

## **Goals of intervention**

To help children increase capacity to learn from, and to increase participation and independence in social interactions, physical environments and activities and the things around them.

To help develop efficient use of visual skills where possible and where needed teach compensatory skills or develop supportive strategies to ensure continued learning and access to these important areas of functioning.

## **Broad Classification to guide intervention**

Profound: Even with best correction and recommended environmental supports, and even when prompted, does not use vision or does not use vision meaningfully to support movement, communication or learning / play

Severe: with best correction and recommended environmental supports provided, when prompted, uses vision in at least one area of functioning consistently in familiar activities or environments and at least briefly in new environments

Moderate: with best correction and recommended environmental supports provided, demonstrates self-initiated use of vision in at least one area of functioning in familiar activities or environments

Mild: with best correction, demonstrates self-initiated use of vision in at least one area of functioning in familiar and unfamiliar environments and has alternative efficient strategies available for other areas of functioning.

## **Principles of intervention for children with CVI**

*In intervention, we are faced with two challenges – helping a child use available vision and helping a child UNDERSTAND what is seen. Using other senses, to get further information about what is seen is an important strategy.*

*Making sense of what they see at first requires constant interpretation by the adult. Use descriptive language as they touch or listen and then repeat this when they use their vision to see the same object. Say “smooth and round and a dip with a stick!” as their fingers feel an apple. Then move your hands over the apple holding where they can see it, saying again, smooth and round and a dip with a stick!” while they watch. As the child uses vision more instinctively and confidently, help her use her vision, tell you what she sees, and then, guide her to check for herself.*

## **Some guidelines:**

Since using vision and understanding what they are seeing is so challenging, it is often extremely hard for children to focus when you are speaking at the same time or when the

object is making a sound. Wait until the child has responded and then give your comment. Or say something and then wait quietly until the child responds. Processing and organizing takes time so please wait even if it seems strange.

Remember that the challenge of recruiting vision to move from one place to another safely and efficiently (orientation and mobility) is different from the challenge of recruiting vision in near work or in communication situations.

Children learn in pleasurable and motivating situations – make sure the activities you suggest are fun and interesting. Make sure what you want them to see is within their visual capacity and within their visual sphere. Success gives confidence and motivation to persist when faced with harder tasks. Start easy, and when you see that they are relaxed and responding well, then present something to challenge them a little.

Pick a fun game and when they are relaxed and enjoying themselves, start to increase challenge a little. If they fail, continue to play and end on a winning note. Children learn when they face a challenge and succeed.

Repeated routine activities such as eating, dressing, or bathing offer children the possibility for repeated exposure and opportunities for revision and mastery. Similarly familiar environments and people offer a sense of security and the possibility for repeated practice. Learning to use a sense that is not easily available to them is tiring and children may lose interest as they tire. Intersperse your activities with non-visually demanding breaks and over time teach children to recognize that they are tired and how to give themselves a break.

Reassess regularly – changes in general health may change visual status.

Learn from the child: Watch children's behaviour and the strategies they use – consider what the function may be both as a clue to the difficulty the child is facing and as an idea to develop for intervention (eg. Squinting to deal with simultagnosia is a strategy you may observe, confirm the reason in testing and that you can choose to support by incorporating nasal and side shields into their spectacles.)

#### **Typical modifications based on visual assessment results:**

1. What can the child see easily? How far, how big, what visual quality/ qualities?
2. Environmental distractions – remove what distracts visual attention (consider sound, touch, movement, temperature and illumination and glare)
3. Environmental supports – use what attracts and sustains visual attention (as above)
4. Visual clutter or distractors –
  - a. face the child into the corner of a room to create a visual clutter free space
  - b. a little child can be placed securely in a cardboard box which can become a manageable play space both visually as well as from a motor perspective.

- c. Throw a dupatta or sari over the backs of two chairs to create a safe single coloured space. For children who require good lighting, use a white or light coloured polyester cloth in a sun filled room or veranda to get a lovely soft glowing space to play

### **Child with motor issues**

All of the above and:

Consider position of child, including the impact of changing position

Consider what emotions like excitement or stress can do to the tonal systems

Consider preparing motor systems before the activity

Consider how the child may communicate and receive communication

Consider remaining available senses and their efficiency in getting sensory information

Use language that reflects their actual experience and supports understanding

### **Child with multiple issues**

All of the above and:

Consider preparing attentional systems before the activity

Pay attention to their readiness and work within their alert periods

Consider sensory thresholds and preferences

Consider medication and impact on alertness

### **Train, Support or Compensate?**

The decision to train, support or compensate visual functioning should be taken as a team. Consider the results of the visual assessment, both functional and clinical. Most children will have different areas of strength and weakness in their profile and will need different strategies for use of vision in the different functional situations. For most children the strategy will change with their age and development and the demands of the tasks appropriate to their ages. For example, a child who can use vision while crawling (greater tactile feedback and closer to the visual targets and obstacles) may need to use a cane to get textural information from the ground when they start to walk.

**Children with profound impairment:** It is a very important strategy to pair touch with what the child sees – touch allows the child to develop the idea of how what is seen is related to dimensions, textures and distance. In other words, we help the child move from seeing to perceiving. At this stage, making things very easily visible, very rewarding and meaningful to the child is important. We have found reducing light in a room and using single bright coloured objects that glow in light, or shimmer and shine (like a mirror, or reflective golden wrapping paper) to be very effective ways to build visual curiosity and interest. Please refer

to <http://www.chetana.org.in/resourcematerial.php> under the tab: Assessment and Intervention for light pad activities to build visual curiosity and interest.

At home where light pads are not available, use our bright Indian sunlight! We have created a "light globe" for children by putting them in a hammock or chair with a white synthetic cloth draped around them (not touching them). Sun light must stream through the cloth – the white diffuses the light and the inside becomes a comfortable brightly lit cocoon

**Once the child shows reasonably consistent visual awareness, interest and curiosity, start encouraging the use of vision in functional contexts.**

### **Some activities to suggest in Vision for Communication**

**Looking at face; understanding expressions; making eye contact;**

**Birth to 3 years**

When: During feeding, bathing, dressing, as you put the baby to sleep

Make sure there is good light falling on your face.

Hold the child so that your face is within their visual sphere

Sit comfortably, place the hand on your face or mouth as you talk quietly, sing, blow air gently at their hair or whistle softly, letting them feel and hear and stopping to see if they will look as well.

Once consistent looking is observed, even if fleeting, move your head slowly using your voice or keeping the child's hand on your face (based on assessment results) to keep the child's visual attention.

Over time, when the child has started to anticipate the activity, if you sit quietly and wait, the child will start looking for your face – at this point, respond by saying "I see you looking at me! Shall we play?" and begin the same games.

Pull your hair over your face or an embroidered cloth over your face and let the child pull it off. The tactile feedback is interesting and engaging and the contrast of cloth or hair vs skin is interesting

Play games that involve the face and head – like moving your forehead toward the child and bumping gently, forehead to forehead. As the child learns the game, you can start moving from different directions, or slightly increased distance. Encourage the child to reach out and pull your head toward himself.

Play in front of a mirror, making faces, moving the child's hand on his own face and watching for reaction; moving the child's hand on yours. Put a cloth over child's face and let the child pull it off and see himself in the mirror

Place bindi's on different parts of your face and have the child pull it off.

Make exaggerated expressions (wide open eyes, closed eyes/ wide grin, big frown) as child places hands on your face

### **3 to 6 years**

Play dress up in front of a mirror

Let child watch you put make-up on. If needed, let him place his hand gently on your hand as you put on lipstick or darken your eyes.

Ask child to put a bindi on your forehead

Have child dress up dolls; put make up and bindi on the doll's face

Ask child to feel and copy your facial expressions, naming them as you do it. Describe what is changing on your face. Describe what is changing on the child's face. This is a great activity to reproduce in front of a mirror

### **Understand and imitate gestures; following point**

#### **birth to 3 years**

Make a routine of massage, finger by finger, palm and back to draw attention to their own hands.

Draw attention to your hand by using bangles with textures and rings on your fingers.

Place your palm against their palm and make simple gestures like bye bye whenever you leave or Namaste when you greet / meet, clap together and so on. Teach them to give you a high five, slapping their hand against yours. Once they have learnt it, bring your hand in at a different angle or from a different position every time. Take care that they succeed!

Play pointing games (tickle here, scratch here etc.) , starting at very near – just a few inches and on their or your face or body. Increase the distance slowly to object on the table and finally move away to things in the familiar environment.

Help children become aware of their hands and yours with rhymes, songs, stories and games that use fingers and hands to represent people, animals, actions and so on.

#### **3 to 6 years**

Shadow play with your fingers in the night when you tell stories. Show children how they can use their hands to make shadows on the wall too. Get them to copy and you also copy them.

Make a game of finding something in the environment and asking the child to follow your point and tell you what it is – eg. I see something green there – what is it. I see something moving there – what is it. Remember to set up the environment and select the item size and distance so that it is well within the child's visual capacity

### **Some activities to suggest for developing Orientation and Mobility**

Start with their own body, move to the near environment and finally to the more distant environment.

Use known people, places or object and familiar games at first.

Some children will find people but not objects more easily and others will find objects but not people more easily. Provide alternative strategies as needed.

Some will identify landmarks but not obstacles or the other way around

Remember always to function within the child's visual capacities and once they have experienced good success, increase the difficulty. When you have tried for at least 6 months and not made progress, increase the use of supportive senses and use vision as a support.

### Visual scanning to find the target object or person; Identifying big items in the environment (eg. Door)

#### **Birth to 3 years**

If scanning itself is a problem, you can help the child practice by catching floating bubbles, watching rolling balls sent between people, watching people type or play an instrument

Hold the child facing you, place her hands on your face / throat and start speaking. Stop and wait a few seconds, ask another family member to start and wait until child shifts gaze. If not, place hand on the second person and talk to help the child attend to the different sound source. Slowly reduce tactile prompt until child turn to voice.

Place the baby in a comfortable position and suspend a favourite toy so that it is to one side of the line of sight and within arm's reach. Long things like a rope of big beads, or hangings made of coconut or mango leaves or even flowers work well. This helps the baby touch what she is looking at and see the impact – it moves or releases smell. Every day if you leave it in the same place, you will see the child start to anticipate, turn toward it and try to reach out for it. Now you are ready to work on shifting visual attention and visual searching – start by moving the object to the center or to the opposite side. You may need to shake it to get visual attention. If this doesn't work, guide their arm to touch the object, letting the tactile system guide the visual attention. Over the next days, keep shifting the object so that the child learns to scan the environment. Once this has begun, increase the number of items, taking care to introduce the new item one at a time, at a distance from the target item and one that is less visually attractive, so that it is still easy for the child to succeed. If the child is unable even after much support to find the target item among several, teach them the strategy of searching with the hands, and confirming with their eyes.

Involve the child in games/ rhymes that include pointing between people –eg. one for my father, one for my brother – hold the child in your lap and guide his hand as you sing, Wait for his eyes to follow his own hand movement. As he succeeds, stop guiding the hand, and see if he can look between the different people named in the song.

#### **3-6 years**

Treasure Hunt. Place a favourite item in the room and describe it or name its location. Place the item near a large, visible or known object in the room and give the child verbal clues.

Teach about the logic of how things are organized – how rooms are organized, how bathrooms are laid out or classrooms; how shelves in the market are stocked, where to find the price, where the payment desk is likely to be located. Prior knowledge helps at least reduce the stress of have no clue about where to start looking.

Ask parents to wear very easily locatable dress items – a turban, shoes with a big buckle, a watch with a coloured strap, an unusual or bright handbag or umbrella – have the child name it before they leave the house. Remember that traffic, a busy school yard or a wedding may present too many things for a child to handle and it may be better to simply give them a strategy for what to do if they lose the parent.

### Navigate to the target/ person in the crowd

#### **Birth to 3 years**

Encourage moving toward a target – reaching, rolling, crawling... any movement.

Have child move to favourite toy/ person. Increase the number of people/ objects in the room but reduce the distance so that the child can succeed. Slowly increase the distance.

Get children to follow behind another child.

#### **3 to 6 years**

Break the route into smaller steps and use big landmarks.” Find the red cupboard with your eyes. Walk to the red cupboard. Find the window, walk to the window, find the door, walk to the door”... and so on. Find the balance between the child’s memory and the number of steps in the route. The goal is to reduce your prompt and the child guides herself

Use other language strategies, for example, ask child to verbally describe the object or person before searching.

Create tactile mazes of real places and have the child find his way on it to different parts of a room, a building or a playground. Let him use his finger to trace the paths and talk about where he is and where he is going.

Many children will benefit from additional tactile feedback – use a cane, a push toy or cart to help them get more information about their environment and route. Children with unsteady gait are also benefitted by this strategy.

### Avoiding/awareness of obstacles on the path to reach out to the target/person

#### **Birth to 3 years**

Draw attention to all fields by playing games of “catch” moving targets into the different quadrants and getting the child to look and catch as it come. Make sure the child is seated comfortably and make it a playful situation

Seat the child comfortably. Place favourite items in fields that the child seems less aware about and ask the child to try to find it.

Place pillows on the ground and have the child crawl or step over it to come to you.

### **3 to 6 years**

Place toys or coloured plastic plates on the ground. When you call out a colour, the child has to run and get all the plates she sees of that colour

Hang balloons around the room so that it is within the upper field. Let the child. When you call out a person, the child has to run to the person, avoiding all the balloons

Teach safety rules, look left, right, up and down before you start to walk. Children may benefit from using a cane or walker of some sort if they consistently miss the lower field.

### Getting on to an adult chair – understanding how to use body in space

#### **Birth to 3 years**

A lot of body play – rolling, tumbling, being swing in the air, an adult carrying them on the back and running - all these help develop a sense of their own body, comfort with movement and an internal understanding of movement.

As the child grows, encourage them to crawl into, under and over things. Let them fit in a shallow plastic tub, curling their bodies this way and that to understand how their bodies fit into spaces.

#### **3 to 6 years**

Teach children to jump off one step and then two or more. To hang from a bar, stand on a swing or climb stairs and playground equipment.

Play games that judge distance and size – for example throwing something into a basket or knocking another ball or marble or stone piles from a distance.

Use language to help the child think aloud and problem solve movement in space.

## **Activities to support sustained near tasks**

### Reaching out to a toy among a pile of toys

#### **Birth to 3 years**

When the baby is lying on the back, provide a plain background with a sheet or dupatta and hang objects at his arm's length on the left, right or directly in front. Select things that tinkle or rustle, things that shimmer and those that have bold patterns. Use different materials – cloth, wood, natural items like leaves and flowers. Use single, bright colours but don't be afraid to try flowers or leaves with lighter colours so that the baby has the full range of things to look at and to practice reaching with. The movement and other sensory stimulation will help the child develop visual attention as well. Start with one thing at a time, leaving it in place every day for several days before changing. You can hang one different thing at every place the baby spends time.

Once reaching is achieved, then reaching to target *among other items* is the next goal. Select a favourite, much loved and touched item as the target. Make sure you first add items that are not as visually striking and are very different in texture and size as well, so

that the target object stands out. For example, you can store a favourite doll in a small tub with marbles or you can hang a much loved mobile made of plastic birds along with a string of wooden beads.

### **3 to 6 years**

Involve children in daily activities that give them practice in searching and locating something specific from among others. Start with the target thing that is quite different and more easily seen than the things in the surrounding. At the beginning, the surrounding things should be the same – for examples, plucking bright flowers from a bush or finding stones in rice. Later it can move to finding tomatoes among green vegetables, pulling their clothes out of a pile of clothes and so on. The greatest challenge is when all items have the same colour and only the shape is different – for example, sorting stainless steel plates, glasses and vessels. They can practice helping you put these away after washing, and can learn to be successful using touch to identify and vision to confirm.

Place the child's favourite food in one plate and leave the others empty so the child has to look between the plates to find his food. You can do the same with a toy in a basket while other baskets are empty. As the child succeeds, start to place two or three things in the same tub or tray. Take care to pick a target item that stands out visually from the background and the other items selected.

For children who struggle with this activity, teach them to first describe the item – my ball is red and round – hold the image in their head and only then start. Another strategy to help direct and hold visual attention is to place one hand on the edge of the tub or mat. Many children may also need to use the other to point as they search between items.

Using vision to orient, touch to search and vision to confirm is an option for children who are unable to respond, even with sustained practice and accommodations.

### Reach past obstacle to locate/pick the target

This ability largely requires an awareness of field and depth and the ability to plan movement in near space.

### **Birth to 3 years**

When the baby is lying on the back, hang a circular clothes hanger above the head and any one, long, easily visible item – like a shiny dupatta - that extends almost to the body. Let it swirl gently round, and encourage the baby to find it, looking at the different quadrants.

Keeping toys or favourite foods or clothes all together in one place pushes children to come up with ways to find what they need.

### **3 to 6 years**

Playing board games and games like hopscotch that require you to throw within a space, find the target and move to it give plenty of practice in understanding distance and obstacles to movement.

Walking out in nature forces attention both downward (to pick up stones and dips in the path) as well as at the edges of our vision (where tree branches and leaves may hit the body or head).

Create an obstacle course in the playground. Even children in wheelchair can push themselves through and learn to duck or hold their body as they anticipate the bumps and dips. When children struggle with this perception, provide them with canes or toys that let them sense the floor surface and get feedback.

### Matching shapes of similar size

#### **2 to 6 years**

Giving children a lot of play things that can be stacked, one inside the other or on top of the others gives them practice in judging size.

Lots of things in the house, for example plates or cups are stacked according to size. Give your child duties around the house that involve judging size. Find pairs of white socks or place shoes and slippers in size order or put all the lids back on the bottles, vessels and boxes in the kitchen. Practicing with objects as a daily routine can help children who are struggling with this.

### Copying Symbols and Reading near print

#### **2 to 6 years**

Give children plenty of opportunity to scribble. Let them scribble with their fingers or sticks in wet mud, using coloured powder on the sand or floor and paint on their palms and feet.

Ask them to tell you what they have drawn and you too draw along with them telling them what you are drawing and pointing out key features – see that's you – that's your ponytail!

Draw items that the child likes or shows interest in – for example your watch or phone.

Trace around these things while your child is watching and add in details, pointing between the item and drawing and telling the child what you are doing. Once the child can easily identify what you have drawn from several days ago, then start drawing things the child has good experience with, describing features as you draw and see if the child can recognize it. Finally, draw without describing, or find drawings of things the child knows as objects and see if the child recognizes them.

Save pictures from boxes in which you buy things and ask the children to find the item from the picture. Later they can learn to match picture to picture – advertisements and packets or boxes in which you buy things are endless sources of pictures.

Reading story books together is a great way to give exposure and practice to symbol decoding and matching. Put your finger on the words as you read aloud. Ask your child to find the characters on the page and describe to you what they look like. Are they fat? Tall? Angry? Tired? It will tell you how well your child is able to compare elements on the page. For children who still need lit objects, try <http://www.chetana.org.in/resourcematerial.php>