The Affordable Care Act (ACA) requires insurance plans to offer pediatric services including vision services, through state health insurance exchanges, as one of the 10 required categories of essential health care benefits beginning January 1, 2014. Qualified health plans will provide coverage for timely vision screening for the early detection and treatment of eye and vision problems in the medical home. This includes maintaining a schedule of vision screening during childhood and adolescence. Ideally, these screenings are done in the pediatrician’s office.
State Requirements

Pediatric Vision Services Provided Under the ACA
- Each state is required to provide:
  - Vision screenings in the medical home
  - An annual fully-dilated comprehensive eye exam with refraction if required
  - Correction of refractive error with eye glasses and contact lenses

http://www.aapos.org/news/show/139

Medical Home

- What is a Medical Home?
- A family-centered medical home is not a building, house, hospital, or home healthcare service, but an approach to providing comprehensive care. In this home, the pediatric care team works in partnership with a child’s family to ensure that all of the medical and non-medical needs of the child are met.

Signs of Possible Vision Problems
- Independent eye turns
- Red, watering, encrusted eye lids, excessive blinking
- Blurred or double vision
- Photophobia, or eye strain
- Burning or itchy eyes
- Headaches, nausea, dizziness
- Print moving on the paper
- Behavioral Issues
  - Dislike or avoidance of close work
  - Short attention span
  - Poor handwriting
  - Closing/covering one eye
  - Close proximity to reading materials
  - Always losing place when reading
  - Poor hand-eye coordination
  - Developing immaturity
Overview

• Child growth and development
• Vision and Learning
• Early detection
• Hormones and vision
• School screenings and state requirements
• Clinic screenings and exams
• Inform and educate

http://www.aao.org/newsroom/release/20130923.cfm

Facts

• As stated from the 2000 AOA clinical practice guidelines for Pediatric Vision reported that there were 72.3 million under the age of 18 (26% of the overall population) and a growth rate of 13.7%
• Vision disorders 4th most common disability in US
• There are approx 39,000 practicing O.D.s = 1846 children per practice
• Only 31% of children rec'd comprehensive exams
• Vision is developing from birth to 20, from 20-40 vision is the most stable and after 40...well 😊

Wisdom For Teachers

• Vision issues are not always noticeable
• Vision disorders do not cause pain or discomfort
• A child is not born knowing what good vision is, so they don’t realize how bad it is
Behavioral Issues

- Eyes crossing
- Avoidance of close work
- Poor handwriting
- Closing of one eye
- Head close to book or desk
- Excessive rubbing of eyes
- Poor hand/eye coordination
- Developmental immaturity

Associated Complaints

- Headaches, nausea, dizziness
- Blurry or double vision
- Light sensitivity
- Sleepiness while reading
- Eye strain
- Print moving while reading

Baby Facts

- The diagnosis of disease in infants and toddlers is more difficult than other patient categories, they have no idea of what good vision looks like.
- Standard procedures (i.e. biomicroscopy, tonometry, and indirect ophthalmoscopy) are more difficult on this population
- You must keep the exam interesting to keep fixation with this population (don’t overstimulate)
- 2010 Public Health Assoc recommended 6 mon, 2 yrs, and 4 years (urged Pediatricians to advocate)
Infants

- 30-50% of infants (under 12 months) have significant astigmatism
- Age 2-18 months (avg Rx 2 diopters hyperopia)
- Children 6-9 months follow lights
- InfantSee Program
- Shaking Baby Syndrome (SBS)
- Neurological problems
- Excessive refractive error
- Eye alignment (strabismus)
- Early morning or after naps are most effective for exams
- Recommend parent bring a bottle

Detection and treatment of retinoblastoma

Detection and treatment of retinoblastoma

Retinoblastoma is the most common cancer involving the eye and young children and the tenth-most common pediatric cancer. It affects one in every 20,000 American children.

Dr. Jenewein notes that retinoblastoma is a devastating condition and that children with this diagnosis often face decreased vision, loss of an eye, and even death.


Baby (0-1 year) Exam Frequency

- First exam – 6 months or first sign of eye trouble
- Black and white contrast
- 1 ft is the focusing dist
- Consider sleep schedule
- Don’t overwhelm or over-stimulate
- Dim room highlight target
Examination Table for Infants

- Patient/family health history
- Developmental history
- Family eye history
- Visual acuity (fixation)
- Obvious defects
- Teller Acuity Cards
- Auto-refraction

Baby Learning (1 foot)

- Games
  - Learning
    - Learning games
    - Colors (black and white)
  - Parents
    - Eye contact (ease into)
    - Sound (not too loud)
    - Room lights on target
    - Caution with over-stimulation
- Mobiles
  - Face down to baby
  - Baby safe mirrors
    - Crib
    - Car
    - Play area

Growth and Development

- Children are not born knowing the difference between good and bad vision
- Early Detection and Prevention is a must
- 6 months, 3 years, and prior to starting school are the recommended intervals
Pre-School Children

- Have the necessary psychological development
- Use matching task @ 6 meters
- 3 diopter of astigmatism
- 30-50% loses astigmatism by age 5
- Low amounts of anisometropia
- Static retinoscopy
- Cycloplegic retinoscopy

- Monocular Estimation Method (MEM)
- Color Vision Test (Peaze Allen Color Test, PACT, Mr. Color Test, Color Vision Made Easy)
- Visual Acuity
  - Lea Symbols chart
  - Broken Wheel Acuity Cards
  - HOTV Test
  - Denver Developmental Screening Test (DDST)
  - Developmental Test of Visual Motor Integration (DTVMI)

Examination Table for Pre-Schooler’s

- Lea Symbols
- HOTV Test

Children

- Cover Test
- Muscle-H Test
- Near Point of Convergence (NPC)
- Positive and negative fusional vergences
- Accommodative amplitude and facility
- MEM retinoscopy
- Stereopsis
- Versions rule out non-committant deviation
  - Stability of fixation, saccadic movement, and pursuit function
- AC/A and facility
17 Skills

1. Eye Movement Control
2. Simultaneous Focus at Far
3. Sustaining Focus at Far
4. Simultaneous Focus at Near
5. Sustaining Focus at Near
6. Simultaneous Alignment at Far
7. Sustaining Alignment at Far
8. Simultaneous Alignment at Near
9. Sustaining Alignment at Near
10. Central Vision (Visual Acuity)
11. Peripheral Vision
12. Depth Awareness
13. Color Perception
15. Fine Visual-Motor
16. Visual Perception
17. Visual Integration

Children...cont

• Most children with vision problems have accommodative or binocular anomalies
• School performance:
  – Eyestrain, blurred vision
  – Double vision, loss of place, skipped lines, and reading defects

Examination Table for Children

• Establish rapport
• Ask the child if they know their ABCs
• Eliminate distractions
• Always encourage

Broken Wheel Acuity Test
Teens

• Growth and hormones
• Fashion is critical
• Sports and functionality
• Hygiene

Vision and Learning

• Give the child things that are exciting for them, things that keep their attention
• Routine practice

Hormones and Vision

• Hormones have a significant impact on the everything...
• Pregnant women, children and growth spurts
• Medical condition
School Screenings and State Requirements

- Each state has its own set of medical requirements, you must your state requirements
- Pediatricians perform screenings
- American Public Health Association recommends exams at 6 months, 2 and 4 yrs of age
- Healthy People 2010 to improve national health

Clinic Screenings and Exams

- **Cover Test** (not as reliable, child must participate, is a position of gaze test)
- **Hirschberg Test** (most successful in children 6 months or younger)
- **Krimsky Test** (prisms with Hirschberg test)
- **Bruckner Test** (presence of Bruckner Reflex identifies positive for strabismus)
- **Versions** (tracking a target, binocular assessment)
- **Near Point Convergence** (tracking a target in toward the child)
- **Pupillary Response Test** (tracking a target in toward the child)

Parent and Child Education

- Children are not born knowing what good vision is
- Routine exams are necessary
- Parents need to be educated on eye exams
- Constant monitoring is a parent's responsibility
Updated June 10, 2014.

Infants are born with a complete visual system, but must learn how to see. A child’s vision will develop throughout the first year of life, and will be monitored at each well-baby appointment, assuring important milestones are met. Below are the top five milestones in vision development.

1. Focusing ability

- Most infants can focus accurately by two to three months of age. The ability to focus requires special eye muscles to change the shape of the lens in order to form clear images. Before two months of age, an infant is capable of focusing objects both near and far, but not very well. It takes time for the eye muscles to learn how to avoid focusing “too close” or “too far away” from near or far objects.

2. Eye Coordination and Tracking

- A baby usually develops the ability to track and follow a slow-moving object by three months of age. Before this time, an infant will follow large, slow-moving objects with jerky motions. A three-month-old can usually track an object quite smoothly. A baby should begin to follow moving objects with the eyes and reach for things at around four months of age.
3. Depth Perception

• Depth perception is the ability to judge objects that are nearer or farther than other objects. Depth perception is not present at birth. It is not until the third to fifth month that the eyes are capable of working together to form a three-dimensional view of the world.

4. Seeing color

• An infant’s color vision is not as sensitive as an adult’s. It is hard to tell if babies can distinguish colors because their eyes might be attracted by the brightness, the darkness, or the contrast of an object against its surroundings, and not by the color alone. By two to six weeks of age, however, a baby can distinguish two highly contrasted colors, such as black and white.

5. Object and Face Recognition

• An infant is born with the ability to see facial features at arm’s length, but is attracted instead to high-contrast borders of objects. For example, a baby will gaze at the edge of a face or the hairline when looking at a human face. By two to three months of age, a baby will begin to notice facial features, such as the nose and mouth. By three to five months, most babies can differentiate between mother’s face and a stranger’s face.

Growth and Development

• Photo of chart

For Parents

• Tear Production around 3 months
• Tear drainage issues common
• Eyes wandering first few months, learning eye control
• Children won’t know what good is, parents must be on the look out

For Teachers

• A vision disorder is not always visible when looking at a child
• Vision disorders don’t normally cause pain
• A child may not realize that they are not seeing better