Module: **Developmentally Appropriate Orientation and Mobility**

Session 1: Foundations of Developmentally Appropriate Orientation and Mobility

Handout N: Adaptive Mobility Devices and Canes for Toddlers: Suggestions for O&M Specialists

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Definitions

Adaptive mobility devices (AMDs) are specially designed devices to provide environmental preview information to people who cannot use a long cane. AMDs are prescribed by orientation and mobility specialists (OMSs) to meet the unique needs of the child. Most adaptive mobility devices are built from PVC pipe to meet the specific needs of the child. The AMD is usually held by two hands and is pushed in front of the child's body.

A *long cane* is an OMS-prescribed cane used by a child to receive information about the environment when walking. Very young children generally use constant contact or modified diagonal technique with the cane. Many children begin using a long cane without having had experiences with an AMD.

AMD and long cane techniques are components of O&M for toddlers with visual impairments. Toddlers require many hands-on experiences to develop the cognitive, motor, social, and communicative skills necessary for safe and independent orientation and travel. Addressing all the O&M skills and concepts needed by toddlers with visual impairments goes beyond the scope of this handout. This handout focuses only on suggestions for teaching toddlers to use AMDs and canes. OMSs must use their professional knowledge and judgment to determine when to introduce AMDs and canes and how to incorporate their use into a comprehensive O&M program.

Note: There are at least as many ways to teach AMD and long cane techniques to toddlers as there are toddlers with visual impairments. The suggestions given below are general guidelines that have been found to be effective with some children. You will have to modify these techniques and create new techniques to meet the unique needs of the children and families with whom you work.

Introducing the AMD or long cane

When introducing an AMD or long cane, plan on giving the child plenty of time to explore with device. Sit down with the child and tell her you brought a new device to help her

when she walks. Tell her the name of the device (e.g., cane, AMD) and say that you are going to let her hold it. Tell her that she will get to walk with it in a little while, but first you are going to look at it while sitting down. Remind the child that she cannot swing the AMD or cane, because she might hit someone. Hand the child the AMD or cane and give the child plenty of time to explore it. The child may choose to feel it, look at it, smell it, or even taste it. As the child is exploring with the device, name the different parts. You may want to describe how the parts feel and what color they are. Some children may want to name their device just as they name stuffed animals. Allow plenty of time for the child to explore the device and ask questions about it.

Adaptive Mobility Devices

First lessons. Some children respond well to an initial period of AMD use during unstructured, but mediated, exploration of a large, open area. A spacious area with occasional interesting landmarks to encounter can provide a sense of freedom of movement and safety to the child, while prompting increased pace with minimal frustration. Large areas that might be appropriate for exploration include the halls of a building, gym, large department store, or a mall. When the floor surfaces are smooth and carpet free, the AMD will slide more easily and the child will experience more success. The child will walk freely, while an adult mediates objects contacted by helping the child determine what the object is and how to maneuver around it.

Some children will benefit from more direct instruction in using the AMD. After the child has become familiar with the AMD, tell her that you and she are going to walk with the AMD. Ask the child to stand up and position the AMD in front of her. Tell the child to reach out and hold on to the AMD with two hands. Let her practice holding on to the device and letting go several times. Some AMDs will stand unsupported but many will fall to the ground when not held. This experience gives the child a chance to learn more about the characteristics of her AMD. Then suggest that you take a short walk (3-5 feet) to find a large object that is important to the child (e.g., the couch where Mama is sitting, the toy box). Be sure the path to the desired goal is clear of obstacles and drop-offs. As the child walks, you may need to provide verbal or physical reminders to keep both hands on the AMD. When the AMD contacts the object, praise the child, “You made it to your toy box!” Some children will be fascinated by the AMD and will want to continue exploring. Other children will want to put the AMD down and spend time in the location they worked so hard to reach.

Most children will need several simple lessons like the one described above to begin using the AMD. These lessons should involve a motivating goal to reach and a short, clear path to the goal. Some lessons may only last a few minutes due to the child’s short attention span.

Advanced lessons. Once the child is able to use an AMD to travel a cleared path, you can begin teaching the child more advanced skills such as obstacle detection, drop-off detection, and trailing. Most toddlers can learn to detect obstacles with their AMDs. Drop-off detection and trailing are much more complex skills and will be too difficult for many 2-year-olds. For

toddlers who are ready to begin drop-off detection and trailing, remember that they will most likely only demonstrate beginning skills; do not expect mastery of these skills.

Obstacle detection can easily be taught in a naturalistic way. Place an object in the child's path that will sound or feel very different from the destination when hit by the AMD. For example, use a metal trashcan as an obstacle when the child is trying to reach an upholstered chair. When the AMD contacts the obstacle, say "Oh, my! There is a _____ in the way. Let's go around it." Some children will want to stop and explore what the AMD hit. This is perfectly acceptable and a wonderful opportunity for learning. Other children may need some physical or verbal guidance to go around the obstacle. Several structured lessons on obstacle detection using large, distinct obstacles can help a child learn to recognize and maneuver around obstacles. In most households and childcare settings, children will have plenty of naturally occurring opportunities to practice obstacle detection.

Drop-off detection is possible with some AMDs but not with all. The commonly used AMDs are NOT designed to be used when ascending or descending stairways. An example of a naturally occurring drop-off that would be appropriate for a child to find with an AMD would be a story area at the public library that is two or three steps lower than the rest of the floor, or one step that leads from the porch to the walkway at a child's home. If the AMD is appropriate for detecting drop-offs, the OMS can plan lessons to teach the child about them. Start with the child several feet from the drop-off. Tell the child that she is going to use her AMD to find a drop-off. You may need to use the language the child already knows for drop-offs, such as *stair* or *curb,* or you may use this as an opportunity to teach *drop-off* as a new vocabulary word. Reassure the child that you will not let her fall. Explain that you and the child will walk toward the drop-off and that, when you get close, the AMD will "drop" in her hand. Walk with the child toward the drop-off and tell her just before the AMD reaches the drop-off. When the AMD "drops," say "Wow! Did you feel that? The AMD dropped." Let the child practice walking up to the drop-off several times until she is comfortable with the way the AMD feels at a drop-off. To understand what the drop-off is, the child may want to step down the drop-off while holding your hand or a railing. Children should also have opportunities to practice finding drop-offs in lots of different locations with different types of flooring. Tell the child to be careful around drop-offs. Remind adults that they should always be within arm's reach of the child when she is near a drop-off.

Trailing with an AMD refers to keeping the AMD in contact with a wall while walking. Trailing allows the child to know her location in space and maintain a straight line of travel. Trailing will not be appropriate with all AMD devices. Trailing is best taught using a miniroute to a meaningful location. Prior to the lesson, be sure the miniroute is clear of obstacles. Tell the child that you are going to walk with the AMD to the motivating destination—for instance, a bookshelf. Ask the child to stand next to the wall and hold the AMD so the side is touching the wall. You may need to help the child position her body and the device appropriately. Tell the child you want the AMD to keep touching the wall as you walk to _____. Walk with the child to the destination using verbal and physical prompts to keep the AMD against the wall as necessary. If the child knows how to trail with her hand, explain that she is now trailing with

the AMD. Help the parents and childcare providers to identify short routes at home and in the child care setting in which trailing would be appropriate. Encourage parents and childcare providers to keep miniroutes clear of obstacles and to have the child trail with the AMD during the daily routines.

Use with parents. Involve parents in lessons with the AMD as much as possible, to allow them to see the benefits of the AMD for their child. Once the child can walk with the AMD, the child should have daily opportunities to practice in appropriate environments. The child should use the AMD only in environments that are safe for the child's current level of skill and should always be supervised by an adult. Ask parents to think of times each day when the child can use the AMD and encourage them to let the child use the AMD as often as possible. If parents are resistant to using the AMD, ask them to identify only one time each week when the child can use the device. As the child becomes more proficient and the parents become more comfortable with the device, encourage them to use the AMD more frequently. Because children are often very comfortable moving in their own homes, assist parents in thinking of other places to use the AMD such as on the walkway from the home to the driveway, in the grocery store, etc.

Long cane

First lessons. Once the child is familiar with the cane, tell the child she is going to learn how to hold the cane. Ask the child to stand up, and tell her you are going to hand her the cane in a moment. Remind the child to hold the cane still, with the tip touching the ground. There are many ways to describe how to hold the cane, including "shaking hands with the cane," using hand-under-hand modeling, and allowing the child to grip the cane as she wants and then using hand-over-hand modeling to adjust the child's grip. Once the child has the proper grip, tell the child that you are going to position the cane. Move the cane into a modified diagonal technique. Now that the child is holding the cane, suggest walking to a nearby location (3-5 feet away with no obstacles in the path). Just before the cane contacts the destination (e.g., wall, chair, toy box), tell the child that the cane is about to contact the object. When the cane touches the object, praise the child for using the cane to find the object.

Most children will need several lessons to practice walking short clear paths with their canes. For the best success, start with lessons on hard floorings such as linoleum and use a mushroom or ball tip. Hard floor surfaces and mushroom or ball tips will help the cane slide more easily than on carpeting or when using a pencil tip. During this practice, stress two issues with the child and parent: (1) keeping the cane in front of the child and (2) keeping the cane tip on the ground. Do not worry about proper grip or keeping the cane in the diagonal position until the child is able to consistently keep the cane in front of his body with the tip on the ground. Most toddlers will need reminders to keep the cane in front of their bodies, so be prepared to provide lots of verbal prompts. If children experience excessive difficulty keeping the cane in front of their bodies, consider adding an L-bar as described in *Standing on My Own Two Feet* (LaPrelle, 1996). Many children who have difficulty keeping the cane in front lack spatial and cognitive concepts and would benefit from further concept development. Concept

development could co-occur with cane instruction, or cane instruction could be postponed until the child develops more spatial and cognitive skills.

Some children will want to experiment with moving the cane as soon as they begin using it. Show the child a modified constant contact technique in which he keeps the tip on the ground and slides the cane from side to side. Provide opportunities for the child to practice moving the cane gently and in an appropriate arc width while standing still. You can stand in front of the child with your feet spread apart and have the child gently move the cane between your feet. Instead of your feet, you could also use the legs of a child's chair as an arc-width guide. Even if you want the child to use a diagonal technique rather than constant contact, this practice will allow the child to feel the range of positions in which the cane is still in front of his body and will teach the child to move the cane gently.

Advanced lessons. The long cane can be used to help a child travel in almost any environment. As toddlers, children will require close supervision when using their canes and will not use canes in all environments. Many children can begin learning more advanced cane technique at very early ages even though they will not fully master these skills until preschool or elementary school age.

Obstacle detection refers to using the cane to locate obstacles in a path. Obstacle detection is easily taught by placing a large obstacle in the child's path. When the cane contacts the obstacle, tell the child what happened. If the child wants to explore the object with her cane or her hands, allow her to do so, but do not allow her to perseverate on the object. If the child was walking toward a specific destination, do not let her explore the obstacle so long that she forgets her travel goal. Encourage children to move around obstacles to reach their destinations. Some children need help learning how to get around objects and continue on their path. As children learn to detect large obstacles, begin presenting them with smaller obstacles. In most homes and childcare centers, children will have numerous natural opportunities to practice detecting obstacles.

Drop-off detection is safely accomplished by a cane user given adequate instruction. Drop-off detection should not be attempted unless the child is able to consistently keep the cane tip on the ground at least one step in front of his body. Start with the child several feet from the drop-off. Tell the child that he is going to use his cane to find a drop-off. You may need to use the language the child already knows for drop-offs, such as *step* or *curb,* or you may use this as an opportunity to teach *drop-off* as a new word. Reassure the child that you will not let him fall. Explain that you and the child will walk toward the drop-off and that, when you get close, the cane tip will drop. Walk with the child toward the drop-off and tell him just before the cane tip reaches the drop-off. When the cane drops, say, "Did you feel that? Your cane dropped." Let the child practice walking up to the drop-off several times until he is comfortable with the way the cane feels at a drop-off. To understand what the drop-off is, the child may want to step down the drop-off while holding your hand or a railing. Children should also have opportunities to practice finding drop-offs in lots of different locations with different types of

flooring. Tell the child to be careful around drop-offs. Remind adults to stay within arm's reach of children who are near drop-offs.

A few 2-year-olds will be able to use their canes to safely ascend and descend single steps (e.g., a curb) or stairways with adult supervision. For these children, you will teach the traditional formal techniques for ascending and descending stairs. The main modification will be to simplify your language and provide verbal and physical assistance as needed.

Trailing with the long cane is an excellent way for a child to remain oriented while traveling and to maintain a straight line of travel. Generally speaking, children will need to be able to maintain a modified diagonal technique in order to trail, but some children who have difficulty maintaining the diagonal technique may use the trailing wall as a cue to keep their canes in a modified diagonal position. Cane trailing is often most appropriately used in hallways to locate doorways, specified landmarks, or intersecting halls.

When teaching cane trailing to a toddler, you should consider which hand the child uses with the cane. Many toddlers alternate hands when using the cane because hand use is rarely established at this age. When a strong preference is shown, this should be considered when providing trailing instruction. The child should trail a wall that is opposite the hand holding the cane. For right-handed cane users, who trail on the left wall, this is not always practical in group childcare settings where children walk on the right side of the hallway. In this situation, the OMS in collaboration with the team should determine whether the setting is appropriate for trailing, whether the child should be encouraged to hold the cane in the left hand for trailing, or whether the child will only trail when the hallways are empty. If the team decides to encourage the child to switch hands for trailing, the child will need many opportunities to get used to using the cane in the left hand before beginning instruction in trailing.

Trailing is best taught using a miniroute to a meaningful location. Tell the child that you are going to walk with the cane to the identified location. Ask the child to stand with her arm next to the wall. The child should hold the cane in the hand that is away from the wall and place the cane in a modified diagonal position. The tip of the cane should be touching the corner where the wall and the floor meet. You may need to give the child verbal or physical prompts to position her body and the cane appropriately. Tell the child you want the cane to keep touching the wall as you walk. Walk with the child to the destination using verbal and physical prompts to keep the cane tip against the wall as necessary. The child should have a considerable foundation of experiences with hand trailing for short distances before being asked to trail with a cane or AMD. With this experience base, the concepts and words associated with cane trailing will be easily understood by the child**.** Help the parents and childcare providers to identify short routes at home and in the childcare setting in which trailing would be appropriate. Encourage the parents and childcare providers to keep miniroutes clear of obstacles and to have the child trail with the cane during the daily routines.

Use with parents. Using a cane is much more complex than using an AMD. Some children and families will be ready to use a cane as soon as it is introduced, though the child will benefit from continued instruction from the OMS. Other children will require several instructional sessions with an OMS before they are ready to use a cane with their parents. If a child is allowed to use a cane improperly (e.g., drag the cane behind him) for a week or two, it will be difficult to reteach the correct cane position. There are several different settings in which a child could begin to use a cane with other adults such as the TVI, with the parents, or at childcare. Determining when a child is ready to use a cane without the OMS depends on several factors: the child's level of skill with the cane, the willingness of the adult to allow the child to use the cane, and the ability of the adults to monitor cane use and give appropriate feedback. The OMS should use professional judgment to determine when a child should begin using a cane outside of O&M lessons and should monitor the child's progress in using the cane with other adults.

Once it is determined that the child will use the cane with other adults, the OMS should provide guidance. When other adults are concerned about the child using the cane, the adult should select one or more environments or routes during which the child can use the cane. The OMS can verify that the environments or routes are appropriate for the child's level of skill or can suggest alternatives. Ideally, the child should use the cane in all appropriate environments. The OMS should remind the other adults of the one or two main skills the child is currently practicing (e.g., keeping the cane tip on the ground). The OMS must also stress that even though the child has a cane, it is still the adult's responsibility to monitor the child's safety. During each lesson, the OMS should ask how cane use is going and help brainstorm solutions to any problems that may arise.

Transitioning from AMD to long cane

Some children learn to use an AMD and long cane simultaneously with frequent opportunities to choose which one to use. Other children, especially those with additional disabilities, use an AMD for months or even years before beginning to use a cane. Some children begin instruction with a long cane with no experiences with an AMD.

When a child is transitioning from using an AMD to using a long cane or is using both devices simultaneously, it is important not to assume that the child will automatically generalize skills from one device to another. If the child has established AMD skills and is transitioning to using the cane, begin by introducing the cane as described above and then move through initial and advanced lessons. Even if a child was able to avoid obstacles and detect drop-offs with an AMD, it will still take practice become proficient in these skills using the long cane. Be sure to provide adequate instruction at each level so that the child is safe and confident in using the cane.

Reference

LaPrelle, L.L. (1996). *Standing on my own two feet: A step-by-step guide to designing and constructing simple, individually tailored adaptive mobility devices for preschool-aged children who are visually impaired.* Los Angeles: Blind Childrens Center.