strength of the evidence are applied, there is high support that benefits clearly outweigh risks and burdens. <i>(or visa-versa for negative recommendations)</i>
It is recommended that... It is recommended that... not...	When the dimensions for judging the strength of the evidence are applied, there is moderate support that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation...	
<i>Given the dimensions below and that more answers to the left of the scales indicate support for a stronger recommendation, the recommendation statement above reflects the strength of the recommendation as judged by the development group. (Note that for negative recommendations, the left/right logic may be reversed for one or more dimensions.)</i>	
Rationale for judgment and selection of each dimension:	
1. Grade of the Body of Evidence	<input type="checkbox"/> High <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Low
<i>Rationale:</i>	
2. Safety/Harm (Side Effects and Risks)	<input checked="" type="checkbox"/> Minimal <input type="checkbox"/> Moderate <input type="checkbox"/> Serious
<i>Rationale:</i> Functional Communication Training reduces aggression and self-injurious behavior. <i>(Kurtz, Huete, Tarbox, & O’Conner, 2003 [4a]; Hagopian, Wilson, & Wilder, 2001 [4a]; Bowman, Fisher Thompson & Piazza, 1998 [4a]; Fisher, Adelinis, Thompson, Wordsell, & Zarcone, 1998 [4a]; Fisher, Kuhn, & Thompson, 1998 [4a]; Hagopian, Fisher, Sullivan, Acquisito & LeBlanc, 1998 [4a]; Fisher, Piazza, Cataldo, Harrell, Jefferson, & Conner, 1993 [4a]; Wacker, Steege, Northup, Sasso, Berg, Reimers, et al., 1990 [4a]; Matson, LoVullo, Boisjoli, & Gonzalez, 2008 [5a]; Kahng, Hendrickson, & Vu, 2000 [5a]).</i>	
3. Health benefit to patient	<input checked="" type="checkbox"/> Significant <input type="checkbox"/> Moderate <input type="checkbox"/> Minimal
<i>Rationale:</i> The risk of harm from aggression and self-injurious behavior is reduced with functional communication training	
4. Burden on patient to adhere to recommendation	<input checked="" type="checkbox"/> Low <input type="checkbox"/> Unable to determine <input type="checkbox"/> High
<i>Rationale:</i> For maximum benefit families should participate in the training and learn strategies for carry over into the home environment.	
5. Cost-effectiveness to healthcare system	<input type="checkbox"/> Cost-effective <input checked="" type="checkbox"/> Inconclusive <input type="checkbox"/> Not cost-effective
<i>Rationale:</i>	
6. Directness of the evidence for this target population	<input checked="" type="checkbox"/> Directly relates <input type="checkbox"/> Some concern of directness <input type="checkbox"/> Indirectly relates
<i>Rationale:</i> All of the studies included in this recommendation included children with autism or developmental disabilities as their target population	
7. Impact on morbidity/mortality or quality of life	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low
<i>Rationale</i>	

Copies of this Best Evidence Statement (BEST) and related tools (if applicable, e.g., screening tools, algorithms, etc.) are available online and may be distributed by any organization for the global purpose of improving child health outcomes.

Website address: <http://www.cincinnatichildrens.org/service/j/anderson-center/evidence-based-care/bests/>

Examples of approved uses of the BEST include the following:

- Copies may be provided to anyone involved in the organization's process for developing and implementing evidence based care;
- Hyperlinks to the CCHMC website may be placed on the organization's website;
- The BEST may be adopted or adapted for use within the organization, provided that CCHMC receives appropriate attribution on all written or electronic documents; and
- Copies may be provided to patients and the clinicians who manage their care.

Notification of CCHMC at EBDMinfo@cchmc.org for any BEST adopted, adapted, implemented, or hyperlinked by the organization is appreciated.

Please cite as: Nelson, A., Cincinnati Children's Hospital Medical Center, Best Evidence Statement: Functional communication training and treatment of problem behavior, <http://www.cincinnatichildrens.org/svc/alpha/h/health-policy/best.htm>, BEST 149, pages 1-6, 12/4/12.

This Best Evidence Statement has been reviewed against quality criteria by two independent reviewers from the CCHMC Evidence Collaboration. Conflict of interest declaration forms are filed with the CCHMC EBDM group.

Once the BEST has been in place for five years, the development team reconvenes to explore the continued validity of the guideline. This phase can be initiated at any point that evidence indicates a critical change is needed. CCHMC EBDM staff perform a quarterly search for new evidence in an horizon scanning process. If new evidence arises related to this BEST, authors are contacted to evaluate and revise, if necessary.

For more information about CCHMC Best Evidence Statements and the development process, contact the Evidence Collaboration at EBDMinfo@cchmc.org.

Note:

This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.