In this context, what does the word comitant mean?
In this context, what does the word **comitant** mean?  
It means the ET is the same in all fields of gaze.
Comitant Esotropia

~50PD of comitant esotropia
In this context, what does the word comitant mean?
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What common cause of ET is effectively ruled out by comitancy?
In this context, what does the word *comitant* mean?
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*What common cause of ET is effectively ruled out by comitancy?*
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Why can’t comitancy rule out an ‘old’ CN6 palsy as well?
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What is spread of comitance?
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What common cause of ET is effectively ruled out by comitancy? A recent-onset CN6 palsy.

Why can’t comitancy rule out an ‘old’ CN6 palsy as well? Because of the possibility of ‘spread of comitance’.

What is spread of comitance? The phenomena in which a longstanding palsy gradually transforms from incomitant to comitant.
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There is a predilection pattern among US whites, blacks and Asians—what is it?
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Which is more common: comitant ET, or comitant XT?
In this context, what does the word **comitant** mean?
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What common cause of ET is effectively ruled out by comitancy?
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What is spread of comitance?
The phenomena in which a longstanding palsy gradually transforms from incomitant to comitant.

Is there a gender predilection for comitant ET?
No.

There is a predilection pattern among US whites, blacks and Asians—what is it?
White = black > Asian.

Which is more common: comitant ET, or comitant XT?
ET is significantly more common.
Comitant Esotropia

Comitant esotropia

?     ?

Comitant ETs are divvied into two groups—what are they?
Comitant Esotropia

Comitant esotropia

- Congenital
- Acquired

Comitant ETs are divvied into two groups—what are they?
Comitant Esotropia

Comitant esotropia

Congenital (onset < before age…)  Acquired (onset > after age…)

With regards to comitant ETs, ‘congenital’ doesn’t mean congenital, rather, it means ‘before a certain age.’ What age is used as the cutoff between congenital and acquired ETs?
Comitant Esotropia

Comitant esotropia

Congenital (onset $< \text{age 6 m}$)  Acquired (onset $> \text{age 6 m}$)

*With regards to comitant ETs, ‘congenital’ doesn’t mean congenital, rather, it means ‘before a certain age.’ What age is used as the cutoff between congenital and acquired ETs?*
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

*Why is the term congenital a misnomer here?*
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Technically, a congenital disorder must be present at birth—it can’t show up 6 months later
Why is the term congenital a misnomer here? Technically, a congenital disorder must be present at birth—it can’t show up 6 months later.

For this reason, some clinicians refer to these ETs not as ‘congenital,’ but as what?
Why is the term congenital a misnomer here? Technically, a congenital disorder must be present at birth—it can’t show up 6 months later.

For this reason, some clinicians refer to these ETs not as ‘congenital,’ but as what? Infantile esotropia.
Worried parents call your office to say they observed their two-month-old child’s eyes cross briefly. Should you be concerned?
Worried parents call your office to say they observed their two-month-old child’s eyes cross briefly. Should you be concerned?

Not necessarily. Brief strabismic episodes are commonly seen in the first few months of life. Tell them it’s probably nothing, but to keep an eye on it (so to speak).
Worried parents call your office to say they observed their two-month-old child's eyes cross briefly. Should you be concerned?

Not necessarily. Brief strabismic episodes are commonly seen in the first few months of life. Tell them it’s probably nothing, but to keep an eye on it (so to speak).

They call back a week later to report they observed his eyes “turning out [going XT] for a second.” As this represented a change from the transient ET they saw previously, they were concerned. Should you be?
Worried parents call your office to say they observed their two-month-old child’s eyes cross briefly. Should you be concerned?
Not necessarily. Brief strabismic episodes are commonly seen in the first few months of life. Tell them it’s probably nothing, but to keep an eye on it (so to speak).

They call back a week later to report they observed his eyes “turning out [going XT] for a second.” As this represented a change from the transient ET they saw previously, they were concerned. Should you be?
Probably not. It’s not uncommon for the same infant to display brief episodes of both ET and XT (it’s referred to as ocular instability of infancy).
Given that episodic strabismus is common in infancy, at what **should** make you worry that the infant has a congenital ET?

If the ET is…

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---

…it probably represents a congenital ET needing treatment
Given that episodic strabismus is common in infancy, at what **should** make you worry that the infant has a congenital ET?

If the ET is…

--present after age # months;
--constant; and
--large (defined as greater than # Δ),

…it probably represents a congenital ET needing treatment.
Given that episodic strabismus is common in infancy, at what **should** make you worry that the infant has a congenital ET?

If the ET is…

--present after age 2 months;
--constant; and
--large (defined as greater than 30Δ),

…it probably represents a congenital ET needing treatment
Congenital ET puts the infant at significant risk of suffering what (very broad) category of non-ophthalmic disease as an adult?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

*Congenital ET puts the infant at significant risk of suffering what (very broad) category of non-ophthalmic disease as an adult?*
*Mental illness. Congenital ET confers a risk ratio of 2.6! (How or why, I have no idea).*
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Two basic forms of congenital ET

?  ?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Two basic forms of congenital ET

With Nystagmus  Without Nystagmus
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

?-??
Comitant esotropia

Congenital (onset $< \text{age } 6 \text{ m}$)  Acquired (onset $> \text{age } 6 \text{ m}$)

With Nystagmus  Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
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Nystagmus blockage syndrome

-- Arises in pts with... *[a nystagmus syndrome]*

-- Pt 'learns' that their nystagmus is decreased (and thus acuity is increased) when their eyes are... converged

-- Key exam finding: Pt 'eats up' prism when deviation is being measured
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Nystagmus blockage syndrome
--Arises in pts with...congenital motor nystagmus (CMN)

With Nystagmus

Nystagmus blockage syndrome
- Latent nystagmus
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Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Nystagmus blockage syndrome
--Arises in pts with... congenital motor nystagmus (CMN)

Briefly, what is congenital motor nystagmus?

A nystagmus arising in the first few months of life that is not secondary to either sensory or CNS pathology

Is the nystagmus vertical, horizontal or both/either?
It is virtually always horizontal

Do CMN pts usually have good vision, or poor?
Good (rule of thumb: If a pt has nystagmus + good VA, it’s CMN)

CMN has a unique finding related to an exam maneuver you’re familiar with but don’t perform very often. What is this finding?
A paradoxical OKN response
Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Nystagmus blockage syndrome
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congenital motor nystagmus (CMN)

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**Comitant Esotropia**

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**Acquired (onset > age 6 m)**
Comitant Esotropia

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Congenital (onset < age 6 m) Acquired (onset > age 6 m)

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Comitant esotropia

**Congenital (onset < age 6 m)**

- **Nystagmus blockage syndrome**
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What does ‘OKN’ stand for in this context?

A paradoxical OKN response
Comitant Esotropia

**Comitant esotropia**

What does ‘OKN’ stand for in this context? Optokinetic nystagmus

A paradoxical OKN response

---

What does CMN stand for?

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What does ‘OKN’ stand for in this context?

- Optokinetic nystagmus

To what does ‘optokinetic nystagmus response’ refer?

- To the phenomenon in which the presentation of a series of visual stimuli moving rapidly through the visual field induces the eyes to pursue (ie, follow) a stimulus, then engage in a rapid return saccade to pick up the next stimulus.

How is OKN testing performed?

- Usually with an OKN drum that is spun about its axis.

What is a paradoxical OKN response?

- A phenomenon that occurs when a CMN pt is presented with an OKN drum spinning in the direction congruent with the pt's nystagmus. Spinning in this direction would be expected to amplify (ie, worsen) the pt's nystagmus. However, in a CMN pt the presentation of congruent OKN movement produces a dampening or even reversal of the nystagmus—hence the term paradoxical OKN response.
Comitant Esotropia

Comitant esotropia

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#OldSchoolCool: OKN drum
Comitant Esotropia

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Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Nystagmus blockage syndrome
--Arises in pts with...congenital motor nystagmus (CMN)
--Pt 'learns' that their nystagmus is decreased (and thus acuity is increased) when their eyes are...['direction' of gaze]

With Nystagmus

Latent nystagmus
Ciancia syndrome
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

**Nystagmus blockage syndrome**
-- Arises in pts with...congenital motor nystagmus (CMN)
-- Pt 'learns' that their nystagmus is decreased (and thus acuity is increased) when their eyes are...converged

- Latent nystagmus
- Ciancia syndrome

---

Nystagmus blockage syndrome
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Nystagmus blockage syndrome
-- Arises in pts with congenital motor nystagmus (CMN)
-- Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are converged
-- Key exam finding: Pt ‘eats up’ prism when deviation is being measured

Nystagmus blockage syndrome
-- Latent nystagmus
-- Ciancia syndrome
Comitant Esotropia

Comitant esotropia

With Nystagmus

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Congenital (onset \(< \text{age 6 m}}\))

Acquired (onset \(> \text{age 6 m}}\))

Nystagmus blockage syndrome

- Latent nystagmus
- Ciancia syndrome
What does it mean to say the pt ‘eats up’ prism?

--Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are converged
--Key exam finding: Pt ‘eats up’ prism when deviation is being measured
What does it mean to say the pt ‘eats up’ prism?  
It means that, when attempting to quantify the size of the esotropia with prisms, the clinician finds the pt needs progressively more prism to neutralize the ET.

Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are...converged.

--Key exam finding: Pt ‘eats up’ prism when deviation is being measured.
What does it mean to say the pt ‘eats up’ prism?
It means that, when attempting to quantify the size of the esotropia with prisms, the clinician finds the pt needs progressively more prism to neutralize the ET. So, eg, a child who initially requires 20PD might shortly thereafter be found to need 35, and after receiving 35 is found to need 50. (You can see how such a child is being said to ‘eat up’ prism.)

Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are...converged
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Why do NBS pts eat up prism?

--Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are...converged
--Key exam finding: Pt ‘eats up’ prism when deviation is being measured
Without Nystagmus

With Nystagmus

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

Comitant esotropia

Ciancia syndrome

Latent nystagmus

Nystagmus blockage syndrome

---Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are...**converged**
---Key exam finding: Pt ‘**eats up**’ prism when deviation is being measured

---Arises in pts with...congenital motor nystagmus (CMN)—Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are...**converged**
---Key exam finding: Pt ‘**eats up**’ prism when deviation is being measured

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It means that, when attempting to quantify the size of the esotropia with prisms, the clinician finds the pt needs progressively more prism to neutralize the ET. So, eg, a child who initially requires 20PD might shortly thereafter be found to need 35, and after receiving 35 is found to need 50. (You can see how such a child is being said to ‘eat up’ prism.)

**Why do NBS pts eat up prism?**

Recall we said these pts often see better in the converged state, and that this improvement in VA is why their visual system adopts an esotropic orientation in the first place. Apparently, if their ET is neutralized with prism, this short-circuits the VA benefit they gained from converging.
What does it mean to say the pt ‘eats up’ prism?
It means that, when attempting to quantify the size of the esotropia with prisms, the clinician finds the pt needs progressively more prism to neutralize the ET. So, eg, a child who initially requires 20PD might shortly thereafter be found to need 35, and after receiving 35 is found to need 50. (You can see how such a child is being said to ‘eat up’ prism.)

Why do NBS pts eat up prism?
Recall we said these pts often see better in the converged state, and that this improvement in VA is why their visual system adopts an esotropic orientation in the first place. Apparently, if their ET is neutralized with prism, this short-circuits the VA benefit they gained from converging. Thus, if their ET is neutralized with prism, re-acquiring improved VA requires the system to crank in even more convergence, and thus the child becomes clinically more esotropic. And if/when that ET is neutralized, the child will crank in even more convergence. In this manner the prism gets ‘et up.’

--Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are…converged
--Key exam finding: Pt ‘eats up’ prism when deviation is being measured
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

Without Nystagmus

Acquired (onset > age 6 m)

Latent nystagmus

--No nystagmus when vision is… [status]
Comitant esotropia

- Congenital (onset < age 6 m)
  - With Nystagmus
    - Latent nystagmus
      -- No nystagmus when vision is binocular
  - Without Nystagmus

- Acquired (onset > age 6 m)

Latent nystagmus

- Nystagmus blockage syndrome
Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus

Acquired (onset > age 6 m)

Latent nystagmus
-- No nystagmus when vision is binocular
-- When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye vs occluded eye
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Latent nystagmus
-- No nystagmus when vision is binocular
-- When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye
Comitant Esotropia

Congenital (onset < age 6 m)

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

Acquired (onset > age 6 m)

Latent nystagmus
-- No nystagmus when vision is... binocular
-- When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye

Manifest latent nystagmus
-- Sounds like an oxymoron...
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

- Nystagmus blockage syndrome
- **Latent nystagmus**
- Ciancia syndrome

**Latent nystagmus**
-- No nystagmus when vision is... binocular
-- When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye

**Manifest latent nystagmus**
-- Sounds like an oxymoron...
-- Nystagmus present when both eyes are open but one is... [temporary vision status]
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

Acquired (onset > age 6 m)

Latent nystagmus
-- No nystagmus when vision is...binocular
-- When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye

Manifest latent nystagmus
-- Sounds like an oxymoron...
-- Nystagmus present when both eyes are open but one is...suppressed
Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

Acquired (onset > age 6 m)

Latent nystagmus

- No nystagmus when vision is binocular
- When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye

Manifest latent nystagmus

- Sounds like an oxymoron...
- Nystagmus present when both eyes are open but one is... suppressed

Latent nystagmus and manifest latent nystagmus are sometimes referred to by what single name?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

- Latent nystagmus

Latent nystagmus and manifest latent nystagmus are sometimes referred to by what single name? Fusion maldevelopment nystagmus syndrome (FMNS)

Latent nystagmus
-- No nystagmus when vision is binocular-- When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye

Manifest latent nystagmus
-- Sounds like an oxymoron...-- Nystagmus present when both eyes are open but one is... suppressed
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus

Ciancia syndrome

-- Deviation tends to be… [magnitude]
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- **Ciancia syndrome**
  -- Deviation tends to be…very large
Comitant Esotropia

Ciancia syndrome
Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)

Ciancia syndrome
-- Deviation tends to be very large

How large is ‘very large’?
Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
  - Ciancia syndrome
    --Deviation tends to be…very large
    How large is ‘very large’?
    Greater than 50Δ
- Without Nystagmus

Acquired (onset > age 6 m)
- Nystagmus blockage syndrome
- Latent nystagmus
  - Ciancia syndrome
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
  - Nystagmus blockage syndrome
  - Ciancia syndrome
    -- Deviation tends to be very large
    -- Nystagmus increases when the fixating eye abducts; decreases when it adducts
- Without Nystagmus

Acquired (onset > age 6 m)
- Ciancia syndrome
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus
- Nystagmus blockage syndrome
- Latent nystagmus
  - Ciancia syndrome

Without Nystagmus

Acquired (onset > age 6 m)

Ciancia syndrome
- Deviation tends to be very large
- Nystagmus increases when the fixating eye abducts; decreases when it adducts
Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

---

**Nystagmus blockage syndrome**

--Damped when the eyes are converged

--Nystagmus appears upon attempted... abstraction.

---

**Ciancia syndrome**

--Deviation tends to be... very large

--Nystagmus increases when the fixating eye... abducts; decreases when it... adducts.
**Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?**

Think of these disorders this way:

--- The NBS is a type of [two words] for which the null point is located in convergence (i.e., the ET is in a sense *caused* by the nystagmus)

--- The Ciancia syndrome is a type of congenital esotropia in which the ET *just happens* to be associated with a nystagmus that manifests in attempted abduction.

--- *Nystagmus blockage syndrome*

  -- Damped when the eyes are...converged
  -- *Nystagmus appears upon attempted...abduction*

--- *Ciancia syndrome*

  -- Deviation tends to be...very large
  -- *Nystagmus increases when the fixating eye...abducts*;
  -- decreases when it...adducts
Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these? Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (ie, the ET is in a sense caused by the nystagmus)

--Ciancia syndrome is a type of congenital esotropia in which the ET just happens to be associated with a nystagmus that manifests in attempted abduction

--- Nystagmus blockage syndrome
--Damped when the eyes are...converged
--- Nystagmus appears upon attempted...abduction

--- Ciancia syndrome
--Deviation tends to be...very large
--- Nystagmus increases when the fixating eye...abducts; decreases when it...adducts
Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these? Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (ie, the ET is in a sense caused by the nystagmus). In contrast,

--The Ciancia syndrome is a type of congenital esotropia in which the ET just happens to be associated with a nystagmus that manifests in attempted abduction.

**Comitant Esotropia**

- Nystagmus blockage syndrome
  --Damped when the eyes are...converged
  --Nystagmus appears upon attempted...abduction

- Latent nystagmus

- Ciancia syndrome
  --Deviation tends to be...very large
  --Nystagmus increases when the fixating eye...abducts;
  decreases when it...adducts
Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these? Think of these disorders this way:
--The NBS is a type of congenital nystagmus for which the null point is located in convergence (ie, the ET is in a sense caused by the nystagmus). In contrast,
--The Ciancia syndrome is a type of congenital esotropia in which the ET just happens to be associated with a nystagmus that manifests in attempted abduction.
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

Think of these disorders this way:

--The NBS is a type of **congenital nystagmus** for which the null point is located in convergence (i.e., the ET is in a sense caused by the nystagmus). In contrast,

--The Ciancia syndrome is a type of **congenital esotropia** in which the ET just happens to be associated with a nystagmus that manifests in attempted abduction.

So, **NBS** is a congenital nystagmus pretending to be a congenital esotropia, whereas **Ciancia syndrome** is a congenital esotropia with an overlay of congenital nystagmus.

---

**Nystagmus blockage syndrome**

--Damped when the eyes are...converged

--**Nystagmus appears upon attempted...abduction**

---

**Ciancia syndrome**

--Deviation tends to be...very large

--**Nystagmus increases when the fixating eye...abducts**;

decreases when it...adducts
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these? Think of these disorders this way:

-- The NBS is a type of congenital nystagmus for which the null point is located in convergence (i.e., the ET is in a sense caused by the nystagmus). In contrast,
-- The Ciancia syndrome happens to be associated

What is a null point?

Nystagmus blockage syndrome
-- Damped when the eyes are...converged
-- Nystagmus appears upon attempted...abduction

Ciancia syndrome
-- Deviation tends to be...very large
-- Nystagmus increases when the fixating eye...abducts;
decreases when it...adducts
Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these? Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (i.e., the ET is in a sense caused by the nystagmus). In contrast, the Ciancia syndrome happens to be associated with a nystagmus that manifests in attempted abduction.

What is a null point?
A direction of gaze in which the intensity of the nystagmus is minimized.

Ciancia syndrome
--Deviation tends to be...very large
--Nystagmus increases when the fixating eye...abducts; decreases when it...adducts

Nystagmus blockage syndrome
--Damped when the eyes are...converged
--Nystagmus appears upon attempted...abduction
Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

Think of these disorders this way:
--- The NBS is a type of congenital nystagmus for which the null point is located in convergence (i.e., the ET is in a sense caused by the nystagmus). In contrast,

--- Given that the ET in NBS stems from convergence, what other signs **may** be present to clue you in that you’re dealing with NBS and not Ciancia syndrome?

--- The Ciancia syndrome is a type of congenital esotropia in which the ET just happens to be associated with a nystagmus that manifests in attempted abduction.

Given that the ET in NBS stems from convergence, what other signs **may** be present to clue you in that you’re dealing with NBS and not Ciancia syndrome?

--- Pupillary constriction **may** accompany the convergence

--- Some infants with NBS 'learn' to uncouple their near-response triad, so miosis (as well as accommodation) are not a universal finding in NBS

--- Nystagmus blockage syndrome

--- Latent nystagmus

--- Ciancia syndrome

--- Nystagmus increases when the fixating eye...abducts; decreases when it...adducts
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (ie, the ET is in a sense caused by the nystagmus). In contrast,

Given that the ET in NBS stems from convergence, what other signs **may** be present to clue you in that you’re dealing with NBS and not Ciancia syndrome?

- Pupillary constriction **may** accompany the convergence

--Damped when the eyes are...converged

--Nystagmus appears upon attempted...abduction

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Ciancia syndrome

--Deviation tends to be...very large

--Nystagmus increases when the fixating eye...abducts; decreases when it...adducts
Note that both NBS and Ciencia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (i.e., the ET is in a sense caused by the nystagmus). In contrast,

--NBS symmetrically affects both eyes.

---Damped when the eyes are converged

---Nystagmus appears upon attempted abduction

---Nystagmus blockage syndrome

With Nystagmus

---Nystagmus increases when the fixating eye abducts; decreases when it adducts

---Ciancia syndrome

---Deviation tends to be very large

---Pupillary constriction may accompany the convergence
Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (ie, the ET is in a sense caused by the nystagmus). In contrast,

Given that the ET in NBS stems from convergence, what other signs **may** be present to clue you in that you’re dealing with NBS and not Ciancia syndrome?

- Pupillary constriction **may** accompany the convergence

**May**? Why the hedging?
Some infants with NBS ‘learn’ to decouple their near-response triad, so miosis (as well as accommodation) are not a universal finding in NBS

With Nystagmus

--Nystagmus appears upon attempted abduction

--Damped when the eyes are...converged

Nystagmus blockage syndrome

- Latent nystagmus

Ciancia syndrome

--Deviation tends to be...very large

--Nystagmus increases when the fixating eye...abducts; decreases when it...adducts
Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, **how can you differentiate between these?**

Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (i.e., the ET is in a sense caused by the nystagmus). In contrast,...

Finally, note also that the magnitude of the ET tends to be much larger in Ciancia syndrome than the NBS. So for purposes of the Boards and/or OKAP, an infant with nystagmus and ≤35PD* of congenital ET probably has NBS, whereas an infant with nystagmus and ≥55PD of congenital ET likely has Ciancia syndrome.

---

**Nystagmus blockage syndrome**

- Latent nystagmus
- Ciancia syndrome

**Ciancia syndrome**

-- Deviation tends to be... **very large**

-- Nystagmus increases when the fixating eye... abducts; **decreases** when it... adducts

---

*Prior to ‘eating up prism’*
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Congenital ET without nystagmus
--Family history usually...[present vs absent]

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Management:
--Prescribe full...cycloplegic refraction
--Perform bilateral...MR recession
--Best if by age...24 months
--If IO overaction present, consider...weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Acquired (onset > age 6 m)

Congenital ET without nystagmus

-- Family history usually...present
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus
  - Congenital ET without nystagmus
    -- Family history usually present
    -- Deviation tends to be [magnitude]

Acquired (onset > age 6 m)

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age 24 months
- If IO overaction present, consider weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus
-- Family history usually...present
-- Deviation tends to be...large
**Comitant Esotropia**

Comitant esotropia

**Congenital (onset < age 6 m)**
- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus

**Acquired (onset > age 6 m)**

**Congenital ET without nystagmus**
-- Family history usually…present
-- Deviation tends to be…large

*How large is ‘large’?*

Management:
-- Prescribe full…cycloplegic refraction
-- Perform bilateral…MR recession
-- Best if by age…24 months
-- If IO overaction present, consider…weakening

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Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large

How large is 'large'? Greater than 30Δ
Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large

If a congenital ET is subtle, what should you infer?

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Management:
--Prescribe full...cycloplegic refraction
--Perform bilateral...MR recession
--Best if by age...24 months
--If IO overaction present, consider...weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus
- Family history usually...present
- Deviation tends to be...large

If a congenital ET is subtle, what should you infer? It’s not a congenital ET (ie, they’re not subtle)

Management:
- Prescribe full...cycloplegic refraction
- Perform bilateral...MR recession
- Best if by age...24 months
- If IO overaction present, consider...weakening
Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

**Congenital ET without nystagmus**

-- Family history usually... present
-- Deviation tends to be... large

*If a congenital ET is subtle, what should you infer?*

It's not a congenital ET (ie, they're not subtle)

*What is the exception to this?*
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
- Without Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

Acquired (onset > age 6 m)

Congenital ET without nystagmus
- Family history usually present
- Deviation tends to be large

If a congenital ET is subtle, what should you infer?
It’s not a congenital ET (ie, they’re not subtle)

What is the exception to this?
ET in preemies—their congenital ET can be small-angle
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

**Congenital ET without nystagmus**
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...*[may be present?]*
Without Nystagmus
With Nystagmus

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

Comitant Esotropia

Comitant esotropia

With Nystagmus
Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Management:
--Prescribe full...cycloplegic refraction--Perform bilateral...MR recession
--Best if by age...24 months
--If IO overaction present, consider...weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Congenital ET without nystagmus
--Family history usually present
--Deviation tends to be large
--Cross fixation may be present

What does this imply about VA?
It tends to be equal OU

Is amblyopia common?
No
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Without Nystagmus

With Nystagmus

With Nystagmus blockage syndrome

With Latent nystagmus

With Ciancia syndrome

Without Nystagmus

Congenital ET without nystagmus

--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present

What does this imply about VA?
It will be equal OU

Acquired (onset > age 6 m)
Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

Acquired (onset > age 6 m)

Congenital ET without nystagmus
- Family history usually present
- Deviation tends to be large
- Cross fixation may be present

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age 24 months
- If IO overaction present, consider weakening

What does this imply about VA?
It will be equal OU

What exam finding is key to determining whether the infant’s vision is equal bilaterally?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present

What does this imply about VA?
It will be equal OU

What exam finding is key to determining whether the infant’s vision is equal bilaterally? If it isn’t, the infant will display a for the better-seeing eye
Comitant Esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

Acquired (onset > age 6 m)

Congenital ET without nystagmus
- Family history usually present
- Deviation tends to be large
- Cross fixation may be present

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age 24 months
- If IO overaction present, consider weakening

What does this imply about VA?
It will be equal OU

What exam finding is key to determining whether the infant’s vision is equal bilaterally?
If it isn’t, the infant will display a gaze preference for the better-seeing eye

Is amblyopia common?
No
Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus

Acquired (onset > age 6 m)

Congenital ET without nystagmus
-- Family history usually...present
-- Deviation tends to be...large
-- Cross fixation...may be present

What does this imply about VA?
It will be equal OU

Is amblyopia common?
Comitant esotropia

Congenital (onset < age 6 m)
  - Without Nystagmus
    - Nystagmus blockage syndrome
    - Latent nystagmus
    - Ciancia syndrome
  - With Nystagmus
    - Congenital ET without nystagmus
      - Family history usually present
      - Deviation tends to be large
      - Cross fixation may be present

Acquired (onset > age 6 m)

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age 24 months
- If IO overaction present, consider weakening

What does this imply about VA?
- It will be equal OU

Is amblyopia common?
- Yes
Without Nystagmus

With Nystagmus

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Comitant Esotropia

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present

If amblyopia is present:
--will vision be equal OU?

If amblyopia is present:

Will a gaze preference be present?

If amblyopia is present:

Is amblyopia common?

Yes

It tends to be equal OU?

Is amblyopia common?

Yes

Is amblyopia common?

Yes

Is amblyopia common?

Yes

Is amblyopia common?

Yes

Is amblyopia common?

Yes

Is amblyopia common?

Yes

Is amblyopia common?

Yes

Is amblyopia common?

Yes

Is amblyopia common?

Yes

Is amblyopia common?
Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
  - Nystagmus
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus
  - Congenital ET without nystagmus
    -- Family history usually...present
    -- Deviation tends to be...large
    -- Cross fixation...may be present
  - Ciancia syndrome
  - Latent nystagmus
  - Nystagmus

Acquired (onset > age 6 m)

If amblyopia is present:
- Will vision be equal OU? No

Management:
- Prescribe full...cycloplegic refraction
- Perform bilateral...MR recession
- Best if by age...24 months
- If IO overaction present, consider...weakening

What does this imply about VA?
- It tends to be equal OU? No

Is amblyopia common?
- Yes
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Congenital ET without nystagmus
--Family history usually present
--Deviation tends to be large
--Cross fixation may be present

If amblyopia is present:
--will vision be equal OU? No
--Will a gaze preference be present?

Is amblyopia common?
Yes

No
Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

- Nystagmus
- Latent nystagmus
- Ciancia syndrome

**Congenital ET without nystagmus**
-- Family history usually present
-- Deviation tends to be large
-- Cross fixation may be present

If amblyopia is present:
-- Will vision be equal OU? **No**
-- Will a gaze preference be present? **Yes**

Is amblyopia common?
**Yes**

What does this imply about VA?
It tends to be equal OU? **No**

Is amblyopia common?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Acquired (onset > age 6 m)

Congenital ET without nystagmus
-- Family history usually present
-- Deviation tends to be large
-- Cross fixation may be present
-- 2/3 with concomitant [strabismic conditions]

Management:
-- Prescribe full cycloplegic refraction
-- Perform bilateral MR recession
-- Best if by age 24 months
-- If IO overaction present, consider weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

**Congenital ET without nystagmus**
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present
--2/3 with concomitant...DVD and IO overaction

With Nystagmus
--Nystagmus blockage syndrome
--Latent nystagmus
--Ciancia syndrome

Management:
--Prescribe full...cycloplegic refraction
--Perform bilateral...MR recession
--Best if by age...24 months
--If IO overaction present, consider...weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

With Nystagmus

Nystagmus blockage syndrome
Latent nystagmus
Ciancia syndrome

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present
--2/3 with concomitant...DVD and IO overaction

In this context, what do DVD and IO stand for?

**DVD:**

**IO:**
Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

- Without Nystagmus
  - Congenital ET without nystagmus
    -- Family history usually present
    -- Deviation tends to be large
    -- Cross fixation may be present
    -- 2/3 with concomitant DVD and IO overaction

Acquired (onset > age 6 m)

Management:
-- Prescribe full cycloplegic refraction
-- Perform bilateral MR recession
-- Best if by age 24 months
-- If IO overaction present, consider weakening

In this context, what do DVD and IO stand for?
**DVD**: Dissociated vertical deviation
**IO**: Inferior oblique (muscle)
Without Nystagmus

With Nystagmus

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

Comitant esotropia

Congenital ET without nystagmus

DVD and IO overaction

Management:
--Prescribe full cycloplegic refraction--Perform bilateral MR recession
--Best if by age 24 months
--If IO overaction present, consider weakening

In this context, what do DVD and IO stand for?

**DVD:** Dissociated vertical deviation
**IO:** Inferior oblique (muscle)

**What is the classic clinical finding in DVD?**

An eye will slowly elevate and extort, either spontaneously (manifest DVD) or when occluded (latent DVD). A crucial finding occurs when the drifting eye reorients downward, and it is this— the fellow eye does not move downward simultaneously (as would normally be the case).
Comitant Esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus

What is the classic clinical finding in DVD?
An eye will slowly elevate and extort, either spontaneously (manifest DVD) or when occluded (latent DVD).

In this context, what do DVD and IO stand for?

**DVD**: Dissociated vertical deviation

**IO**: Inferior oblique (muscle)
Comitant Esotropia

DVD
Comitant esotropia

-**Congenital (onset < age 6 m)**
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

-**Acquired (onset > age 6 m)**

**Congenital ET without nystagmus**

What is the classic clinical finding in DVD?
An eye will slowly elevate and extort, either spontaneously (manifest DVD) or when occluded (latent DVD). A crucial finding occurs when the drifting eye reorients downward, and it is this—the fellow eye does not move downward simultaneously (as would normally be the case).

In this context, what do DVD and IO stand for?
**DVD**: Dissociated vertical deviation
**IO**: Inferior oblique (muscle)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Without Nystagmus

With Nystagmus

Without Nystagmus

Acquired (onset > age 6 m)

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present
--2/3 with concomitant...DVD and IO overaction

Both DVD and IO overaction involve elevation and extorsion. How can they be differentiated?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

- Without Nystagmus
  - Congenital ET without nystagmus
    -- Family history usually present
    -- Deviation tends to be large
    -- Cross fixation may be present
    -- 2/3 with concomitant DVD and IO overaction

Acquired (onset > age 6 m)

Management:
-- Prescribe full cycloplegic refraction
-- Perform bilateral MR recession
-- Best if by age 24 months
-- If IO overaction present, consider weakening

Both DVD and IO overaction involve elevation and extorsion.

How can they be differentiated?
DVD violates Hering’s law; IO overaction doesn’t
Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus
-- Family history usually...present
-- Deviation tends to be...large
-- Cross fixation...may be present
-- 2/3 with concomitant...DVD and IO overaction

Management:
-- Prescribe full...cycloplegic refraction
-- Perform bilateral...MR recession
-- Best if by age...24 months
-- If IO overaction present, consider...weakening

Both DVD and IO overaction involve elevation and extorsion. How can they be differentiated? DVD violates Hering’s law; IO overaction doesn’t

What does this mean, exactly?
**Comitant Esotropia**

**Comitant esotropia**

- **Congenital (onset < age 6 m)**
  - With Nystagmus
  - Without Nystagmus
    - Nystagmus blockage syndrome
    - Latent nystagmus
    - Ciancia syndrome
  - **Congenital ET without nystagmus**
    - Family history usually...present
    - Deviation tends to be...large
    - Cross fixation...may be present
    - 2/3 with concomitant...DVD and IO overaction

- **Acquired (onset > age 6 m)**

**Management:**
- Prescribe full...cycloplegic refraction
- Perform bilateral...MR recession
- Best if by age...24 months
- If IO overaction present, consider...weakening

Both DVD and IO overaction involve elevation and extorsion.

**How can they be differentiated?**

**DVD violates Hering’s law; IO overaction doesn’t**

**What does this mean, exactly?**

When an eye that is elevated by IO overaction depresses, the fellow eye obeys Hering’s law and depresses as well. This doesn’t happen in DVD.
Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  By Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Comitant ET without nystagmus

For more on DVD and IO overaction, see slide-set P7; for Hering’s law, see FELT3.

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
  - Best if by age 24 months
  - If IO overaction present, consider weakening

Both DVD and IO overaction involve elevation and extorsion. How can they be differentiated?

DVD violates Hering’s law; IO overaction doesn’t
- If IO overaction present, consider...weakening

What does this mean, exactly?
When an eye that is elevated by IO overaction depresses, the fellow eye obeys Hering’s law and depresses as well. This doesn’t happen in DVD.
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

---Nystagmus blockage syndrome
---Latent nystagmus
---Ciancia syndrome

**Congenital ET without nystagmus**
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present
--2/3 with concomitant...DVD and IO overaction

**Management:**
--Prescribe full...
Comitant Esotropia

Comitant esotropia

Congenital (onset < **age 6 m**)

Acquired (onset > **age 6 m**)

With Nystagmus

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

**Congenital ET without nystagmus**

-- Family history usually… present
-- Deviation tends to be… large
-- Cross fixation… may be present
-- 2/3 with concomitant… DVD and IO overaction

**Management:**

-- Prescribe full… cycloplegic refraction

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Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

Congenital ET without nystagmus
-- Family history usually present
-- Deviation tends to be large
-- Cross fixation may be present
-- 2/3 with concomitant DVD and IO overaction

Management:
-- Prescribe full cycloplegic refraction

Why prescribe the full CR?

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Comitant Esotropia
Comitant Esotropia

With Nystagmus

With Nystagmus

Without Nystagmus

Comitant (onset < age 6 m)

Acquired (onset > age 6 m)

Congenital ET without nystagmus

--Family history usually present

--Deviation tends to be large

--Cross fixation may be present

--2/3 with concomitant DVD and IO overaction

Management:

--Prescribe full cycloplegic refraction

Why prescribe the full CR?

In case the ET has an accommodative component
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nystagmus
Without Nystagmus

With Nystagmus
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

Congenital ET without nystagmus
-- Family history usually present
-- Deviation tends to be large
-- Cross fixation may be present
-- 2/3 with concomitant DVD and IO overaction

Management:
-- Prescribe full cycloplegic refraction
-- Perform bilateral [surgery]
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Congenital ET without nystagmus
--Family history usually…present
--Deviation tends to be…large
--Cross fixation…may be present
--2/3 with concomitant…DVD and IO overaction

Management:
--Prescribe full…cycloplegic refraction
--Perform bilateral…MR recession

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present
--2/3 with concomitant...DVD and IO overaction

Management:
--Prescribe full...cycloplegic refraction
--Perform bilateral...MR recession
--Best if by age...
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present
--2/3 with concomitant...DVD and IO overaction

Management:
--Prescribe full...cycloplegic refraction
--Perform bilateral...MR recession
--Best if by age...24 months

Acquired (onset > age 6 m)
Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

**Congenital ET without nystagmus**
-- Family history usually present
-- Deviation tends to be large
-- Cross fixation may be present
-- 2/3 with concomitant DVD and IO overaction

**Management:**
-- Prescribe full cycloplegic refraction
-- Perform bilateral MR recession
  -- Best if by age 24 months
-- If IO overaction present, consider [surgery]
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Without Nystagmus
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

With Nystagmus

Acquired (onset > age 6 m)

Congenital ET without nystagmus
-- Family history usually present
-- Deviation tends to be large
-- Cross fixation may be present
-- 2/3 with concomitant DVD and IO overaction

Management:
-- Prescribe full cycloplegic refraction
-- Perform bilateral MR recession
  -- Best if by age 24 months
-- If IO overaction present, consider weakening
Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

- Without Nystagmus

Acquired (onset > age 6 m)

What is the realistic goal of treatment?

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age 24 months
- If IO overaction present, consider weakening
Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

What is the realistic goal of treatment?
Monofixation syndrome, or a small-angle esophoria

Management:
-- Prescribe full... cycloplegic refraction
-- Perform bilateral... MR recession
  -- Best if by age... 24 months
-- If IO overaction present, consider... weakening
Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus

Acquired (onset > age 6 m)

What is the realistic goal of treatment? Monofixation syndrome, or a small-angle esophoria

What about high-grade stereopsis?

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
  - Best if by age 24 months
  - If IO overaction present, consider weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

With Nystagmus

Acquired (onset > age 6 m)

What is the realistic goal of treatment?
Monofixation syndrome, or a small-angle esophoria

What about high-grade stereopsis?
It’s not gonna happen

Management:
- Prescribe full...cycloplegic refraction
- Perform bilateral...MR recession
- Best if by age...24 months
- If IO overaction present, consider...weakening
Comitant Esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus
- Nystagmus block
- Latent nystagmus
- Ciancia syndrome

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age 24 months
- If IO overaction present, consider weakening

What is the realistic goal of treatment?

Monofixation syndrome

Monofixation syndrome is one of the three adaptations the immature visual system makes in response to misalignment. What are the other two?

Mnemonic is...
Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nystagmus
- Nystagmus block
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

What is the realistic goal of treatment? Monofixation syndrome

Monofixation syndrome is one of the three adaptations the immature visual system makes in response to misalignment. What are the other two?
- S
- A
- Monofixation syndrome

Mnemonic is...SAM

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral...MR recession
-- Best if by age...24 months
-- If IO overaction present, consider...weakening

What about high-grade stereopsis? It’s not gonna happen

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Monofixation syndrome is one of the three adaptations the immature visual system makes in response to misalignment. What are the other two? -- S -- A -- Monofixation syndrome

Mnemonic is...SAM

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral...MR recession
-- Best if by age...24 months
-- If IO overaction present, consider...weakening

What about high-grade stereopsis? It’s not gonna happen

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Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

- Nystagmus block
- Latent nystagmus
- Ciancia syndrome

Monofixation syndrome is one of the three adaptations the immature visual system makes in response to misalignment. What are the other two?

--- Suppression
--- Anomalous retinal correspondence

Mnemonic is…SAM

What is the realistic goal of treatment?

Monofixation syndrome, or a small-angle esophoria

Management:

--- Prescribe full cycloplegic refraction
--- Perform bilateral MR recession
--- Best if by age...24 months
--- If IO overaction present, consider…weakening

What about high-grade stereopsis?

It’s not gonna happen
Comitant Esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nystagmus
- Nystagmus block
- Latent nystagmus
- Straight ahead

Without Nystagmus
- Comitant esotropia
- Ciancia syndrome
- Latent nystagmus
- Nystagmus blockage syndrome
- Congenital ET without nystagmus

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age ~ 24 months

What is the realistic goal of treatment?
Monofixation syndrome or a small-angle esophoria

Monofixation syndrome is one of the three adaptations the immature visual system makes in response to misalignment. What are the other two?
- Suppression
- Anomalous retinal correspondence
  Mnemonic is...SAM

For more on sensory responses in strabismus, see slide-set P14
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Two basic forms of acquired ET
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Accommodative  Nonaccommodative

Two basic forms of acquired ET
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative  Nonaccommodative

Accommodative
--Onset between ages 6 months and 7 years; average age 2.5 years
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)

- Accommodative
  --Onset between ages 6 months and 7 years; average age 2.5 years
- Nonaccommodative

Ciancia syndrome

Latent nystagmus

Nystagmus blockage syndrome
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)

- Accommodative
- Nonaccommodative

Accommodative
-- Onset between ages 6 months and 7 years; average age 2.5 years
-- Initially.., eventually becoming..
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

Without Nystagmus

Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Accommodative

--Onset between ages 6 months and 7 years; average age 2.5 years

--Initially...intermittent, eventually becoming...constant
Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
  -- Onset between ages 6 months and 7 years; average age 2.5 years
  -- Initially...intermittent, eventually becoming...constant
  -- Amblyopia is...[common vs uncommon]
- Nonaccommodative
Comitant Esotropia

Comitant esotropia

- Congenital (onset < age 6 m)
  - With Nystagmus
  - Without Nystagmus
- Acquired (onset > age 6 m)
  - Accommodative
  - Nonaccommodative

Accommodative

--- Onset between ages 6 months and 7 years; average age 2.5 years
--- Initially intermittent, eventually becoming constant
--- Amblyopia is common
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

Without Nystagmus

Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Accommodative

--Onset between ages 6 months and 7 years; average age 2.5 years

--Initially...intermittent, eventually becoming...constant

--Amblyopia is...common

--c/o diplopia early, but stop after developing a...
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
  -- Onset between ages 6 months and 7 years; average age 2.5 years
  -- Initially...intermittent, eventually becoming...constant
  -- Amblyopia is...common
  -- c/o diplopia early, but stop after developing a...facultative suppression scotoma
- Nonaccommodative
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

What is ‘suppression’ in this context?

Accommodative
--Onset between ages 6 months
--Initially...intermittent, eventually
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...facultative suppression scotoma
What is ‘suppression’ in this context?
It is the prevention of an image in one eye from reaching conscious awareness.

Accommodative
--Onset between ages 6 months
--Initially...intermittent, eventually
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...facultative suppression scotoma
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative
--Onset between ages 6 months
--Initially...intermittent, eventually
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...facultative suppression scotoma

What is ‘suppression’ in this context?
It is the prevention of an image in one eye from reaching conscious awareness

How does the phenomenon of suppression come about?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative
--Onset between ages 6 months
--Initially...intermittent, eventually
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...facultative suppression scotoma

What is ‘suppression’ in this context?
It is the prevention of an image in one eye from reaching conscious awareness

How does the phenomenon of suppression come about?
It is one of the three sensory adaptations to strabismus that was mentioned previously
Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative
--Onset between ages 6 months
--Initially...intermittent, eventually
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...

What is ‘suppression’ in this context?
It is the prevention of an image in one eye from reaching conscious awareness

What does it mean to say a suppression scotoma is ‘facultative’?
facultative suppression
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

**Accommodative**
--Onset between ages 6 months and 7 years; average age 2.5 years
--Initially...intermittent, eventually becoming...constant
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...facultative scotoma

**What is ‘suppression’ in this context?**
It is the prevention of an image in one eye from reaching conscious awareness

**What does it mean to say a suppression scotoma is ‘facultative’?**
It means suppression occurs only while the eye is deviated

**facultative suppression**
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Accommodative  Nonaccommodative
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative
  - Two basic forms
    - Refractive
    - Nonrefractive
Comitant esotropia

**Acquired (onset > age 6 m)**

**Accommodative**

- Combo of uncorrected **Refractive** and inadequate

**Nonaccommodative**

**Refractive**

**Nonrefractive**

- Latent nystagmus
- Ciancia syndrome
Comitant Esotropia

Acquired (onset > age 6 m)

Accommodative

Latent nystagmus
Ciancia syndrome

Refractive

Nonrefractive

Nonaccommodative
Comitant Esotropia

Comitant esotropia

Accommodative (onset < age 6 m)

- Accommodative: Refractive
  - Combo of uncorrected hyperopia and inadequate divergence

Acquired (onset > age 6 m)

- Comitant esotropia
  - Ciancia syndrome

Refractive

- Ciancia syndrome

Nonrefractive

- Ciancia syndrome

What does the term divergence refer to in this context?

To motor inputs intended to prevent overconvergence, with subsequent loss of bifixation of the object of regard.

What is the general term for the set of efferent pathways responsible for establishing and maintaining bifixation on objects of regard?

The supranuclear pathways.
What does the term divergence refer to in this context? To motor inputs intended to prevent overconvergence, with subsequent loss of bifixation of the object of regard.
Comitant Esotropia

Comitant esotropia

Accommodative (onset < age 6 m)
- Combo of uncorrected hyperopia and inadequate divergence

Refactive: Nonrefractive

What does the term divergence refer to in this context?
To motor inputs intended to prevent overconvergence, with subsequent loss of bifixation of the object of regard

What is the general term for the set of efferent pathways responsible for establishing and maintaining bifixation on objects of regard?

Accommodative: Refractive
- Accommodative

Ciancia syndrome

Acquired (onset > age 6 m)
- Nonaccommodative

Refractive
- Nonrefractive

Management
- Prescribe full CR
- If residual ET' with full CR: Rx bifocal
- Try to wean off plus over time
Comitant esotropia

Accommodative

- Combo of uncorrected hyperopia and inadequate divergence

What does the term divergence refer to in this context?
To motor inputs intended to prevent overconvergence, with subsequent loss of bifixation of the object of regard

What is the general term for the set of efferent pathways responsible for establishing and maintaining bifixation on objects of regard?
The supranuclear pathways

Refractive

- Nystagmus Accommodative
- Nystagmus Nonaccommodative

Nonrefractive

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)
Comitant Esotropia

Accommodative: Refractive
- Combo of uncorrected hyperopia and inadequate divergence

Acquired (onset > age 6 m)

For more on the supranuclear pathways, see slide-set N21

What is the general term for the set of efferent pathways responsible for establishing and maintaining bifixation on objects of regard?
The supranuclear pathways

Ciancia syndrome

What does the term divergence refer to in this context?
To motor inputs intended to prevent overconvergence, with subsequent loss of binaxion of the object of regard
Comitant Esotropia

Comitant esotropia

Accommodative: **Refractive**
--Combo of uncorrected hyperopia and inadequate divergence
--Average refractive error:

--- Latent nystagmus
--- Ciancia syndrome

Acquired (onset > **age 6 m**)

Accommodative

Nonaccommodative

Refractive

Nonrefractive
Comitant Esotropia

Comitant esotropia

Accommodative: **Refractive**
--Combo of uncorrected hyperopia and inadequate divergence
--Average refractive error: +4

Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Refractive

Nonrefractive

Latent nystagmus
Ciancia syndrome
Comitant Esotropia

Comitant esotropia

Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Accommodative: Refractive
-- Combo of uncorrected hyperopia and inadequate divergence
-- Average refractive error: +4
-- Strabismus usually measures ET \( \approx \) ET’

Latent nystagmus
Ciancia syndrome

Refractive

Nonrefractive

Nonaccommodative
Without Nystagmus
With Nystagmus

Accommodative Nonaccommodative

Refractive Nonrefractive

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

Comitant esotropia

Accommodative: **Refractive**
-- Combo of uncorrected **hyperopia** and inadequate **divergence**
-- Average refractive error: +4
-- Strabismus usually measures \( ET \approx ET' \)

Accommodative Nonaccommmodative

Refractive Nonrefractive

Latent nystagmus
Ciancia syndrome

Acquired (onset > age 6 m)
Comitant esotropia

**Accommodative: Refractive**
- Combo of uncorrected hyperopia and inadequate divergence
- Average refractive error: +4
- Strabismus usually measures ET $\approx$ ET'

**Management**
- Prescribe...[refraction]

**Acquired (onset > age 6 m)**

**Comitant Esotropia**

**Refactive**

**Nonrefractive**

Latent nystagmus
Ciancia syndrome
Comitant Esotropia

Comitant esotropia

**Acquired (onset > age 6 m)**

- **Accommodative**
  - Combo of uncorrected hyperopia and inadequate divergence
  - Average refractive error: +4
  - Strabismus usually measures ET ≈ ET’
  - **Management**
    - Prescribe…full CR

- **Nonaccommodative**

**Refractive**

- Latent nystagmus
- Ciancia syndrome

**Nonrefractive**
Comitant esotropia

Acquired (onset > age 6 m)

Accommodative

Refractive

--Combo of uncorrected hyperopia and inadequate divergence
--Average refractive error: +4
--Strabismus usually measures ET ≈ ET'

Management
--Prescribe...full CR
--If residual ET' with full CR: Rx...

Nonaccommodative

Refractive

Nonrefractive

Latent nystagmus
Ciancia syndrome

Accommodative: Refractive

Without Nystagmus

With Nystagmus Accommodative Nonaccommodative

Refractive Nonrefractive

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)
Comitant Esotropia

Comitant esotropia

Accommodative: **Refractive**
- Combo of uncorrected hyperopia and inadequate divergence
- Average refractive error: +4
- Strabismus usually measures ET ≈ ET'

**Management**
- Prescribe...full CR
  - If residual ET’ with full CR: Rx...bifocal

Acquired (onset > **age 6 m**)

Accommodative

Nonaccommodative

Refractive

Nonrefractive

Latent nystagmus

Ciancia syndrome
Comitant Esotropia

Comitant esotropia

Accommodative: **Refractive**
-- Combo of uncorrected hyperopia and inadequate divergence
-- Average refractive error: +4
-- Strabismus usually measures ET \( \approx \) ET’

**Management**
-- Prescribe… **full CR**
  -- If residual ET’ with full CR: Rx… **bifocal**
  -- Try to wean off plus over time

Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Refractive

Nonrefractive

Latent nystagmus
Ciancia syndrome
Comitant Esotropia

Compliance is often an issue with spectacle wear in this population—why?

Management
--Prescribe...full CR
--If residual ET' with full CR: Rx...bifocal
--Try to wean off plus over time

- Latent nystagmus
- Ciancia syndrome

Accommodative

Nonaccommodative

Refractive

Nonrefractive
Comitant Esotropia

**Management**
- Prescribe **full CR**
  - If residual ET’ with full CR: Rx **bifocal**
  - Try to wean off plus over time

**Compliance is often an issue with spectacle wear in this population—why?**
Patients who have become accustomed to maintaining a constant accommodative effort are often intolerant of full-CR spectacles (they can’t relax accommodation enough to see clearly through them), and will refuse to wear them—hence the compliance issue. To improve compliance, some clinicians will ‘cut sphere;’ ie, prescribe less than the full CR.

**Accommodative**
- Latent nystagmus
- Ciancia syndrome

**Nonaccommodative**
- Acquired ET: Accommodative:
  - Refractive

**Refractive**
- Nonrefractive

> age 6 m)
Comitant esotropia

*Compliance is often an issue with spectacle wear in this population—why?* Patients who have become accustomed to maintaining a constant accommodative effort are often intolerant of full-CR spectacles (they can’t relax accommodation enough to see clearly through them), and will refuse to wear them—hence the compliance issue. To improve compliance, some clinicians will ‘cut sphere;’ ie, prescribe less than the full CR. Alternatively and perhaps more frequently, the clinician will prescribe topical *atropine* drug to paralyze accommodation, thereby making the child more accepting of the full-CR spectacles.

**Management**
- Prescribe...**full CR**
- If residual ET’ with full CR: Rx...**bifocal**
- Try to wean off plus over time

---

**Comitant Esotropia**

- **Refractive**
  - Latent nystagmus
  - Ciancia syndrome

- **Nonrefractive**

- **Accommodative**

- **Nonaccommodative**

---

(age 6 m)
Comitant Esotropia

**Compliance is often an issue with spectacle wear in this population—why?**
 Patients who have become accustomed to maintaining a constant accommodative effort are often intolerant of full-CR spectacles (they can’t relax accommodation enough to see clearly through them), and will refuse to wear them—hence the compliance issue. To improve compliance, some clinicians will ‘cut sphere,’ i.e., prescribe less than the full CR. Alternatively and perhaps more frequently, the clinician will prescribe topical atropine to paralyze accommodation, thereby making the child more accepting of the full-CR spectacles.

**Management**
--Prescribe...full CR
--If residual ET’ with full CR: Rx...bifocal
--Try to wean off plus over time

- Latent nystagmus
- Ciancia syndrome

---

**Comitant esotropia**

---

**Accommodative**

**Nonaccommodative**

---

**Refractive**

**Nonrefractive**
Without Nystagmus
With Nystagmus
Accommodative Nonaccommodative
Refractive Nonrefractive

Congenital (onset < age 6 m)
Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to… high AC/A ratio
--ET'

Management
--No consensus on optimum treatment
--Give bifocal of about… +3
--Reasonable treatment goals:
  --Distance: Fusion
  --Near: <10

Comitant esotropia
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to...high AC/A ratio

Accommodative
Nonaccommodative

Accommodative
Nonrefractive

Management
--No consensus on optimum treatment--Give bifocal of about...+3--Reasonable treatment goals:
--Distance: Fusion
--Near: <10 
What is the AC/A ratio?

The near triad consists of convergence, accommodation, and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes); likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the 'factory setting' of the AC/A ratio is too high— their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is usually greatest at near.)
What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio.
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The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high—their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)
**Comitant Esotropia**

**What is the AC/A ratio?**
The *near triad* consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the **AC/A ratio**. For some individuals, the ‘factory setting’ of the AC/A ratio is too high—their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)

**What are the units for:**
- **AC?** Prism diopters
- **A?** Diopters

**What is a normal AC/A?**
Around 3:1 to 5:1
What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high—their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)

What are the units for:
--AC? Prism diopters
--A? Diopters

Accommodative: Nonrefractive
--ET secondary to high AC/A ratio

Nonrefractive

Accommodative

Nonaccommodative
What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high—their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)

What are the units for:
--AC? **Prism diopters**
--A? **Diopters**

What is a normal AC/A?

Accommodative: **Nonrefractive**
--ET secondary to high AC/A ratio

Accommodative

Nonrefractive

Nonaccommodative
What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high—their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)

What are the units for:
--AC? Prism diopters
--A? Diopters

What is a normal AC/A?
Around 3:1 to 5:1
Without Nystagmus

With Nystagmus Accommodative Nonaccommodative

Refractive Nonrefractive

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

Comitant Esotropia

What is the AC/A ratio?

The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes); likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the 'factory setting' of the AC/A ratio is too high--their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)

How is the AC/A ratio measured?

The gradient method is probably the most commonly-employed technique in clinical practice. The child's deviation is measured while gazing at a near (33 cm) target. The child is then re-measured while wearing a +3D add, the addition of which should obviate any accommodative effort on the child's part to see a target at 33 cm. The change in ET is divided by 3 (the power of the add); the result is the child's AC/A ratio.

AC/A ratio = (ET' without add - ET' with add)/3

If the result is greater than 5, the child has a high AC/A ratio.

What are the units for:

--AC? Prism diopters
--A? Diopters

What is a normal AC/A?

Around 3:1 to 5:1
### What is the AC/A ratio?

The **AC/A ratio** is a quantifiable measure that represents the relationship between the amplitude of convergence (AC) and the amount of accommodation (A). It helps in understanding the functional interaction between these two visual functions.

The AC/A ratio is typically expressed as a ratio, such as 3:1 or 4:1, indicating that for every degree of accommodation, there is a corresponding change in the amplitude of accommodation.

### How is the AC/A ratio measured?

The **gradient method** is commonly used to measure the AC/A ratio. This method involves measuring the deviation at a near (33 cm) target and then re-measuring while wearing a +3D add, which should obviate any accommodative effort. The change in esotropia (ET) is then divided by the power of the add. The formula for calculating the AC/A ratio is:

\[
\text{AC/A ratio} = \frac{\text{ET' without add} - \text{ET' with add}}{3}
\]

If the result is greater than 5, the child is considered to have a high AC/A ratio.

### What are the units for:

- **AC?** Prism diopters
- **A?** Diopters

### What is a normal AC/A?

Around **3:1 to 5:1**
Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to... high AC/A ratio
--ET > ET'

Accommodative
Nonaccommodative

Accommodative
Nonrefractive
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to...high AC/A ratio
--ET < ET'

Accommodative

Nonaccommodative

Nonrefractive
Comitant Esotropia

What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high—their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)

Accommodative: Nonrefractive
--ET secondary to...high AC/A ratio
--ET < ET'

Nonrefractive

Nonaccommodative
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to...high AC/A ratio
--ET < ET'

Accommodative
Nonaccommodative

How much greater is the ET at near?

Accommodative
Nonrefractive
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to...high AC/A ratio
--ET < ET'

Accommodative

Nonaccommodative

Accommodative

Nonrefractive

Nonrefractive

At least 10Δ

How much greater is the ET at near?
Comitant Esotropia

- Congenital (onset < age 6 m)
- Acquired (onset > age 6 m)

**Accommodative:** Nonrefractive
- ET secondary to high AC/A ratio
- ET < ET'
- Average refractive error # but can be anything, even myopic

**Nonaccommodative**
- Accommodative
- Nonrefractive
Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to...high AC/A ratio
--ET < ET'
--Average refractive error +2, but can be anything, even myopic

Nonaccommodative

Accommodative Nonrefractive
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
-- ET secondary to... high AC/A ratio
-- ET < ET'
-- Average refractive error +2, but can be anything, even myopic

Management
-- No consensus on optimum treatment
-- Give bifocal of about... #

Nonaccommodative

Accommodative

Nonrefractive
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
-- ET secondary to high AC/A ratio
-- ET < ET'
-- Average refractive error +2, but can be anything, even myopic

Management
-- No consensus on optimum treatment
-- Give bifocal of about +3

Accommodative Nonaccommodative

Accommodative

Nonrefractive
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to high AC/A ratio
--ET < ET'
--Average refractive error +2, but can be anything, even myopic

Management
--No consensus on optimum treatment
--Give bifocal of about +3
--Reasonable treatment goals:
  --Distance:
  --Near:

Accommodative: Nonrefractive

Nonaccommodative
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to…high AC/A ratio
--ET < ET’
--Average refractive error +2, but can be anything, even myopic

Management
--No consensus on optimum treatment
--Give bifocal of about…+3
--Reasonable treatment goals:
  --Distance: Fusion
  --Near: <10Δ ET

Nonrefractive

Refractive

Accommodative

Nonaccommodative
Without Nystagmus
With Nystagmus
Accommodative
Nonaccommodative
Refractive
Nonrefractive
Congenital (onset < age 6 m)
Acquired (onset > age 6 m)

Comitant Esotropia

Accommodative: Nonrefractive
--ET secondary to high AC/A ratio
--ET < ET'
--Average refractive error +2, but can be anything, even myopic

Management
--No consensus on optimum treatment
--Give bifocal of about...+3
--Reasonable treatment goals:
  --Distance: Fusion
  --Near: <10 Δ ET

Can a high AC/A ratio be a component of an exotropia?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to high AC/A ratio
--ET < ET'
--Average refractive error +2, but can be anything, even myopic

Management
--No consensus on optimum treatment
--Give bifocal of about...+3
--Reasonable treatment goals:
  --Distance: Fusion
  --Near: <10Δ ET

Can a high AC/A ratio be a component of an exotropia? Yes
Comitant Esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to high AC/A ratio
--ET < ET'
--Average refractive error +2, but can be anything, even myopic

Management
--No consensus on optimum treatment
--Give bifocal of about...+3
--Reasonable treatment goals:
  --Distance: Fusion
  --Near: <10Δ ET

Can a high AC/A ratio be a component of an exotropia? Yes

Is high AC/A ratio more likely to be associated with ET, or with XT?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--- ET secondary to high AC/A ratio
--- ET < ET’
--- Average refractive error +2, but can be anything, even myopic
Management
--- No consensus on optimum treatment
--- Give bifocal of about...+3
--- Reasonable treatment goals:
   -- Distance: Fusion
   -- Near: <10Δ ET

Can a high AC/A ratio be a component of an exotropia? Yes

Is high AC/A ratio more likely to be associated with ET, or with XT?
ET (by a lot)
Comitant Esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to low AC/A ratio
--ET < ET'
--Average refractive error +2, but can be anything, even myopic

Management
--No consensus on optimum treatment
--Give bifocal of about...+3
--Reasonable treatment goals:
  --Distance: Fusion
  --Near: <10Δ ET

Nonrefractive
Without Nystagmus

With Nystagmus

Accommodative: Nonrefractive

- Low AC/A ratio
- ET secondary to...

Management

- Average refractive error +2, but can be anything, even myopic
- ET < ET'
- No consensus on optimum treatment
- Reasonable treatment goals:
  - Distance: Fusion
  - Near: <10 Δ ET

Nonaccommodative

Refractive

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Comitant Esotropia

Comitant

Is low AC/A ratio a thing?

Yes

No

Acquired

Comitant Esotropia
Comitant Esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to ... low AC/A ratio
--ET < ET’
--Average refractive error +2, but can be anything, even myopic
Management
--No consensus on optimum treatment
--Give bifocal of about... +3
--Reasonable treatment goals:
  --Distance: Fusion
  --Near: <10Δ ET

Is low AC/A ratio a thing?
Yes

Is low AC/A ratio more likely to be associated with ET, or with XT?
**Comitant Esotropia**

- **Congenital (onset < age 6 m)**
- **Acquired (onset > age 6 m)**

**Accommodative:** *Nonrefractive*
- ET secondary to low AC/A ratio
- ET < ET’
- Average refractive error +2, but can be anything, even *myopic*

**Management**
- No consensus on optimum treatment
- Give bifocal of about...+3
- Reasonable treatment goals:
  - Distance: *Fusion*
  - Near: <10Δ ET

**Is low AC/A ratio a thing?**
- Yes

**Is low AC/A ratio more likely to be associated with ET, or with XT?**
- XT (by a lot)
Comitant Esotropia

Comitant esotropia

- Congenital (onset < age 6 m)
  - With Nystagmus
    - Nystagmus blockage syndrome
    - Latent nystagmus
    - Ciancia syndrome
  - Without Nystagmus
- Acquired (onset > age 6 m)
  - Accommodative
  - Nonaccommodative
Comitant esotropia

Congenital (onset < age 6 m) | Acquired (onset > age 6 m)
--- | ---
With Nystagmus | Accommodative
Without Nystagmus | Nonaccommodative

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Refractive | Nonrefractive
--- | ---
Basic | Sensory
Divergence insufficiency | Spasm of the near
Consecutive | Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Nonaccommodative

Basic

Sensory

Nystagmus blockage syndrome

Latent nystagmus

Ciancia syndrome

Nonaccommodative: Basic

--In essence, is the acquired version of...
**Sensory Basic**
**Consecutive Spasm of the near Divergence insufficiency**

**Nonaccommodative:**
--In essence, is the acquired version of…'congenital ET w/o nystagmus'.

**Management**
-- CR for any accommodative component
-- Consider prism adaptation prior to bilateral medial rectus recession

**Congenital** (onset < age 6 m)

**Acquired** (onset > age 6 m)

**Without Nystagmus**

**With Nystagmus**

**Comitant Esotropia**

**Nonaccommodative**
-- Basic
-- Sensory

**1. Without Nystagmus**
- Congenital (onset < age 6 m)
- Acquired (onset > age 6 m)

**2. With Nystagmus**
- Congenital (onset < age 6 m)
- Acquired (onset > age 6 m)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative
  - Basic
  - Sensory

Nonaccommodative: Basic
-- In essence, is the acquired version of… 'congenital ET w/o nystagmus'
-- Consider workup for a…
**Comitant Esotropia**

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative
  - Basic
  - Sensory

*Nonaccommodative: Basic*
-- In essence, is the acquired version of... 'congenital ET w/o nystagmus'
-- Consider workup for a... CNS lesion
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative
  - Basic
  - Sensory

Nonaccommodative: Basic
-- In essence, is the acquired version of ‘congenital ET w/o nystagmus’
-- Consider workup for a CNS lesion

Management
-- CR for any accommodative component
-- Consider prism adaptation prior to bilateral medial rectus recession

What would clue you in that a workup is warranted?

If there is anything hinky about the presentation, e.g., neuro signs/symptoms; face turn; c/o HA; etc.
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Accommodative  Nonaccommodative

Nonaccommodative: Basic
--In essence, is the acquired version of ‘congenital ET w/o nystagmus’
--Consider workup for a…CNS lesion

Management
--CR for any accommodative component
--Consider two words (non-surg proc.) prior to four words (surgical procedure)
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**Management**
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Nystagmus blockage syndrome

What is prism adaptation?

Prism adaptation is a process in which the patient is prescribed the full prism needed to nullify their esotropia (ET), then re-evaluated periodically to determine whether additional ET has been uncovered. If it has, their prescription is updated to nullify the additional ET. This is repeated until the prism prescription is stable, at which time surgery is performed to correct the full final prism prescription.

---

Consider prism adaptation prior to bilateral medial rectus recession.
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---Consider prism adaptation prior to bilateral medial rectus recession
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--Consider prism adaptation prior to bilateral medial rectus recession
**Sensory** (aka *deprivational*) nonaccommodative esotropia develops in response to vision loss.
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**Comitant Esotropia**

Comitant esotropia

- Congenital (onset < age 6 m)
  - With Nystagmus
    - Nystagmus blockage syndrome
    - Latent nystagmus
  - Without Nystagmus
- Acquired (onset > age 6 m)
  - Accommodative
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Earlier in this slide-set we mentioned supranuclear divergence inputs that prevent overconvergence. In **divergence insufficiency**, a lack of robustness on the part of these inputs allows the eyes to turn in a bit, resulting in a modest esotropia.
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Comitant esotropia

- Congenital (onset < age 6 m)
- Acquired (onset > age 6 m)

With
- With
- Without

Earlier in this slide-set we mentioned supranuclear divergence inputs that prevent overconvergence. In divergence insufficiency, a lack of robustness on the part of these inputs allows the eyes to turn in a bit, resulting in a modest esotropia. The classic presentation is that of an esotropia that is present at distance, but not at near. The most common form of this develops in older individuals—hence its alternative name, age-related distance esotropia. In some pts, orbital imaging reveals changes to the EOMs and ligamentous support structures.
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Comitant Esotropia

Note that these conditions can be differentiated on the basis of the relative magnitude of the esotropia as a function of whether it is measured at distance vs near:

**Refractive:** $\text{ET} \leq \text{ET}'$

**Nonrefractive (high AC/A ratio):** $\text{ET} \geq \text{ET}'$

**Divergence insufficiency:** $\text{ET} = \text{ET}'$

- Sensory
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

- Consecutive

- Cyclic

- Refractive

- Nonrefractive
Comitant Esotropia

Note that these conditions can be differentiated on the basis of the relative magnitude of the esotropia as a function of whether it is measured at distance vs near:

**Refractive:** $ET \approx ET'$

**Nonrefractive (high AC/A ratio):** $ET < ET'$

**Divergence insufficiency:** $ET > ET'$
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  - With Nystagmus
  - Without Nystagmus

- Acquired (onset > age 6 m)
  - Accommodative
  - Nonaccommodative
    - Sensory
    - Basic
    - Consecutive
    - Divergence insufficiency
    - Cyclic

Spasm of the near (aka convergence spasm) is almost always a response to }
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**Spasm of the near** (aka *convergence spasm*) is almost always a functional response to psychosocial stressors. All three components of the near triad (convergence, miosis and accommodation) can usually be demonstrated. The esotropia may alternate with periods of orthotropia. Abduction will be poor or absent when the eyes are tested simultaneously, but full when tested monocularly. Treatment should address the inciting stressors. If further intervention is needed, and/or can be tried.
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative

Nonaccommodative
- Basic
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- Divergence insufficiency
- Spasm of the near
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Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)
- Comitant
- Esotropia
- Ciancia syndrome
- Latent nystagmus
- Nystagmus blockage syndrome

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**Comitant Esotropia**

**Comitant esotropia**

Congenital (onset < age 6 m)  
- With Nystagmus  
- Without Nystagmus

Acquired (onset > age 6 m)  
- Accommodative
- Nonaccommodative
  - Basic
  - Sensory
  - Divergence insufficiency
  - Spasm of the near
  - Consecutive
  - Cyclic

**Consecutive esotropia** refers to esotropia that develops in someone with a history of Nystagmus blockage syndrome.
Concurrent Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative  Nonaccommodative

-Consecutive

Nystagmus blockage syndrome

Consecutive esotropia refers to esotropia that develops in someone with a history of exotropia.

Basic
Sensory
Divergence insufficiency
Spasm of the near
Consecutive Cyclic
Concomitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  
- With Nystagmus
  - Nystagmus blockage syndrome
- Without Nystagmus

Acquired (onset > age 6 m)  
- Accommodative
- Nonaccommodative
  - Basic
  - Sensory
  - Divergence insufficiency
  - Spasm of the near
  - Consecutive
  - Cyclic

**Consecutive esotropia** refers to esotropia that develops in someone with a history of exotropia. In almost all cases, consecutive esotropia is **two-words**.
Concomitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
  - Nystagmus blockage syndrome
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative
  - Basic
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  - Spasm of the near
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Consecutive esotropia refers to esotropia that develops in someone with a history of exotropia. In almost all cases, consecutive esotropia is post-surgical.
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative  Nonaccommodative

Nystagmus blockage syndrome

Consecutive esotropia refers to esotropia that develops in someone with a history of exotropia. In almost all cases, consecutive esotropia is post-surgical, ie, it represents an apparent overcorrection in someone who underwent strab surgery for exotropia.
Concomitant esotropia refers to esotropia that develops in someone with a history of exotropia. In almost all cases, consecutive esotropia is post-surgical, i.e., it represents an apparent overcorrection in someone who underwent strab surgery for exotropia. Consecutive esotropia often resolves spontaneously, so unless it is very large (in which case it likely represents a slipped/lost muscle), observation for a month or two is usually the preferred management option.
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus  Accommodative  Nonaccommodative

Sensory  Basic  Cyclic

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  - Accommodative
  - Nonaccommodative
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    - Divergence insufficiency
    - Spasm of the near
    - Consecutive

**Cyclic esotropia** is a rare disorder in which a comitant ET is present intermittently, usually with a cycle time.
Comitant esotropia

**Congenital (onset < age 6 m)**
- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus

**Acquired (onset > age 6 m)**
- Accommodative
- Nonaccommodative
  - Basic
  - Sensory
  - Divergence insufficiency
  - Spasm of the near
  - Consecutive

**Cyclic esotropia** is a rare disorder in which a comitant ET is present intermittently, usually every other day.
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Comitant esotropia

Congenital (onset < age 6 m)

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  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

- Without Nystagmus

Acquired (onset > age 6 m)

- Accommodative

Nonaccommodative

- Basic
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