

Encouraging Pill Swallowing in Young Children with Cystic Fibrosis (ages 3-8 years): A Behavioral Intervention for the CF Team

Alexandra L. Quittner, Ph.D., Kristen K. Marciel, Ph.D.,
Avani C. Modi, Ph.D., & Ivette Cruz, M.S.

Why is pill swallowing important?

Difficulty swallowing pills is a significant barrier to adherence in young children with CF. In a survey of patients from general pediatric practices, 26% of children had difficulty swallowing pills (Anderson et al., 1995). In a study of barriers to adherence for CF, "difficulty swallowing pills" was listed by the child as the second most important reason for missing enzymes or oral medications (after "forgetting"; Modi & Quittner, 2006). Learning to swallow pills is important for children who must regularly take oral medications. Swallowing pills without difficulty increases adherence, convenience for parents, and the efficacy of enzymes.

Behavioral Intervention

- Uses successive approximations (steps) to establish the behavior (swallowing pills)
- Positive reinforcement (rewards) help to get the behavior going and maintained (Beck et al., 2005)
- Program was developed and evaluated in an NIH study to improve adherence (Quittner et al., 2001)

Preparation

- Create a pill swallowing kit including: candy (sprinkles, mini M&Ms, Nerds), small cups for water, empty gel capsules, stickers, sticker charts.
- Ask parents to save gel capsules when they remove enzyme beads; these capsules can be used later!



Assessment

- Get approval from the CF team; Check for allergies to the candies
- Ask parents if eating candy is okay

Instructions for Successive Approximations

- Step 1:** Ask the child to swallow a sip of water. Praise the child, "great job swallowing the water!" Let the child pick another sticker for this first success!
- Step 2:** Start with the smallest candy (sprinkles). Let the child feel the candy on their tongue and melting down their throat.
- Step 3:** Ask the child to "place the candy on the middle of your tongue. Feel how the sprinkle, take a drink of water, and swallow the 'pill'."
- Step 4:** If the child is comfortable with Steps 1-3, go on to the next larger candy.



Hierarchy

After several consecutive successes, the child may move on to the next size candy "pill." You can set the pace for moving through the hierarchy below:

- Sprinkles
- Mini M&Ms
- Nerds
- Empty pill gel capsule.
- Finally, take the enzyme!



First Session

- Praise the child for both effort and success.
- Most children find swallowing these sprinkles surprisingly easy.
- Sessions generally last 5 to 10 minutes and should be fun!
- Length of the session should be based on the child's attention and skill.
- If the child has difficulty with a larger piece of candy, end the session with a success by having the child swallow a smaller piece.
- {You can move backwards on the hierarchy at any time!}

Homework

- Give the parent samples of each candy, blank sticker charts, and stickers to continue the program at home.
- Encourage the parent to practice each day and to reinforce progress with praise and stickers.
- Be specific about when they will practice (e.g., before dinner).
- After the child earns a certain number of stickers (determined by the parent), the child can earn a small prize, such as crayons, a coloring book, or extra time playing video games or with parents.
- Check progress and continue the pill swallowing program at the next clinic visit.
- This can also be done if child is in hospital.



A sticker chart titled "Sticker Chart for Pill Swallowing Program" showing a weekly schedule from Sunday to Saturday. The chart is organized into columns for each day and rows for different times of the day: Breakfast, Snack, Lunch, and Dinner. Each cell contains a label and a corresponding emoji (e.g., 🍌 for Breakfast, 🍪 for Snack, 🍽️ for Lunch, 🍴 for Dinner). The chart is designed to track progress and reward successful pill swallowing with stickers.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Breakfast 🍌						
Snack 🍪						
Lunch 🍽️						
Snack 🍪						
Dinner 🍴						

Future Sessions

- Begin the next session with the size candy the child swallowed at the end of the previous session.
- Once the child progresses through the 3 types of candy, he/she can swallow the empty enzyme capsule.
- Some children move through the hierarchy easily in one or two sessions. Other children may require 2 to 6 sessions.
- Be patient and make it fun!
- Continue to praise and reinforce pill swallowing until the behavior is well-established.

Other Strategies at Home

- Put the pill into a spoonful of ice cream, applesauce, or pudding and let it slide down your child's throat.
- Swallow the pill with milk or juice instead of water to change the thickness and taste of the liquid.

References:

- Anderson, O., Zweidorff, O.K., Hjelde, T., & Rodland, E.A. (1995). Sola legesenter: Problems with swallowing tablets. A questionnaire study from general practice. *Tidsskrift for den Norske lægeforening (NORWAY)*, 115, 947-949.
- Beck, M.H., Cataldo, M., Slifer, K.J., Pulbrook, V., & Guhman, J.K. (2005). Teaching children with attention deficit hyperactivity disorder (ADHD) and autistic disorder (AD) how to swallow pills. *Clinical Pediatrics*, 44(6), 515-526.
- Modi, A.C. & Quittner, A.L. (2006). Barriers to Treatment Adherence for Children with Cystic Fibrosis and Asthma: What gets in the way? *Journal of Pediatric Psychology*, 31, 846-858.

We acknowledge the support of NIH grant #R01 HL69736.