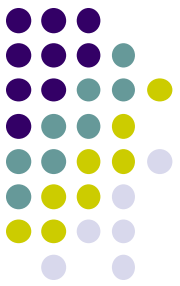


Comitant Esotropia

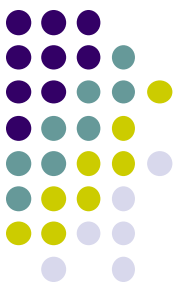
*In this context, what does the word **comitant** mean?*



Comitant Esotropia

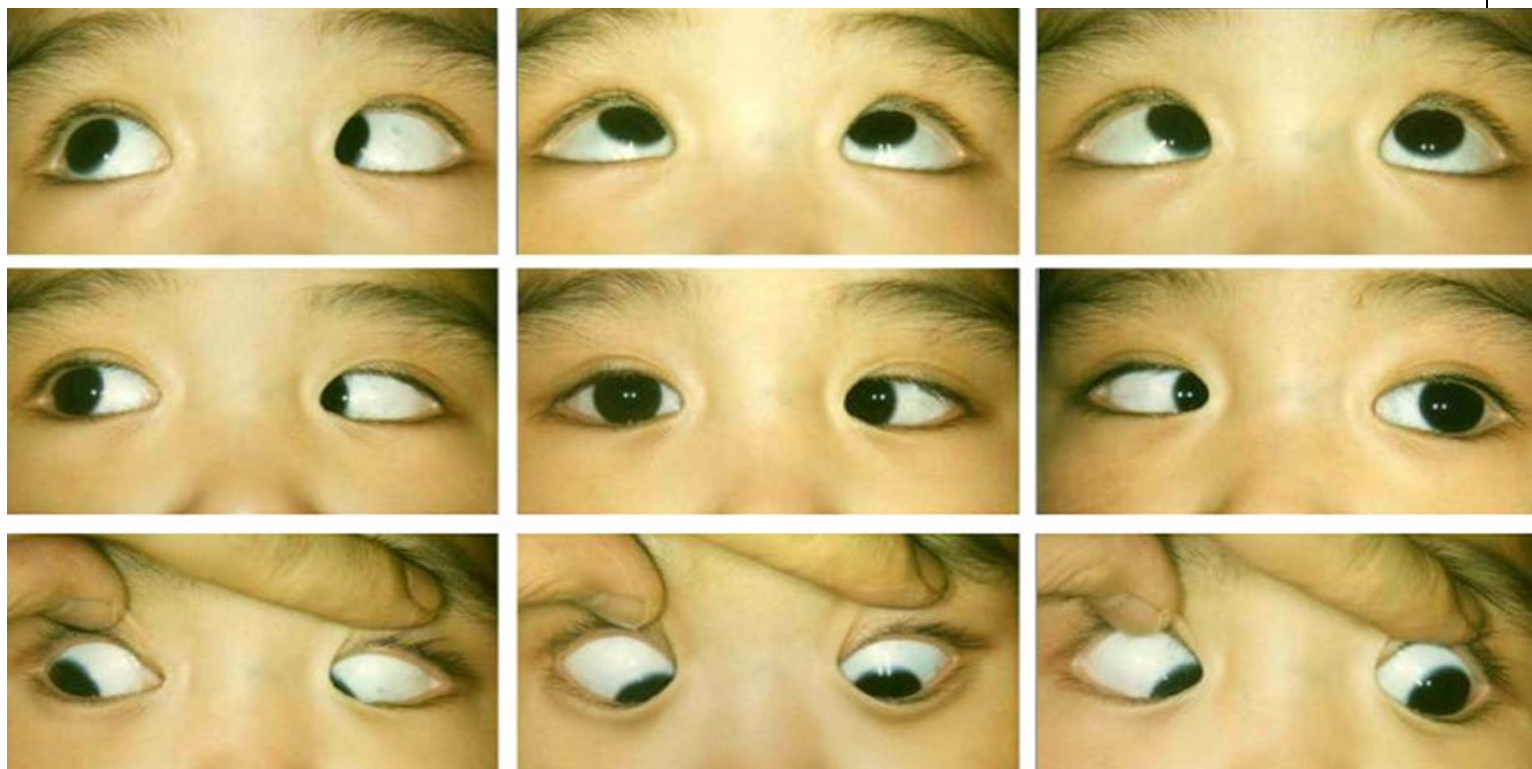
*In this context, what does the word **comitant** mean?*

It means the ET is the same in all fields of gaze



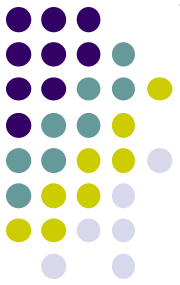


Comitant Esotropia



~50PD of comitant esotropia

Comitant Esotropia

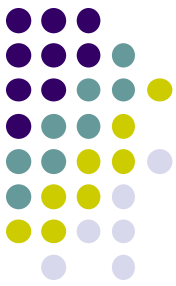


*In this context, what does the word **comitant** mean?*

It means the ET is the same in all fields of gaze

What common cause of ET is effectively ruled out by comitancy?

Comitant Esotropia



*In this context, what does the word **comitant** mean?*

It means the ET is the same in all fields of gaze

What common cause of ET is effectively ruled out by comitancy?

A recent-onset CN6 palsy

Comitant Esotropia



*In this context, what does the word **comitant** mean?*

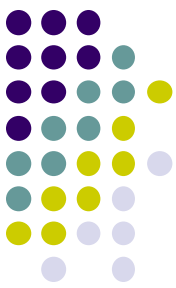
It means the ET is the same in all fields of gaze

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?

Comitant Esotropia



*In this context, what does the word **comitant** mean?*

It means the ET is the same in all fields of gaze

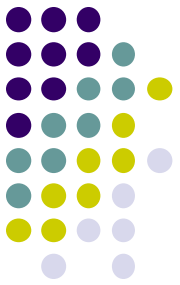
What common cause of ET is effectively ruled out by comitancy?

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'

Comitant Esotropia



*In this context, what does the word **comitant** mean?*

It means the ET is the same in all fields of gaze

What common cause of ET is effectively ruled out by comitancy?

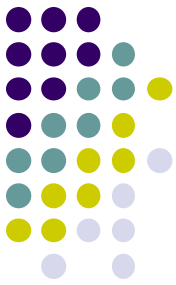
A recent-onset CN6 palsy

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?

Comitant Esotropia



*In this context, what does the word **comitant** mean?*

It means the ET is the same in all fields of gaze

What common cause of ET is effectively ruled out by comitancy?

A recent-onset CN6 palsy

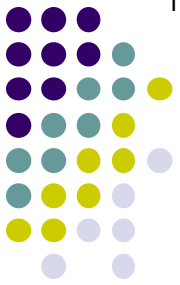
Why can't comitancy rule out an 'old' CN6 palsy as well?

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

Comitant Esotropia



*In this context, what does the word **comitant** mean?*

It means the ET is the same in all fields of gaze

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?

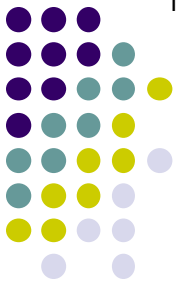
Because of the possibility of 'spread of comitance'

What is spread of comitance?

The phenomena in which a longstanding palsy gradually transforms from incomitant to comitant

Is there a gender predilection for comitant ET?

Comitant Esotropia



*In this context, what does the word **comitant** mean?*

It means the ET is the same in all fields of gaze

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'

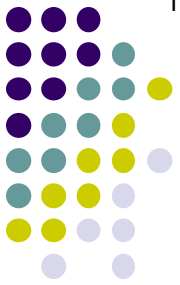
What is spread of comitance?

The phenomena in which a longstanding palsy gradually transforms from incomitant to comitant

Is there a gender predilection for comitant ET?

No

Comitant Esotropia



*In this context, what does the word **comitant** mean?*

It means the ET is the same in all fields of gaze

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?

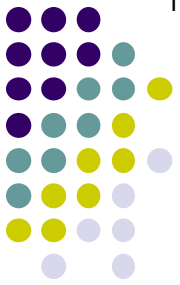
The phenomena in which a longstanding palsy gradually transforms from incomitant to comitant

Is there a gender predilection for comitant ET?

No

There is a predilection pattern among US whites, blacks and Asians—what is it?

Comitant Esotropia



*In this context, what does the word **comitant** mean?*

It means the ET is the same in all fields of gaze

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?

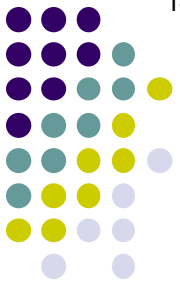
The phenomena in which a longstanding palsy gradually transforms from incomitant to comitant

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



Comitant Esotropia

*In this context, what does the word **comitant** mean?*

It means the ET is the same in all fields of gaze

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

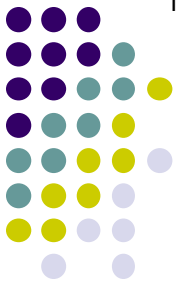
Is there a gender predilection for comitant ET?

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?



Comitant Esotropia

*In this context, what does the word **comitant** mean?*

It means the ET is the same in all fields of gaze

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

Is there a gender predilection for comitant ET?

No

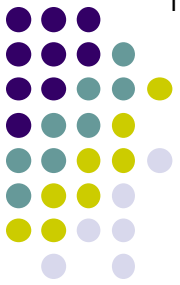
*There **is** a predilection pattern among US whites, blacks and Asians—what is it?*

White = black > Asian

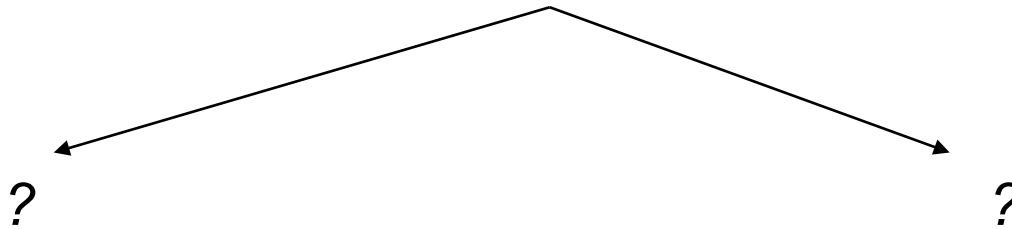
Which is more common: comitant ET, or comitant XT?

ET is significantly more common

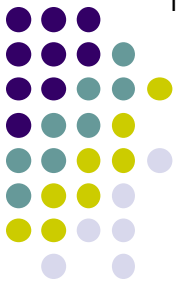
Comitant Esotropia



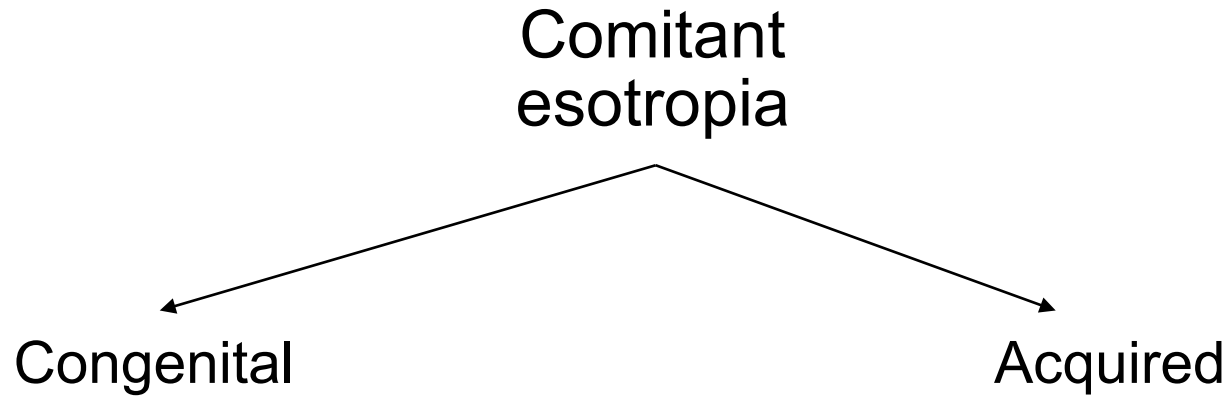
Comitant
esotropia



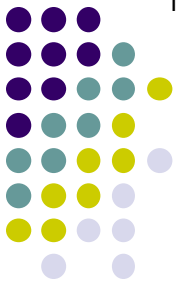
Comitant ETs are divided into two groups—what are they?



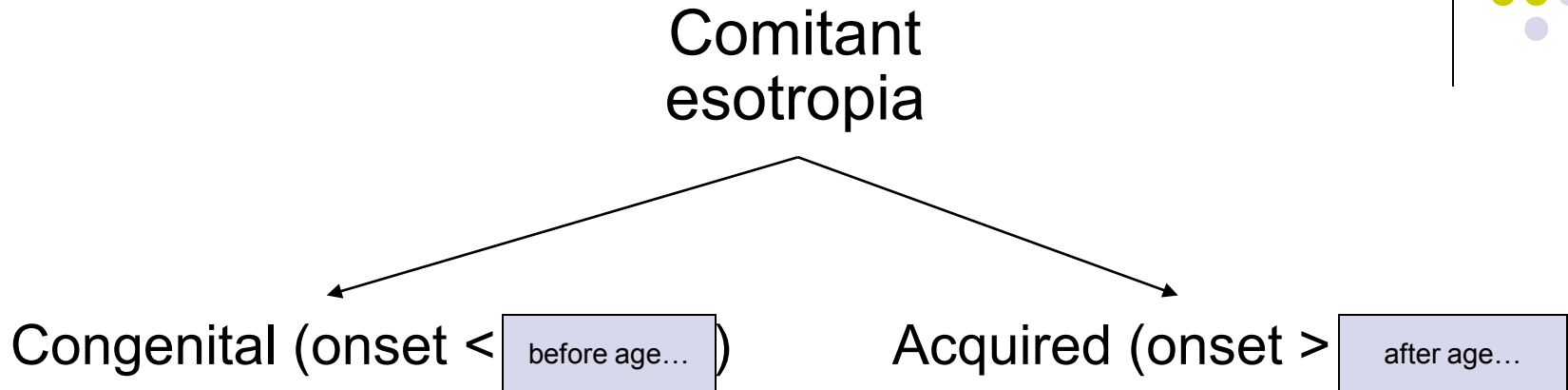
Comitant Esotropia



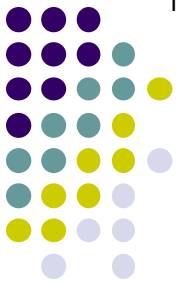
Comitant ETs are divided into two groups—what are they?



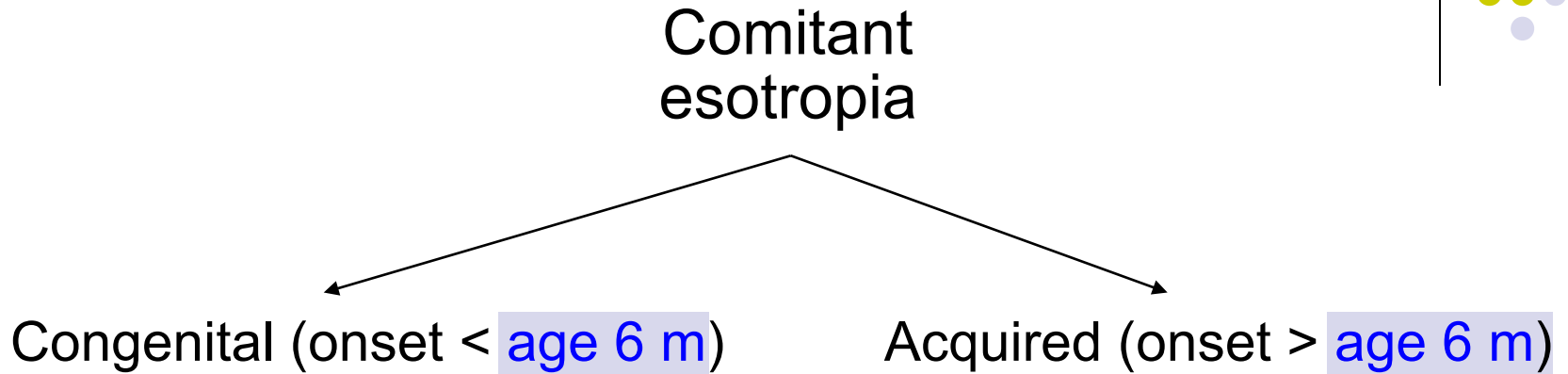
Comitant Esotropia



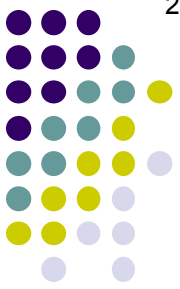
With regards to comitant ETs, 'congenital' doesn't mean congenital, rather, it means 'before a certain age.' What age is used as the cutoff between congenital and acquired ETs?



Comitant Esotropia



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?



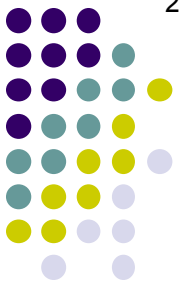
Comitant Esotropia

Comitant
esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Why is the term congenital a misnomer here?



Comitant Esotropia

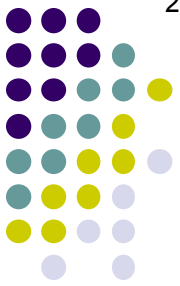
Comitant esotropia

Congenital (onset < age 6 m)

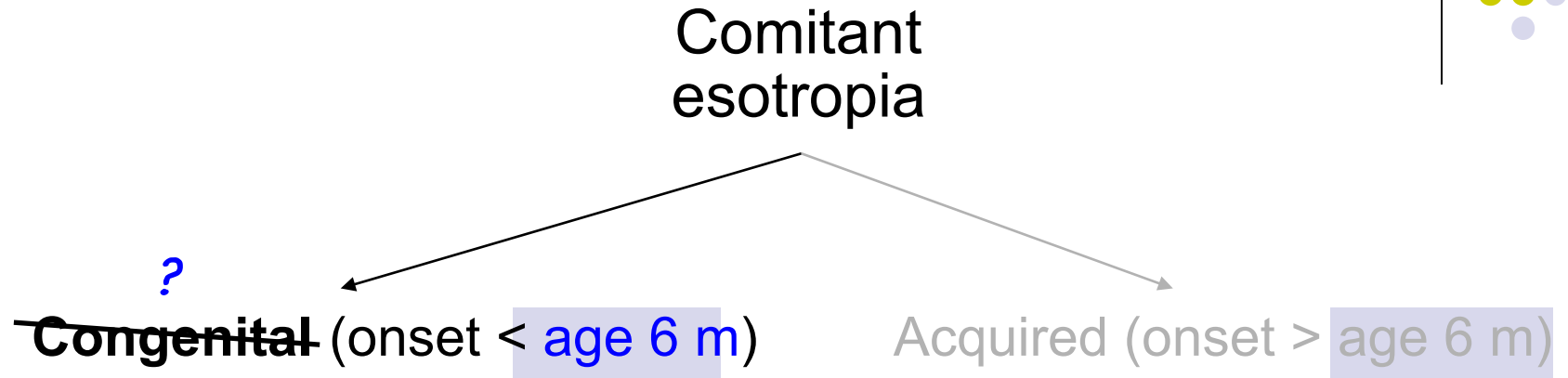
Acquired (onset > age 6 m)

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



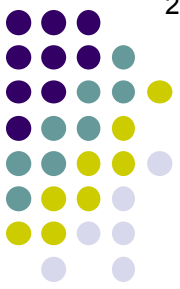
Comitant Esotropia



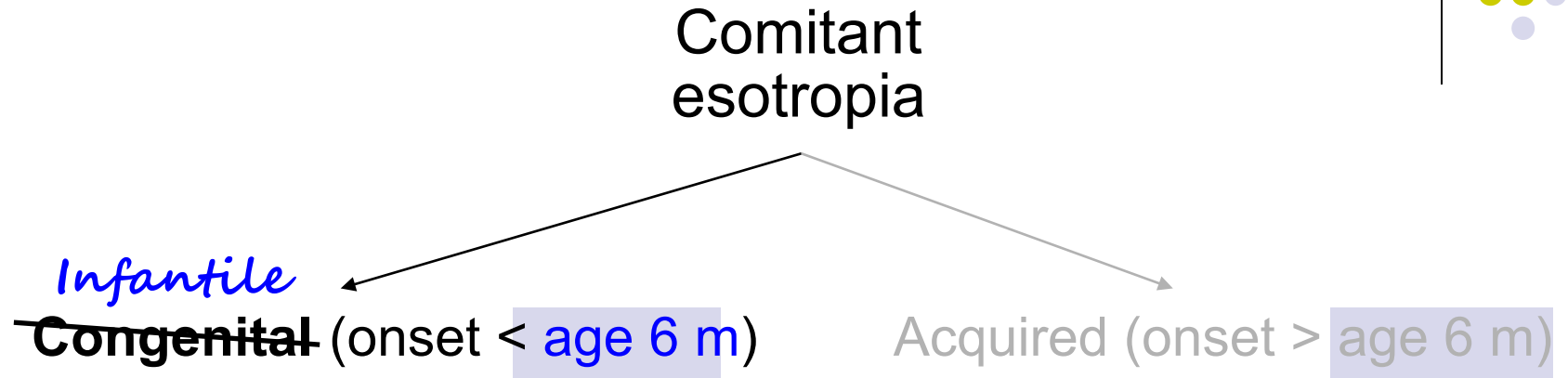
Why is the term congenital a misnomer here?

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?



Comitant Esotropia

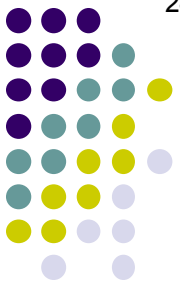


Why is the term congenital a misnomer here?

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



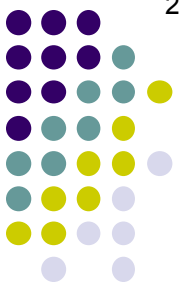
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Worried parents call your office to say they observed their two-month-old child's eyes cross briefly. Should you be concerned?



Comitant Esotropia

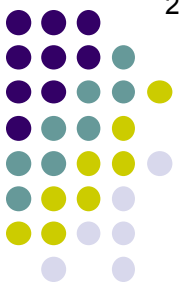
Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

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).



Comitant Esotropia

Comitant esotropia

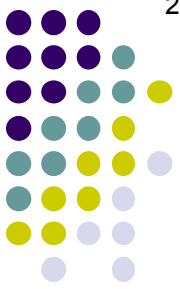
Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

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?



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

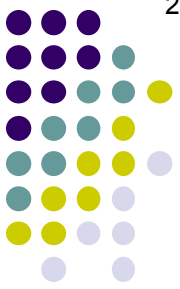
Acquired (onset > age 6 m)

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*).



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

*Given that episodic strabismus is common in infancy, at what **should** make you worry that the infant has a congenital ET?*

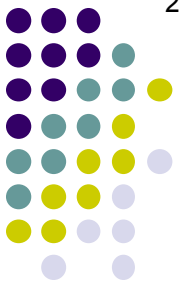
If the ET is...

--

--

--

...it probably represents a congenital ET needing treatment



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

*Given that episodic strabismus is common in infancy, at what **should** make you worry that the infant has a congenital ET?*

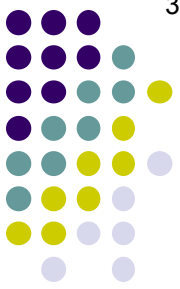
If the ET is...

--present after age # months;

--constant; and

--large (defined as greater than #Δ),

...it probably represents a congenital ET needing treatment



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

*Given that episodic strabismus is common in infancy, at what **should** make you worry that the infant has a congenital ET?*

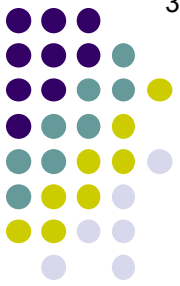
If the ET is...

--present after age 2 months;

--constant; and

--large (defined as greater than 30Δ),

...it probably represents a congenital ET needing treatment



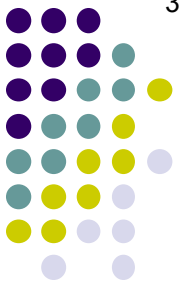
Comitant Esotropia

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?



Comitant Esotropia

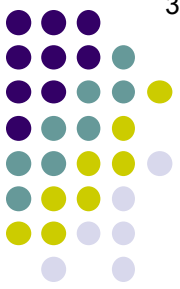
Comitant esotropia

Congenital (onset < age 6 m)

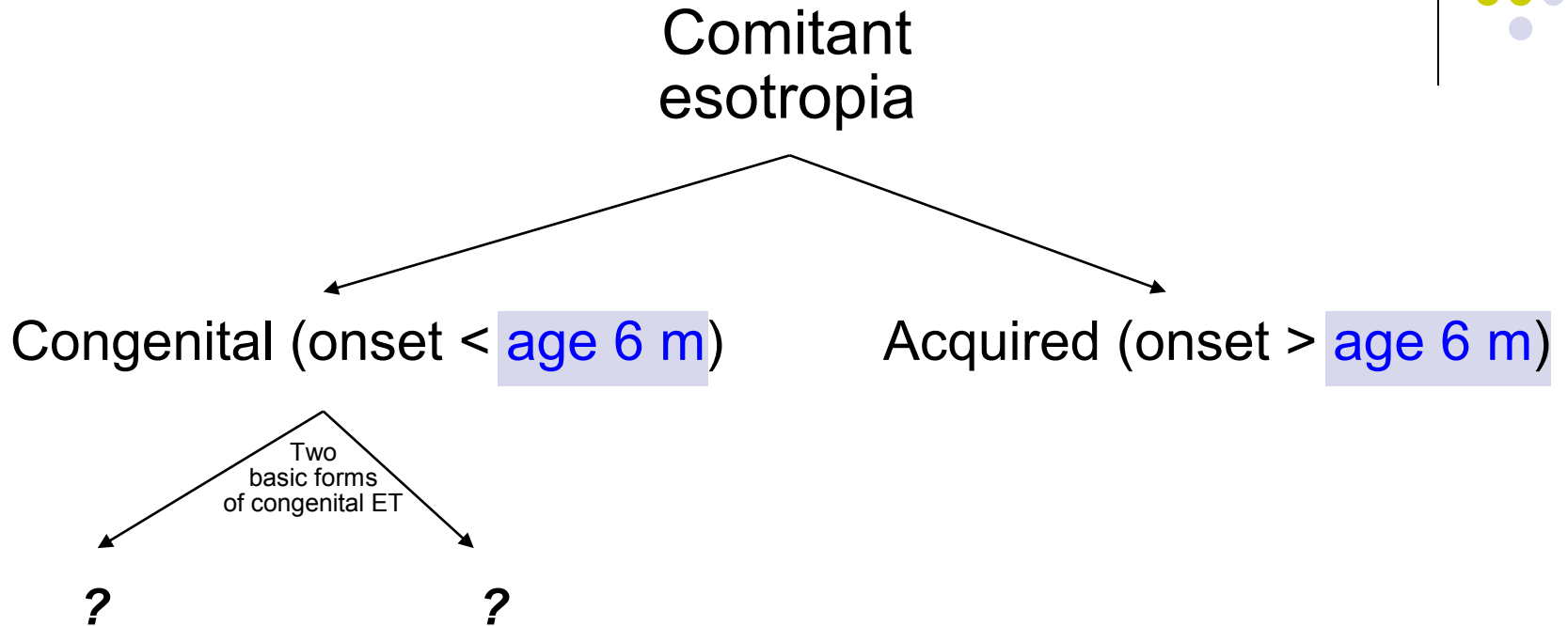
Acquired (onset > age 6 m)

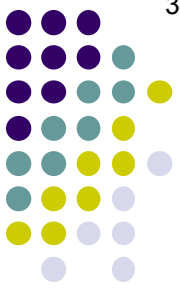
Congenital ET puts the infant at significant risk of suffering what (very broad) category of non-ophthalmic disease as an adult?

Mental illness. Congenital ET confers a risk ratio of 2.6! (How or why, I have no idea).

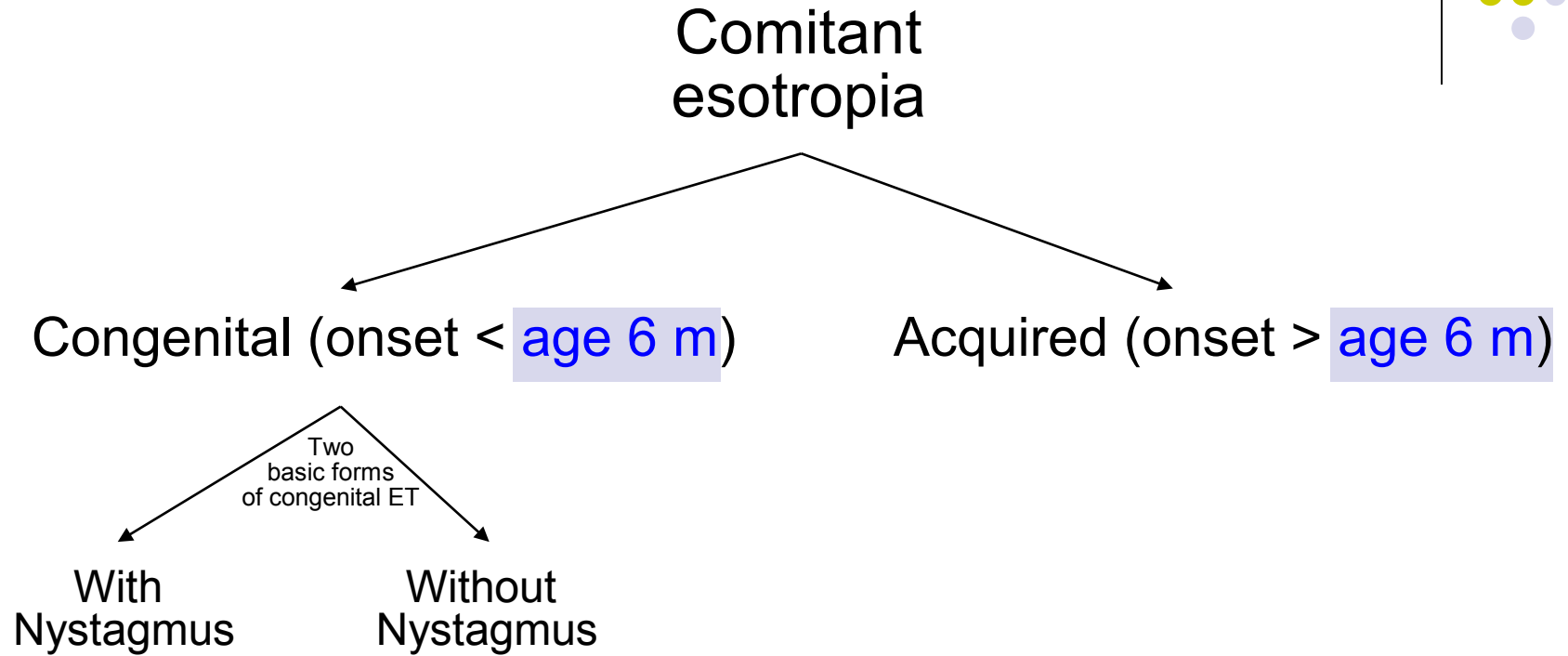


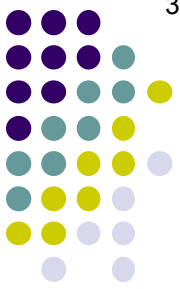
Comitant Esotropia



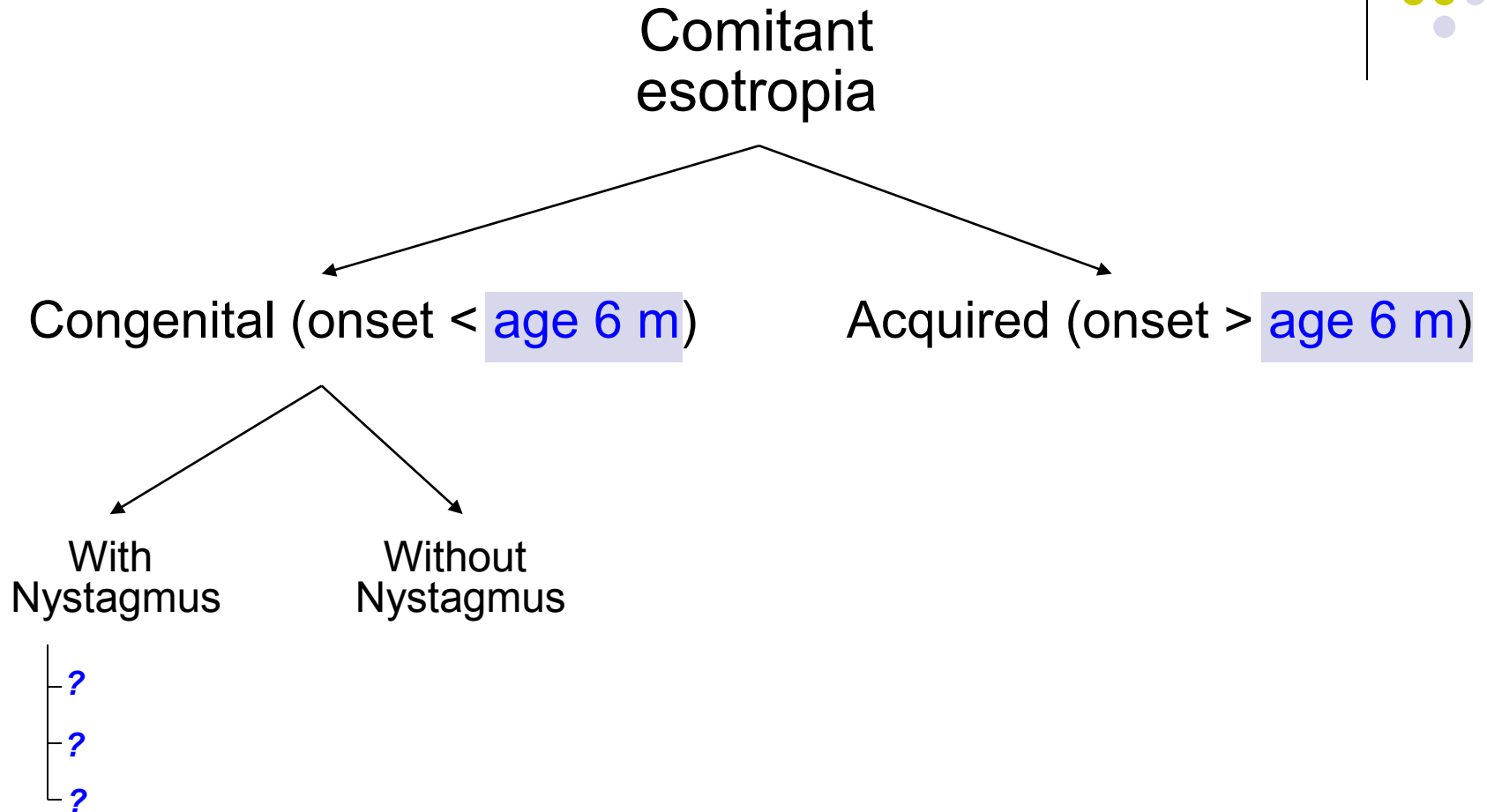


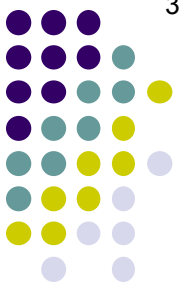
Comitant Esotropia



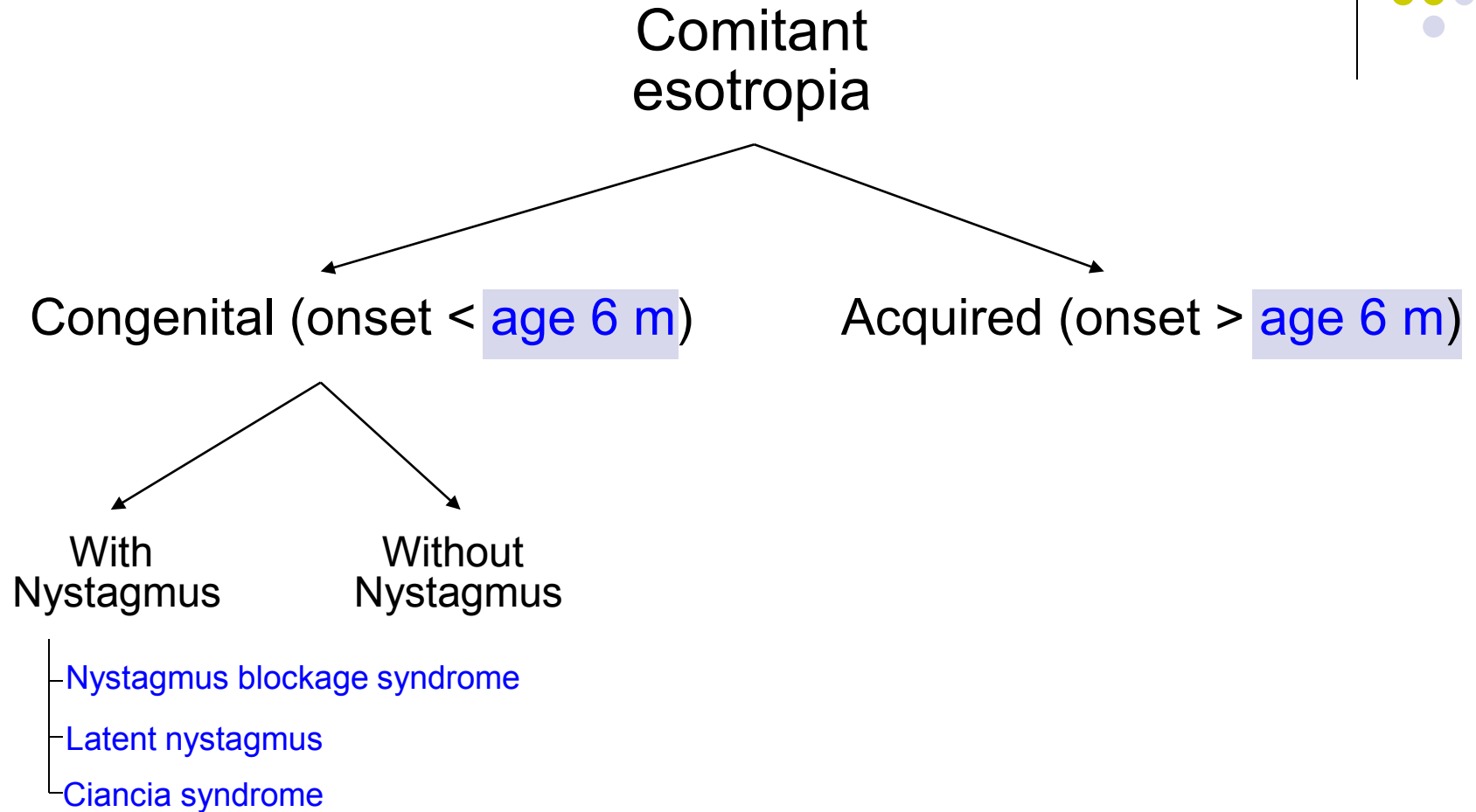


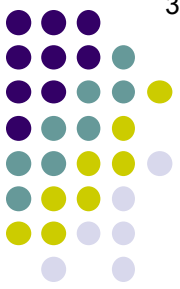
Comitant Esotropia





Comitant Esotropia





Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Nystagmus blockage syndrome

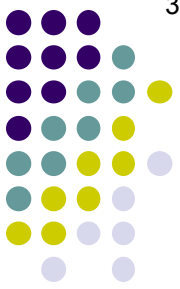
--Arises in pts with...*[a nystagmus syndrome]*

With
Nystagmus

Nystagmus blockage syndrome

Latent nystagmus

Ciaccia syndrome



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Nystagmus blockage syndrome

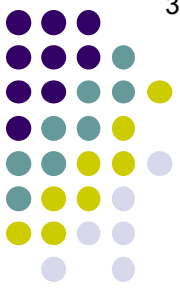
--Arises in pts with...congenital motor nystagmus (CMN)

With
Nystagmus

Nystagmus blockage syndrome

Latent nystagmus

Ciancia syndrome



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

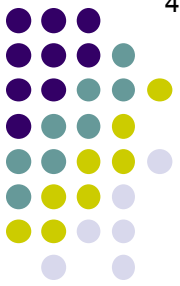
Acquired (onset > age 6 m)

Nystagmus blockage syndrome

--Arises in pts with.

congenital motor nystagmus (CMN)

Briefly, what is congenital motor nystagmus?



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

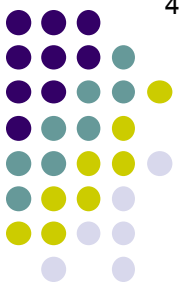
Acquired (onset > age 6 m)

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



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Nystagmus blockage syndrome

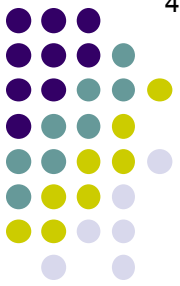
--Arises in pts with

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?



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)

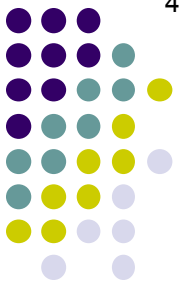
Briefly, what is congenital motor nystagmus?

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





Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Nystagmus blockage syndrome

--Arises in pts with

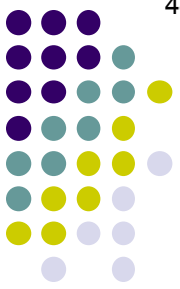
congenital motor nystagmus (CMN)

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



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)

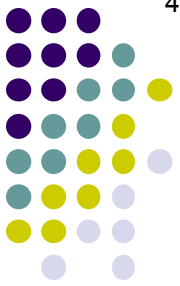
Briefly, what is congenital motor nystagmus?

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?



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?

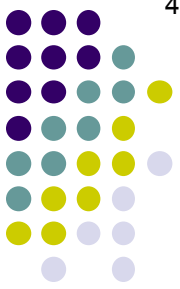
A nystagmus arising in the first few months of life that is not secondary to either sensory or CNS pathology

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)



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

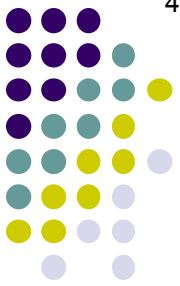
Is the nystagmus vertical, horizontal or both/either?

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?



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?

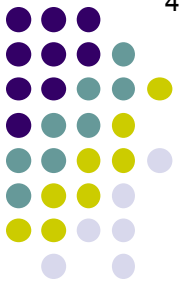
It is virtually always horizontal

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

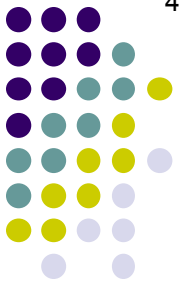


Comitant Esotropia

Comitant esotropia

What does 'OKN' stand for in this context?

don't perform very often. What is this finding?
A paradoxical **OKN** response

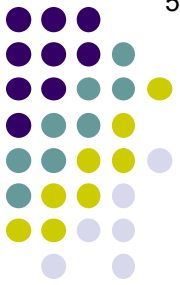


Comitant Esotropia

Comitant esotropia

What does 'OKN' stand for in this context?
Optokinetic nystagmus

don't perform very often. What is this finding?
A paradoxical **OKN** response



Comitant Esotropia

Comitant esotropia

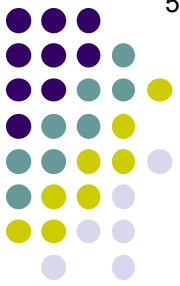
What does 'OKN' stand for in this context?

Optokinetic nystagmus

To what does 'optokinetic nystagmus response' refer?

don't perform very often. What is this finding?

A paradoxical **OKN response**



Comitant Esotropia

Comitant esotropia

What does 'OKN' stand for in this context?

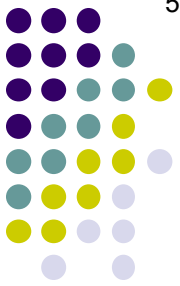
Optokinetic nystagmus

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

don't perform very often. What is this finding?

A paradoxical **OKN response**



Comitant Esotropia

Comitant esotropia

What does 'OKN' stand for in this context?

Optokinetic nystagmus

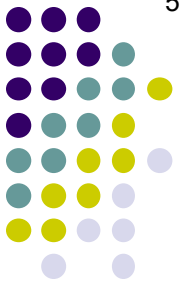
To what does 'optokinetic nystagmus response' refer?

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?

don't perform very often. What is this finding?

A paradoxical **OKN response**



Comitant Esotropia

Comitant esotropia

What does 'OKN' stand for in this context?

Optokinetic nystagmus

To what does 'optokinetic nystagmus response' refer?

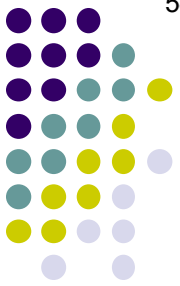
To the phenomenon in which the presentation of a series of visual stimuli moving rapidly through the visual field induces the eyes to pursue (ie, follow) a stimulus, then engage in a rapid return saccade to pick up the next stimulus

How is OKN testing performed?

Usually with an OKN drum that is spun about its axis

don't perform very often. What is this finding?

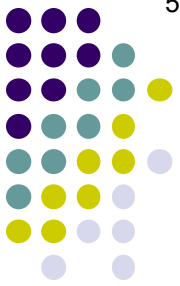
A paradoxical **OKN response**



Comitant Esotropia



#OldSchoolCool: OKN drum



Comitant Esotropia

Comitant esotropia

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

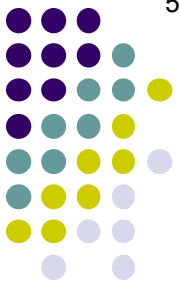
How is OKN testing performed?

Usually with an OKN drum that is spun about its axis

*What is a **paradoxical** OKN response?*

don't perform very often. What is this finding?

A **paradoxical OKN response**



Comitant Esotropia

Comitant esotropia

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?

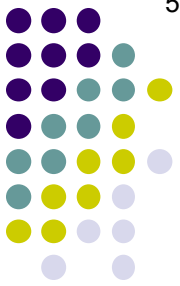
Usually with an OKN drum that is spun about its axis

*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.

don't perform very often. What is this finding?

A **paradoxical OKN response**



Comitant Esotropia

Comitant esotropia

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?

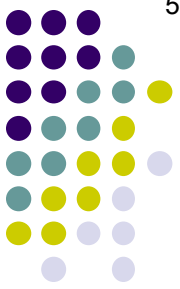
Usually with an OKN drum that is spun about its axis

*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*.

don't perform very often. What is this finding?

A **paradoxical OKN response**



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Nystagmus blockage syndrome

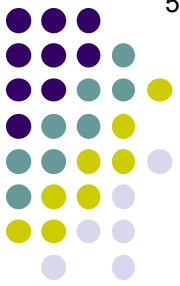
--Arises in pts with...congenital motor nystagmus (CMN)
 --Pt 'learns' that their nystagmus is decreased (and thus acuity is increased) when their eyes are...*['direction' of gaze]*

With
Nystagmus

Nystagmus blockage syndrome

Latent nystagmus

Ciancia syndrome



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Nystagmus blockage syndrome

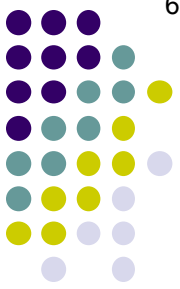
--Arises in pts with...congenital motor nystagmus (CMN)
 --Pt 'learns' that their nystagmus is decreased (and thus acuity is increased) when their eyes are...converged

With
Nystagmus

Nystagmus blockage syndrome

Latent nystagmus

Ciancia syndrome



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Nystagmus blockage syndrome

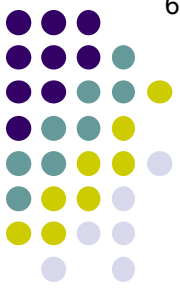
- Arises in pts with...congenital motor nystagmus (CMN)
- Pt 'learns' that their nystagmus is decreased (and thus acuity is increased) when their eyes are...converged
- Key exam finding: Pt 'two words' prism when deviation is being measured

With
Nystagmus

Nystagmus blockage syndrome

Latent nystagmus

Ciancia syndrome



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...converged
- Key exam finding: Pt 'eats up' prism when deviation is being measured

With
Nystagmus

Nystagmus blockage syndrome

Latent nystagmus

Ciancia syndrome



Comitant Esotropia

What does it mean to say the pt 'eats up' prism?

C

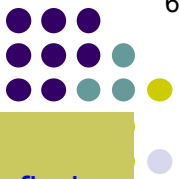
With
Nystagmus

--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

Ciaccia syndrome



Comitant Esotropia

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.

C

With
Nystagmus

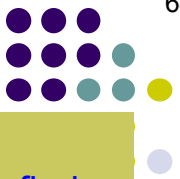
--Pt 'learns' that their nystagmus is decreased (and thus acuity is increased) when their eyes are...converged

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

Nystagmus blockage syndrome

Latent nystagmus

Ciaccia syndrome



Comitant Esotropia

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.)

C

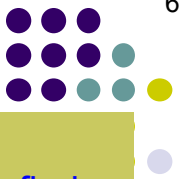
With
Nystagmus

--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

Ciaccia syndrome



Comitant Esotropia

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?

C

With
Nystagmus

--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

Ciaccia syndrome



Comitant Esotropia

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.

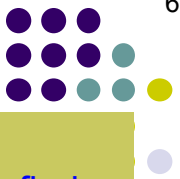
With Nystagmus

--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

Ciaccia syndrome



Comitant Esotropia

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.'

With Nystagmus

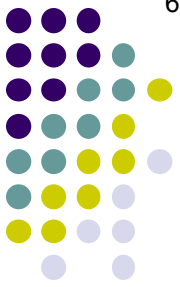
--Pt 'learns' that their **nystagmus is decreased (and thus acuity is increased) when their eyes are...converged**

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

Nystagmus blockage syndrome

Latent nystagmus

Ciancia syndrome



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

Without
Nystagmus

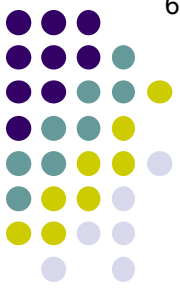
— Nystagmus blockage syndrome

— **Latent nystagmus**

— Ciancia syndrome

Latent nystagmus

--No nystagmus when vision is... *[status]*



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

Without
Nystagmus

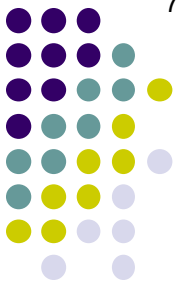
-Nystagmus blockage syndrome

-**Latent nystagmus**

-Ciancia syndrome

Latent nystagmus

--No nystagmus when vision is...**binocular**



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

Without
Nystagmus

- Nystagmus blockage syndrome

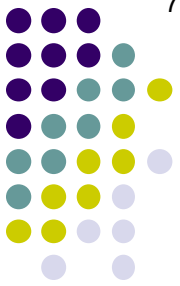
- **Latent nystagmus**

- Ciancia syndrome

Latent nystagmus

--No nystagmus when vision is...**binocular**

--When one eye occluded, jerk nystagmus occurs with the fast phase toward the **fixating vs occluded** eye



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

Without
Nystagmus

— Nystagmus blockage syndrome

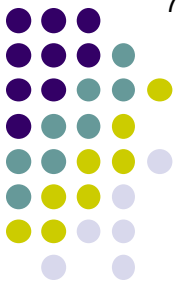
— **Latent nystagmus**

— 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

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...



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

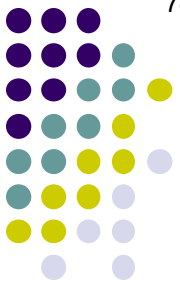
--No nystagmus when vision is...**binocular**

--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)

Acquired (onset > age 6 m)

With
Nystagmus

Without
Nystagmus

Nystagmus blockage syndrome

Latent nystagmus

Ciarcia syndrome

Latent nystagmus

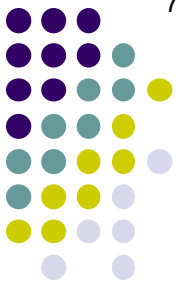
--No nystagmus when vision is...**binocular**

--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...**suppressed**



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Latent nystagmus

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

--No nystagmus when viewing with the fixating eye

--When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye

Manifest latent nystagmus

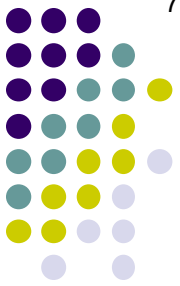
--Sounds like an oxymoron...

--Nystagmus present when both eyes are open but one is...**suppressed**

Nystagmus blockage syndrome

Latent nystagmus

Ciarcia syndrome



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Latent nystagmus

--No nystagmus when viewing

--When one eye occluded, full 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

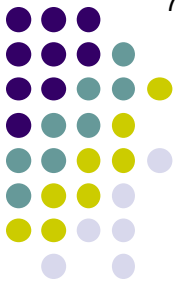
Latent nystagmus and manifest latent nystagmus are sometimes referred to by what single name?

Fusion maldevelopment nystagmus syndrome (FMNS)

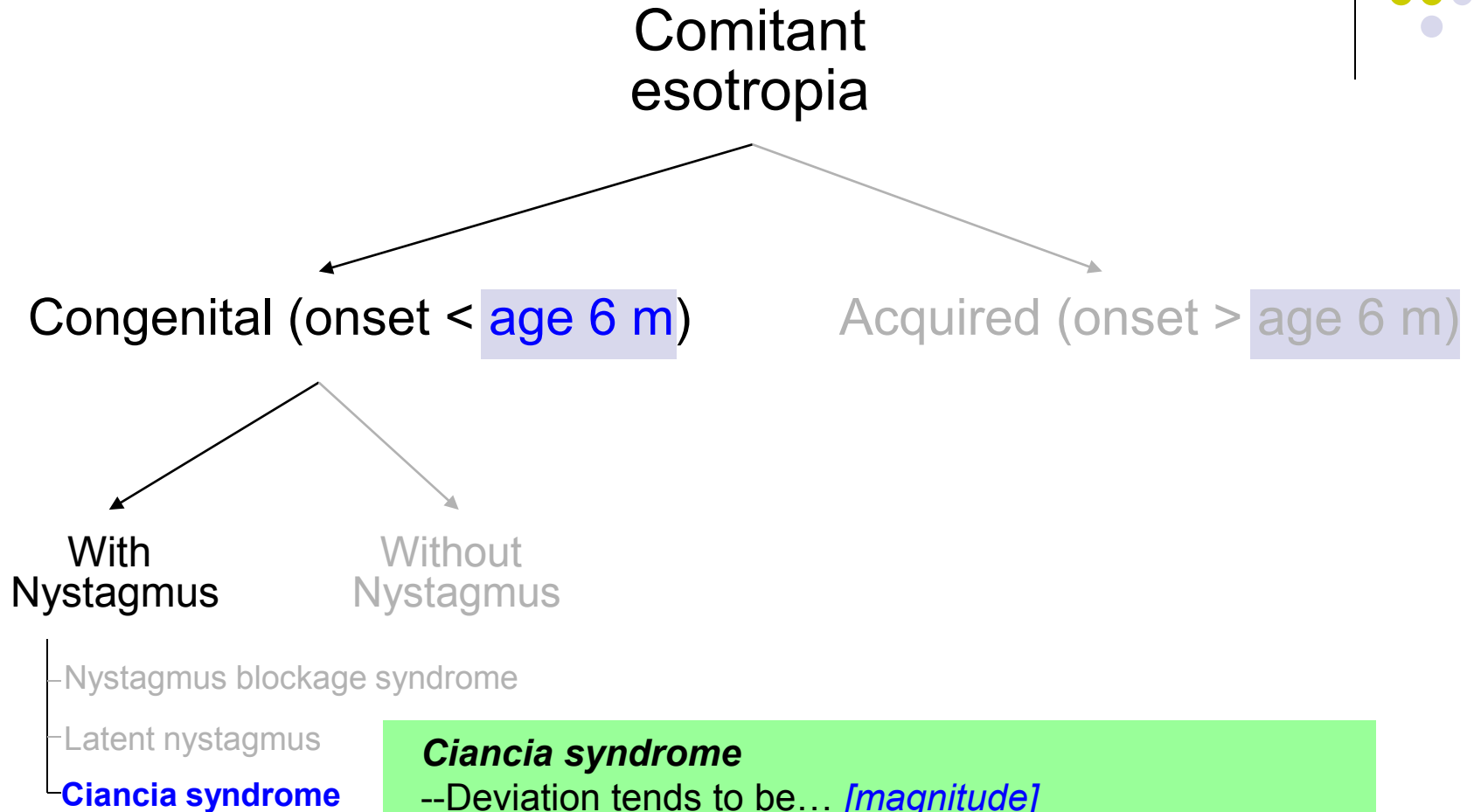
Nystagmus blockage syndrome

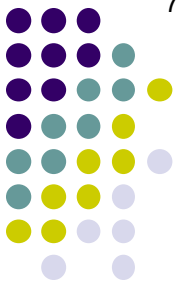
Latent nystagmus

Ciarcia syndrome

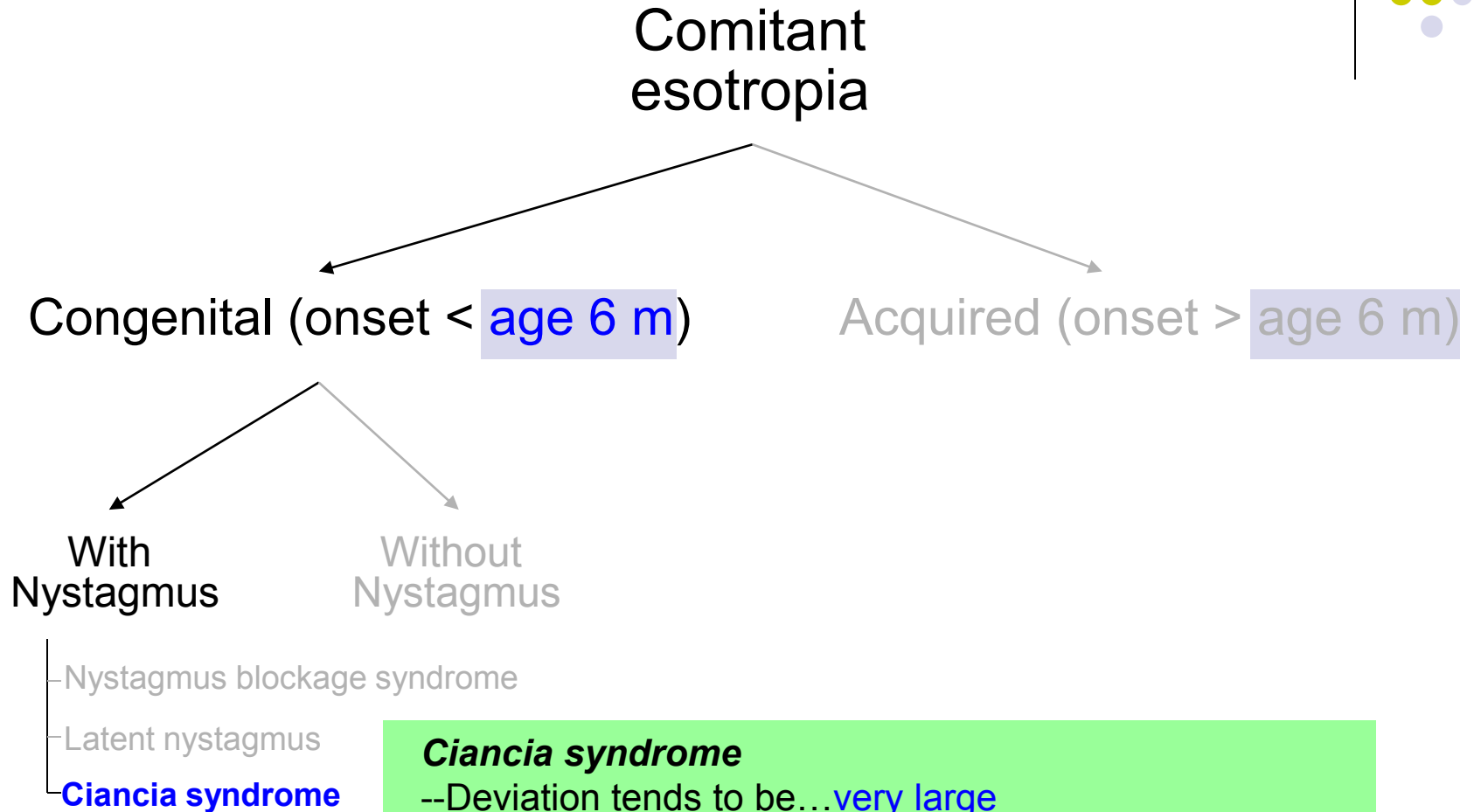


Comitant Esotropia

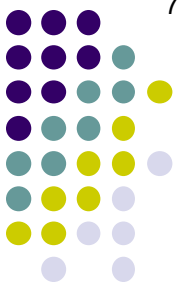




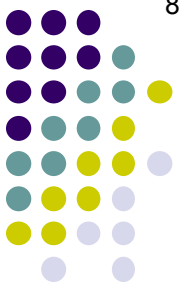
Comitant Esotropia



Comitant Esotropia



Ciancia syndrome



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

Without
Nystagmus

-Nystagmus blockage syndrome

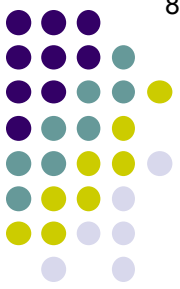
-Latent nystagmus

-**Ciancia syndrome**

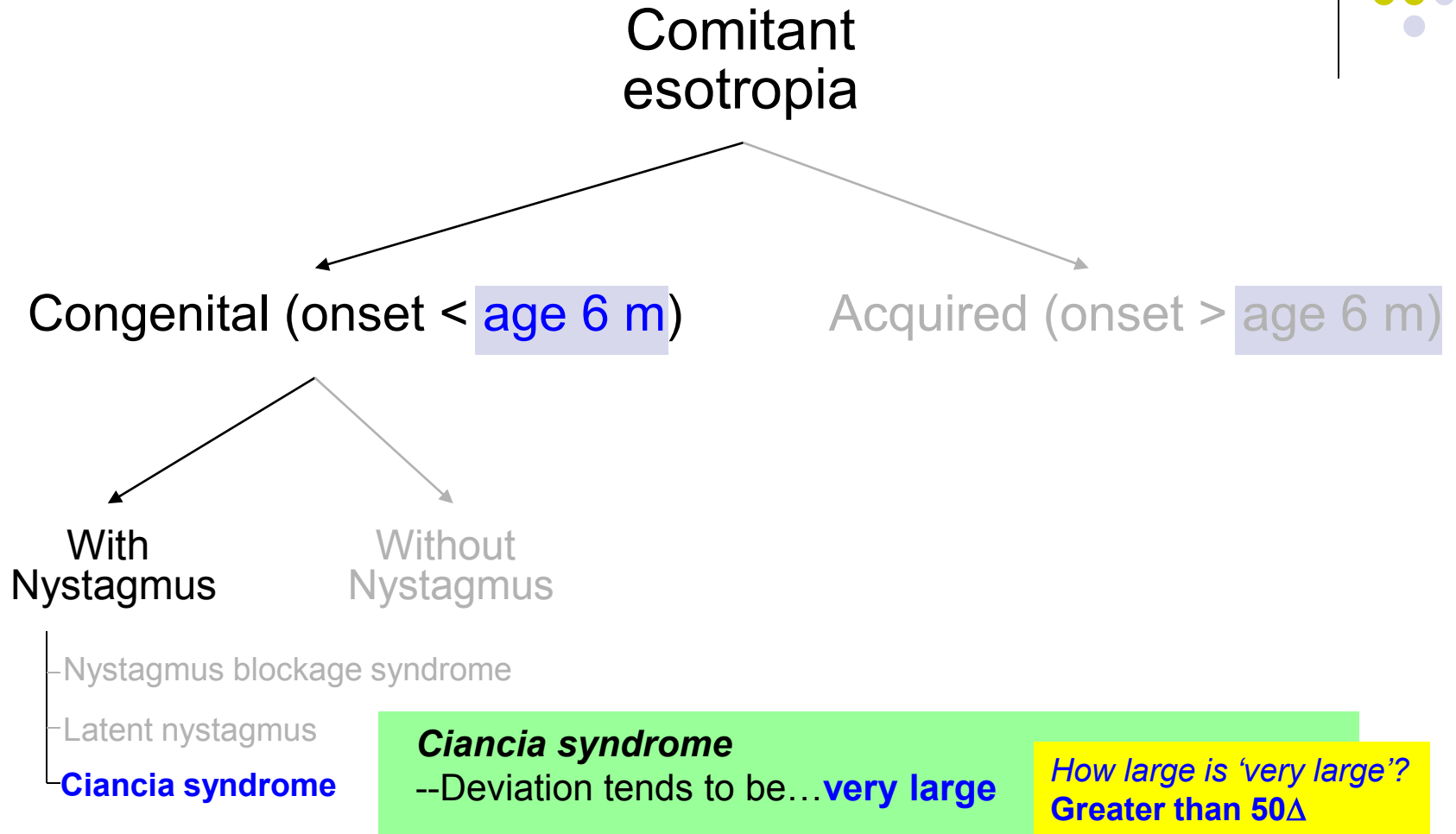
Ciancia syndrome

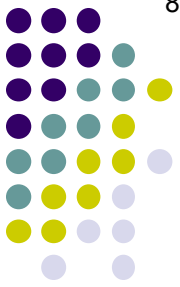
--Deviation tends to be...**very large**

How large is 'very large'?

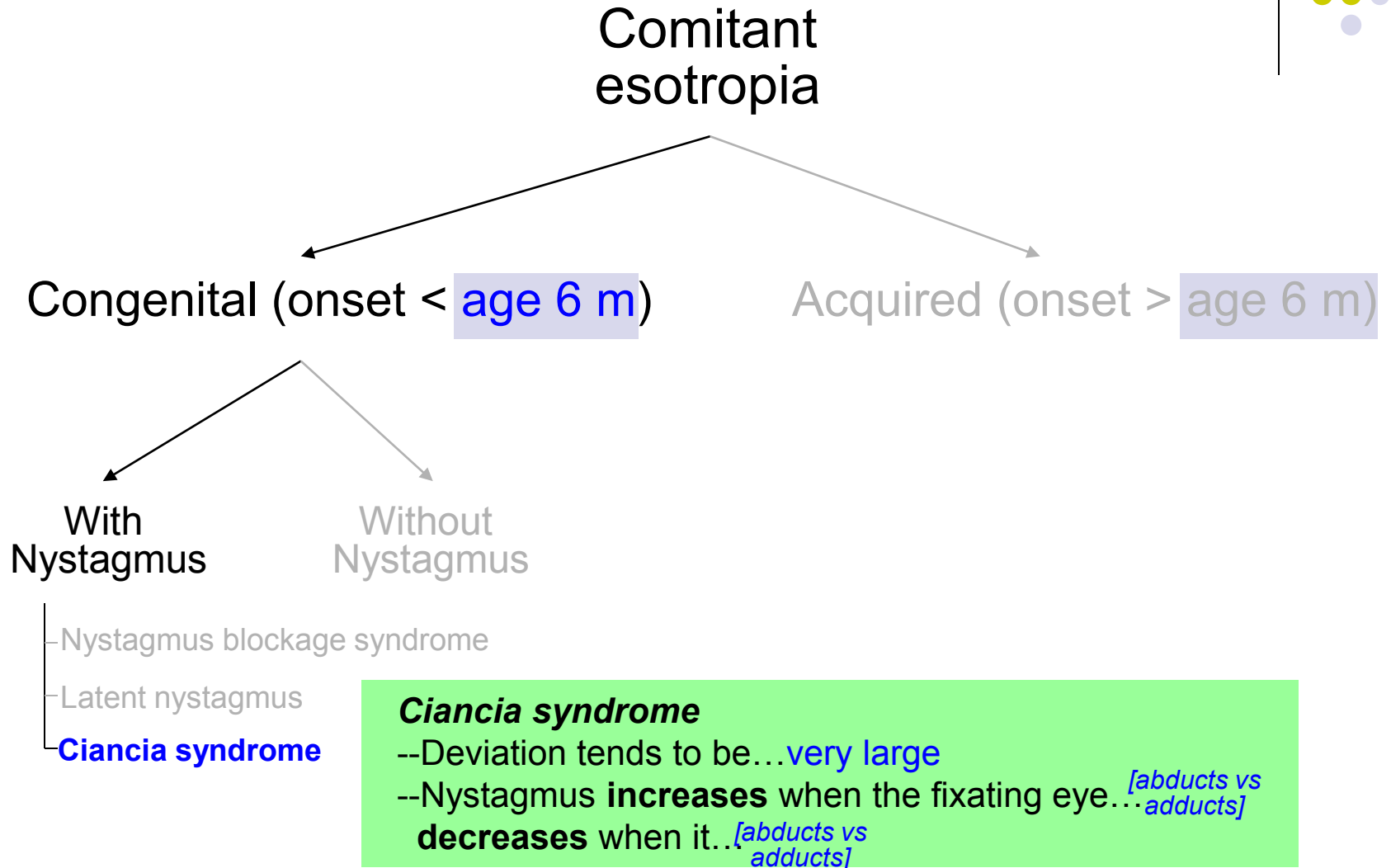


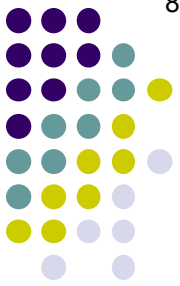
Comitant Esotropia



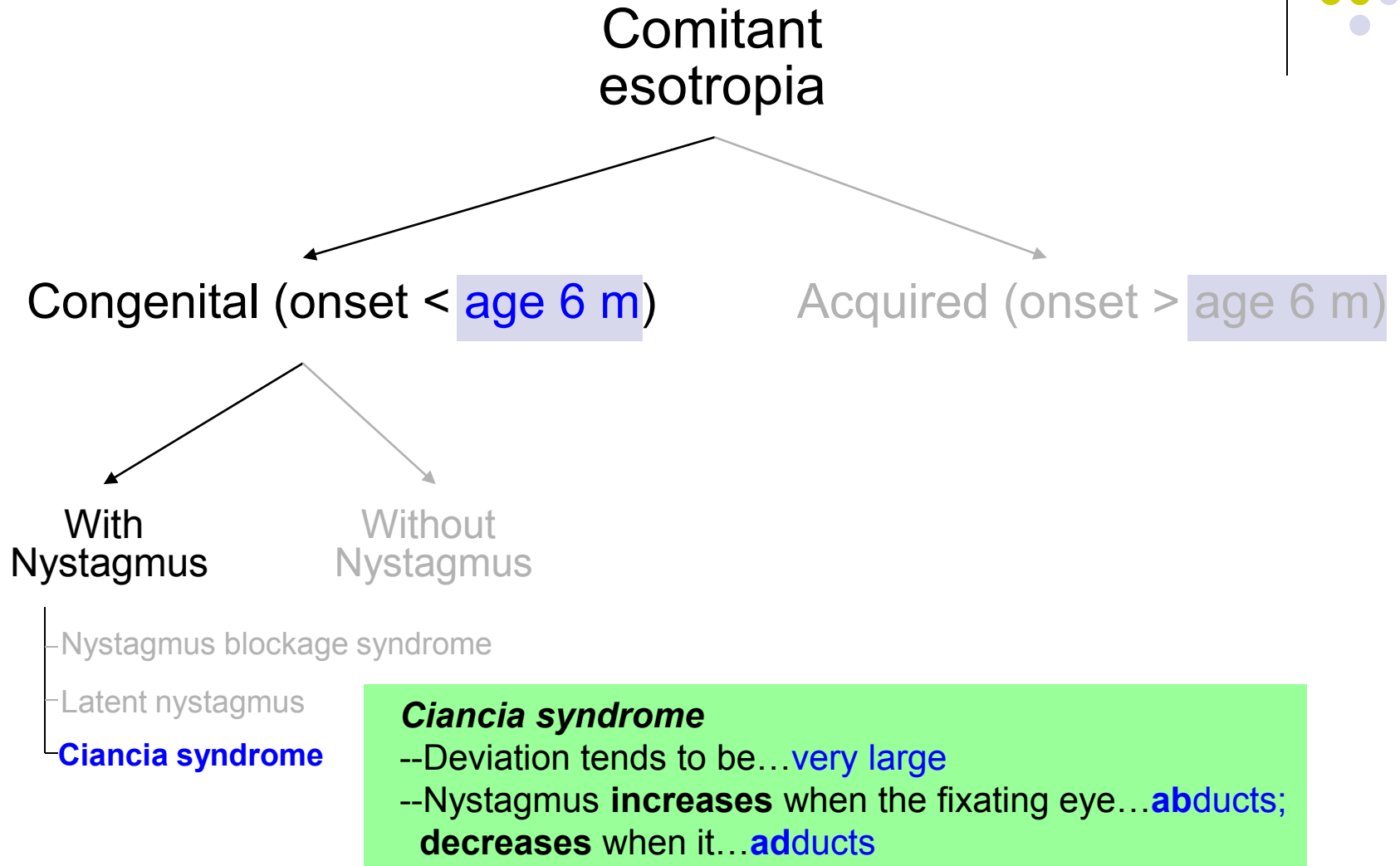


Comitant Esotropia

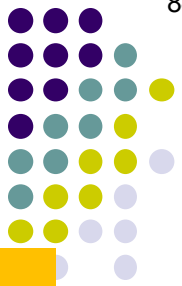




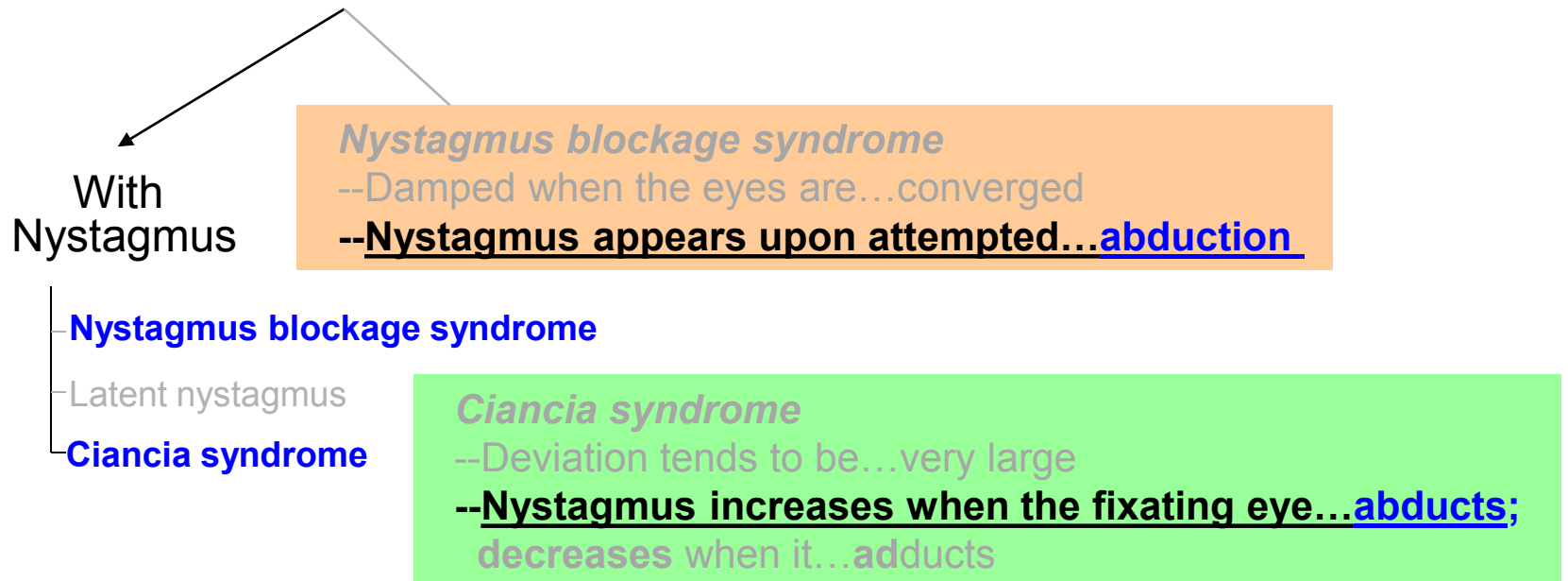
Comitant Esotropia



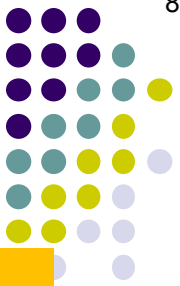
Comitant Esotropia



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



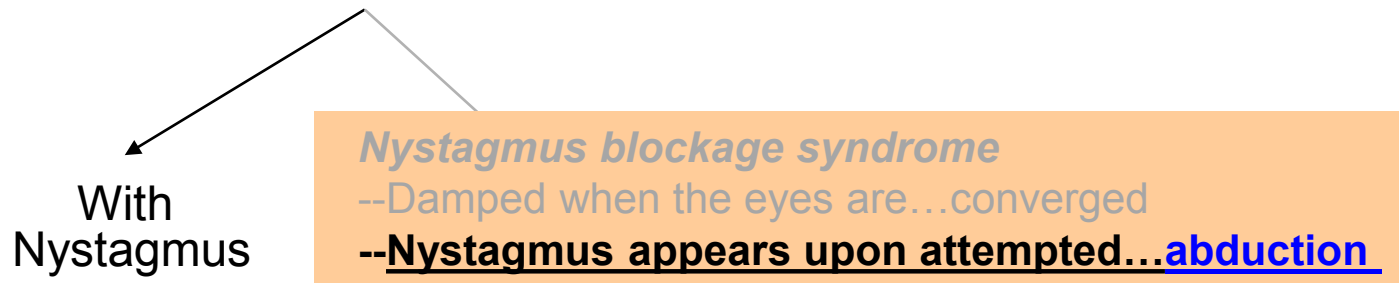
Comitant Esotropia



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 two words for which the null point is located in convergence (ie, the ET is in a sense *caused* by the nystagmus)



Nystagmus blockage syndrome

Latent nystagmus

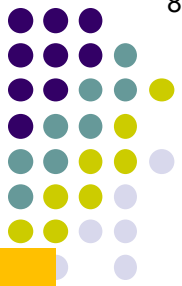
Ciancia syndrome

Ciancia syndrome

--Deviation tends to be...very large

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

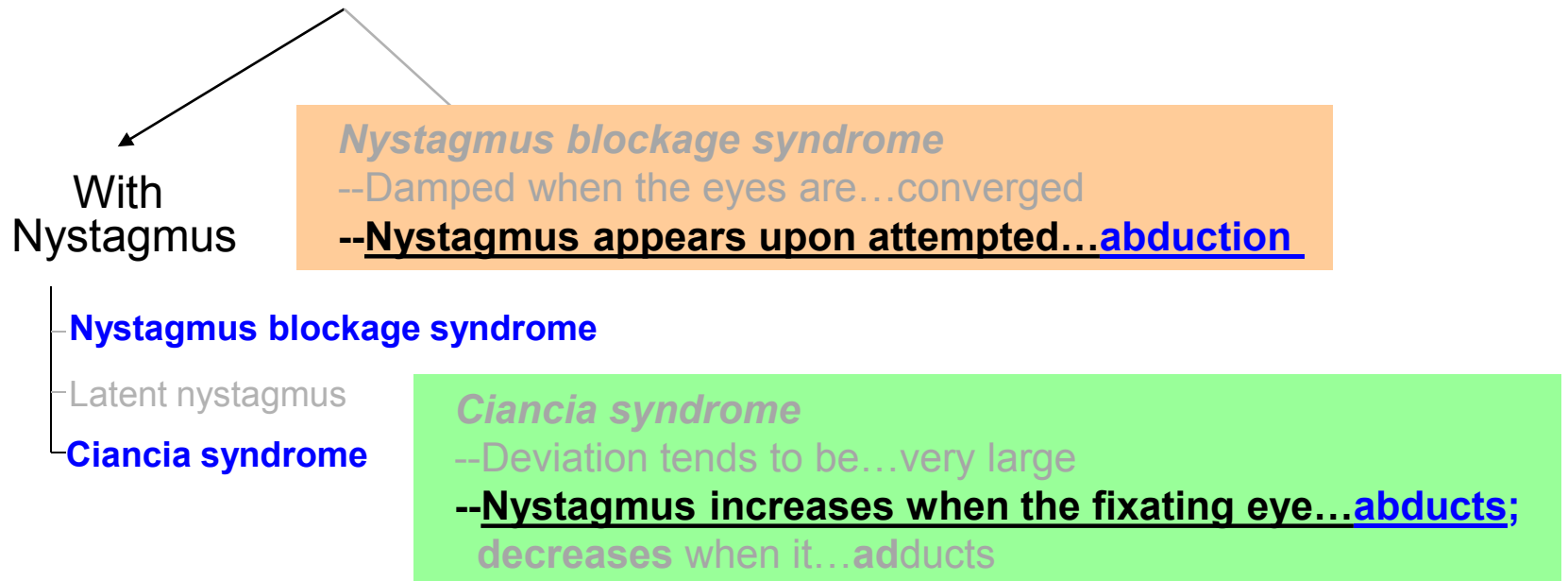
Comitant Esotropia



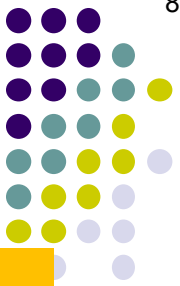
Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

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)



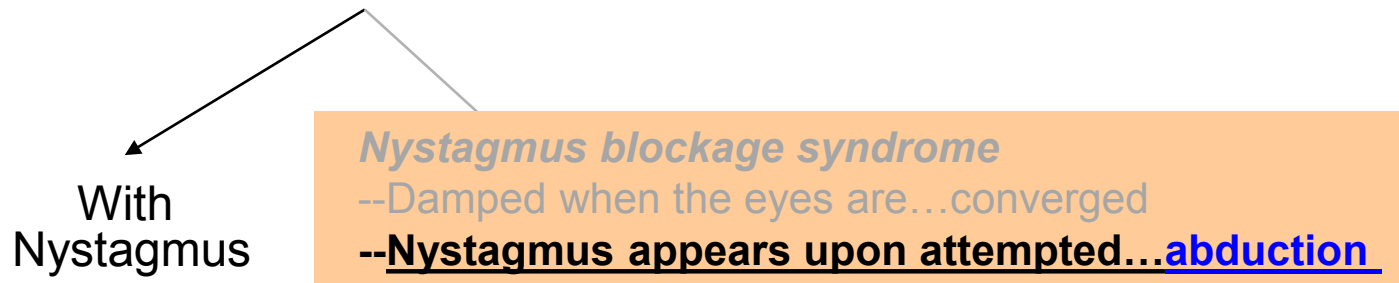
Comitant Esotropia



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



Nystagmus blockage syndrome

Latent nystagmus

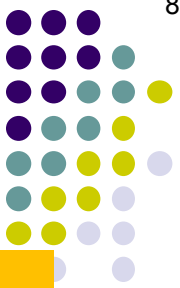
Ciancia syndrome

Ciancia syndrome

--Deviation tends to be...very large

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

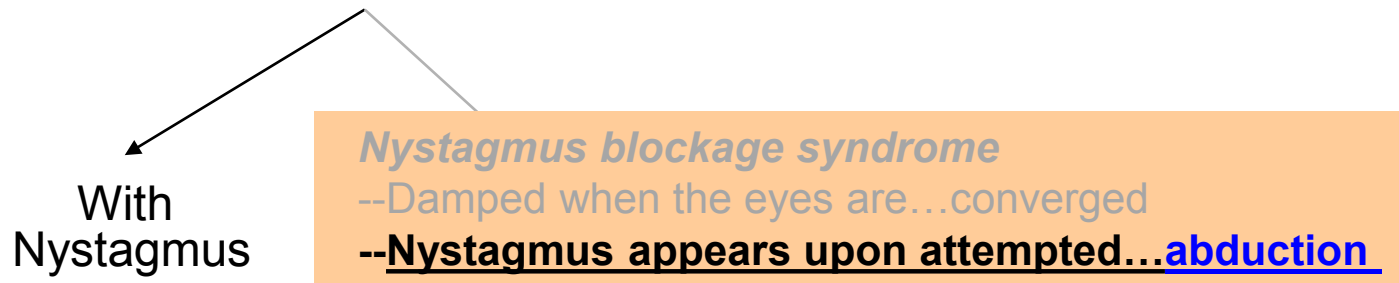
Comitant Esotropia



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,
- 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

Latent nystagmus

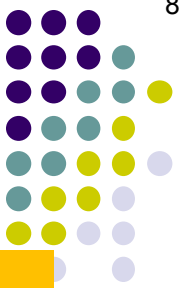
Ciancia syndrome

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 (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.

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

With
Nystagmus

Nystagmus blockage syndrome

--Damped when the eyes are...converged

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

Nystagmus blockage syndrome

Latent nystagmus

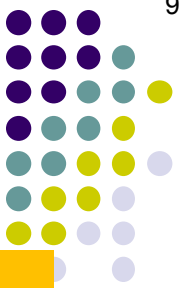
Ciancia syndrome

Ciancia syndrome

--Deviation tends to be...very large

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

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,

--The Ciancia syndrome happens to be associated

What is a null point?

With
Nystagmus

Nystagmus blockage syndrome

--Damped when the eyes are...converged

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

Nystagmus blockage syndrome

Latent nystagmus

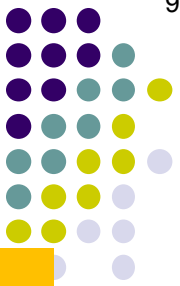
Ciancia syndrome

Ciancia syndrome

--Deviation tends to be...very large

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

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?

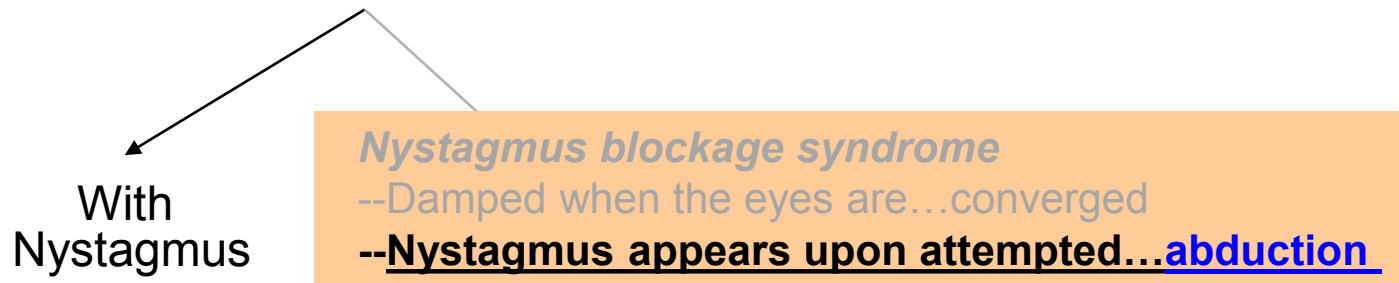
Think of these disorders this way:

--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,

--The Ciancia syndrome happens to be associated

What is a null point?

A direction of gaze in which the intensity of the nystagmus is minimized



Nystagmus blockage syndrome

Latent nystagmus

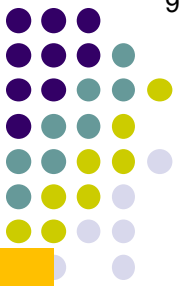
Ciancia syndrome

Ciancia syndrome

--Deviation tends to be...very large

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

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?

With
Nystagmus

--Damped when the eyes are...converged

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

Nystagmus blockage syndrome

Latent nystagmus

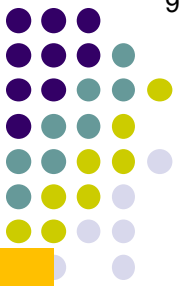
Ciancia syndrome

Ciancia syndrome

--Deviation tends to be...very large

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

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

With
Nystagmus

--Damped when the eyes are...converged

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

Nystagmus blockage syndrome

Latent nystagmus

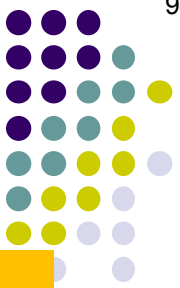
Ciancia syndrome

Ciancia syndrome

--Deviation tends to be...very large

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

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

May? Why the hedging?

With
Nystagmus

--Damped when the eyes are...converged

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

Nystagmus blockage syndrome

Latent nystagmus

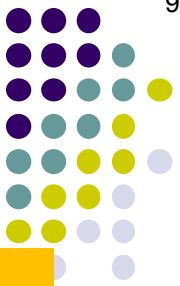
Ciancia syndrome

Ciancia syndrome

--Deviation tends to be...very large

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

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

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

--Damped when the eyes are...converged

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

Nystagmus blockage syndrome

Latent nystagmus

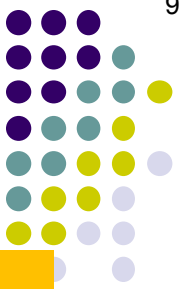
Ciancia syndrome

Ciancia syndrome

--Deviation tends to be...very large

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

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,

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 $\leq 35\text{PD}^*$ of congenital ET probably has NBS, whereas an infant with nystagmus and $\geq 55\text{PD}$ of congenital ET likely has Ciancia syndrome.

Nystagmus blockage syndrome

Latent nystagmus

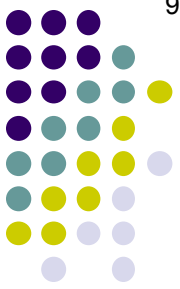
Ciancia syndrome

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)

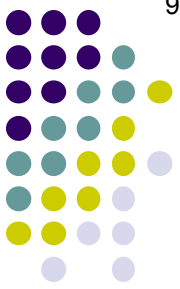
Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

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



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

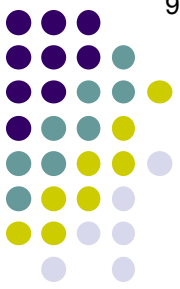
With
Nystagmus

**Without
Nystagmus**

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus

--Family history usually...**present**



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

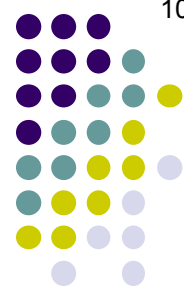
**Without
Nystagmus**

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus

--Family history usually...**present**

--Deviation tends to be...**[magnitude]**



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

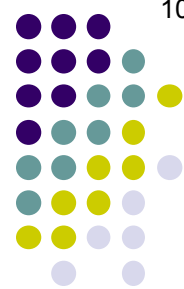
With
Nystagmus

**Without
Nystagmus**

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus

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



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

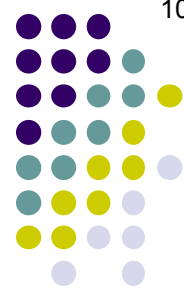
**Without
Nystagmus**

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus

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

How large is 'large'?



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

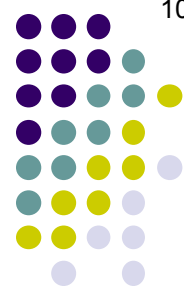
**Without
Nystagmus**

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus

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

How large is 'large'?
Greater than 30Δ



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

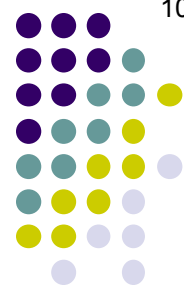
**Without
Nystagmus**

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus

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

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



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

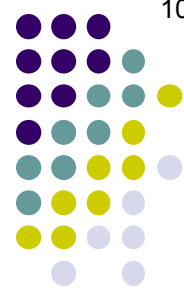
**Without
Nystagmus**

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus

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

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



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**

***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)

Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

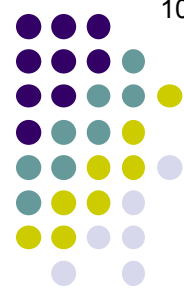
Congenital ET without nystagmus

- 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?

ET in **preemies**—their congenital ET can be small-angle



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

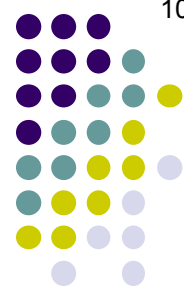
With
Nystagmus

**Without
Nystagmus**

- 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?]**



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

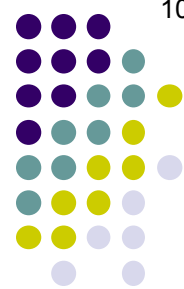
With
Nystagmus

**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**



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

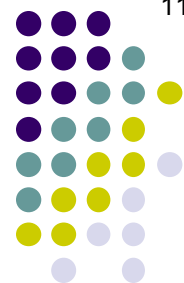
**Without
Nystagmus**

- 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**

What does this imply about VA?



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**

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



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

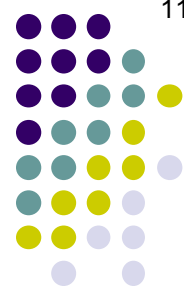
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus

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

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

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

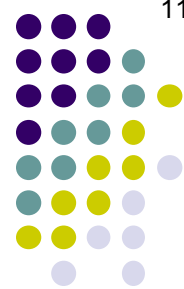
Congenital ET without nystagmus

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

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

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

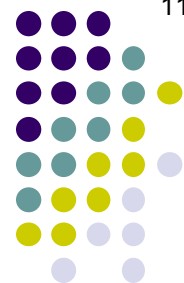
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus

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

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



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

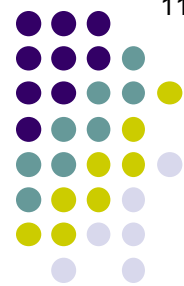
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus

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

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

Is amblyopia common?



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

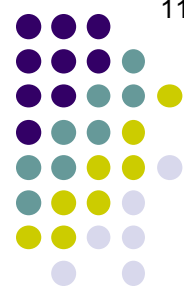
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus

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

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

Is amblyopia common?
Yes



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

- Nystagmus
- Latent nystagmus
- Ciancia syndrome

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

Congenital ET without nystagmus

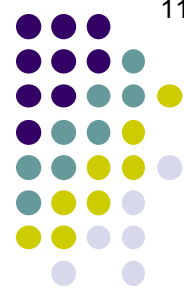
- Family history usually...present
- Deviation tends to be...large
- Cross fixation...may be present

*this imply about VA?
e equal OU?*

Is amblyopia common?

Yes





Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

- Nystagmus
- Latent nystagmus
- Ciancia syndrome

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

Congenital ET without nystagmus

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

*this imply about VA?
e 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**

- Nystagmus
- Latent nystagmus
- Ciancia syndrome

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

Congenital ET without nystagmus

--Family history usually...present

--Deviation tends to be...large

--**Cross fixation...may be present**

Yes

*this is about VA?
 e equal OU? No*

Is amblyopia common?



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

- Nystagmus
- Latent nystagmus
- Ciancia syndrome

If amblyopia is present:

--will vision be equal OU? **No**

--Will a gaze preference be present? **Yes**

Congenital ET without nystagmus

--Family history usually...present

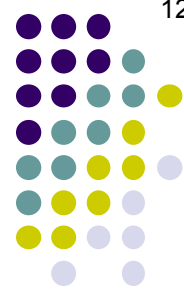
--Deviation tends to be...large

--~~Cross fixation...~~ **may be present**

Yes

this is about VA?
e equal OU? No

Is amblyopia common?



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

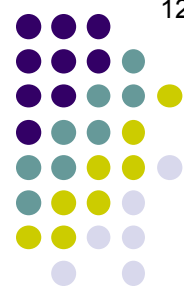
With
Nystagmus

**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...**[strabismic conditions]**



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

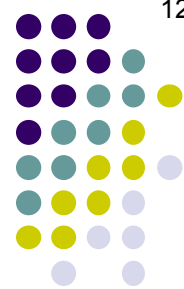
With
Nystagmus

**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**



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

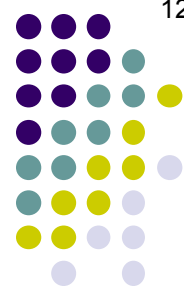
Congenital ET without nystagmus

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

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

DVD:

IO:



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**

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)

Acquired (onset > age 6 m)

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

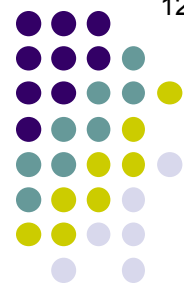
Congenital ET without nystagmus

What is the classic clinical finding in DVD?

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)

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?

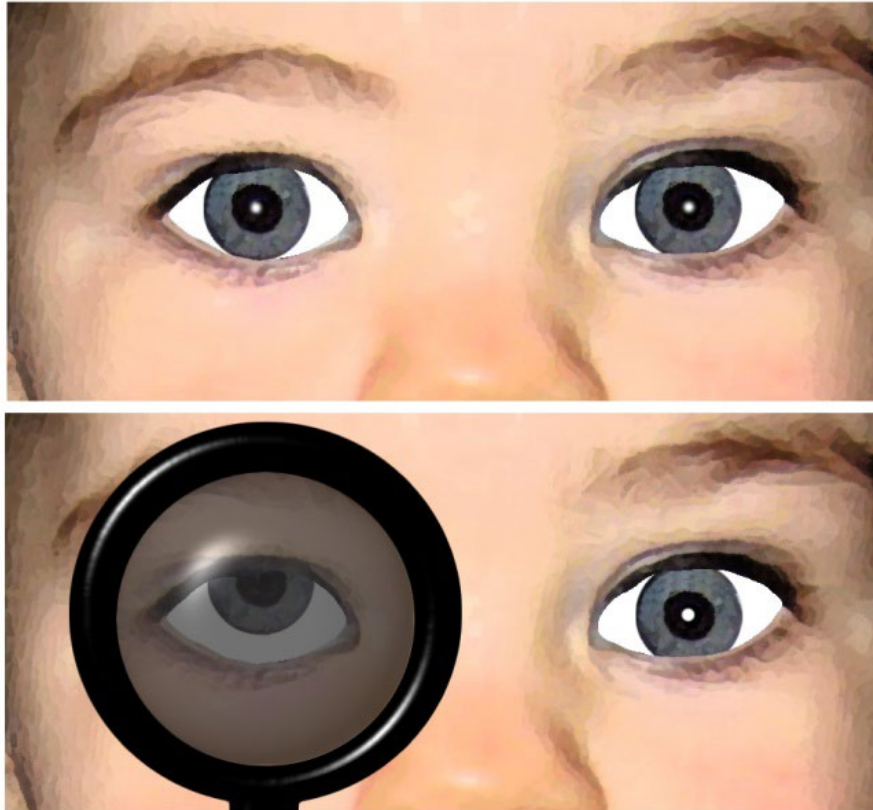
An eye will slowly elevate and extort, either spontaneously (*manifest DVD*) or when occluded (*latent DVD*).

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

DVD: Dissociated vertical deviation

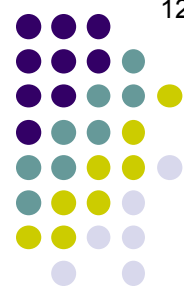
IO: inferior oblique (muscle)

Comitant Esotropia



DVD





Comitant Esotropia

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

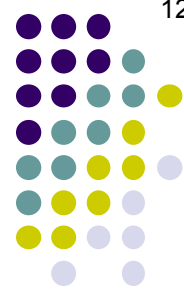
What is the classic clinical finding in DVD?

An eye will slowly elevate and extort, either spontaneously (*manifest* DVD) or when occluded (*latent* DVD). 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)

Acquired (onset > age 6 m)

With
Nystagmus

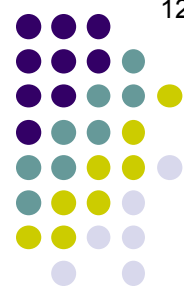
**Without
Nystagmus**

- 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**

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



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

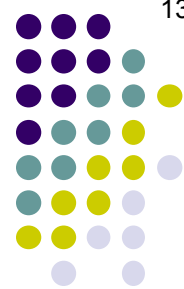
**Without
Nystagmus**

- 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**

***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

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciarcia 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**

*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)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciarcia syndrome

Congenital ET without nystagmus

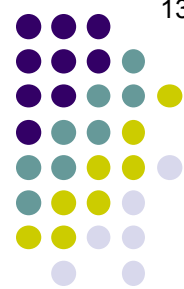
- Family history usually...present
- Deviation tends to be...large
- Cross fixation...may be present
- 2/3 with concomitant...**DVD and IO overaction**

*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

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Congenital ET without nystagmus

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

With Nystagmus

--2/3 with concomitant...DVD and IO overaction

Management:

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

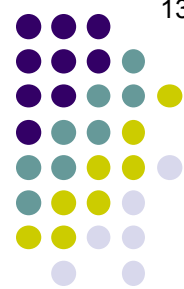
Both DVD and IO overaction involve elevation and extorsion. How can they be differentiated?

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**

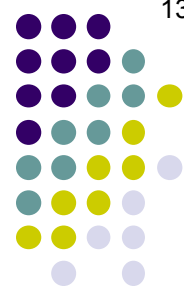
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

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**

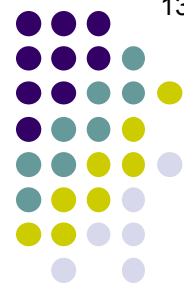
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

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



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

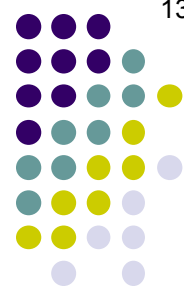
Congenital ET without nystagmus

- 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

Why prescribe the full CR?



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

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**

- 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...**[surgery]**



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

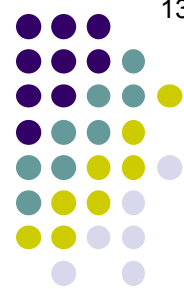
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

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
- Perform bilateral...MR recession



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

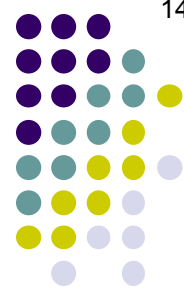
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

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
- Perform bilateral...MR recession
- Best if by age...



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

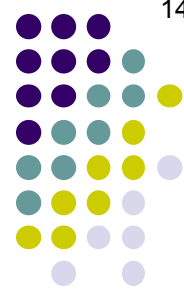
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

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
- Perform bilateral...MR recession
- Best if by age...24 months



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

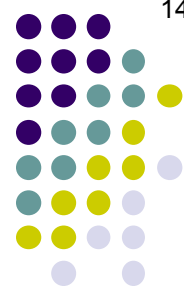
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

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**
- 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)

Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

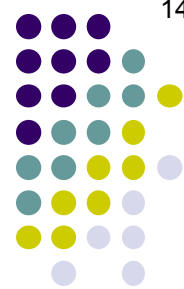
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

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**



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

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

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

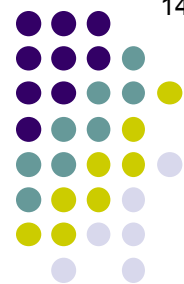
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

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

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

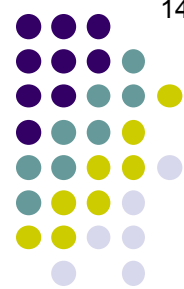
What is the realistic goal of treatment?

Monofixation syndrome, or a small-angle esophoria

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)

Acquired (onset > age 6 m)

With
Nystagmus

**Without
Nystagmus**

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

What is the realistic goal of treatment?

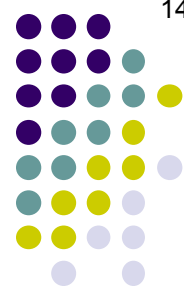
Monofixation syndrome, or a small-angle esophoria

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

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

- Nystagmus block
- Latent nystagmus
- Ciancia syndrome

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?

--
--

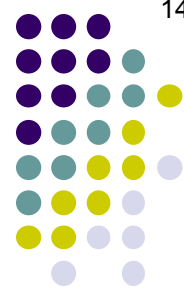
--Monofixation syndrome

Mnemonic is...

--Enormous bilateral...IRK 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

- Nystagmus block
- Latent nystagmus
- Ciancia syndrome

What is the realistic goal of treatment?

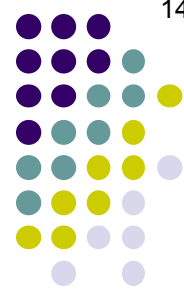
Monofixation syndrome, or a small-angle esophoria

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

- S
 - A
 - M
- Monofixation syndrome

Mnemonic is...SAM

- If chronic bilateral...IMR 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

- Nystagmus block
- Latent nystagmus
- Ciancia syndrome

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?

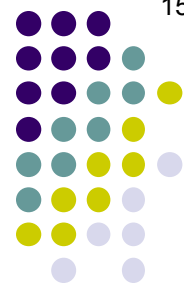
- Suppression
- Anomalous retinal correspondence
- Monofixation syndrome

Mnemonic is...SAM

--If chronic bilateral...IMR 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

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?

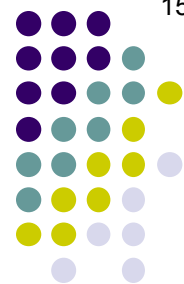
--**S**uppression

--**A**nomalous retinal correspondence

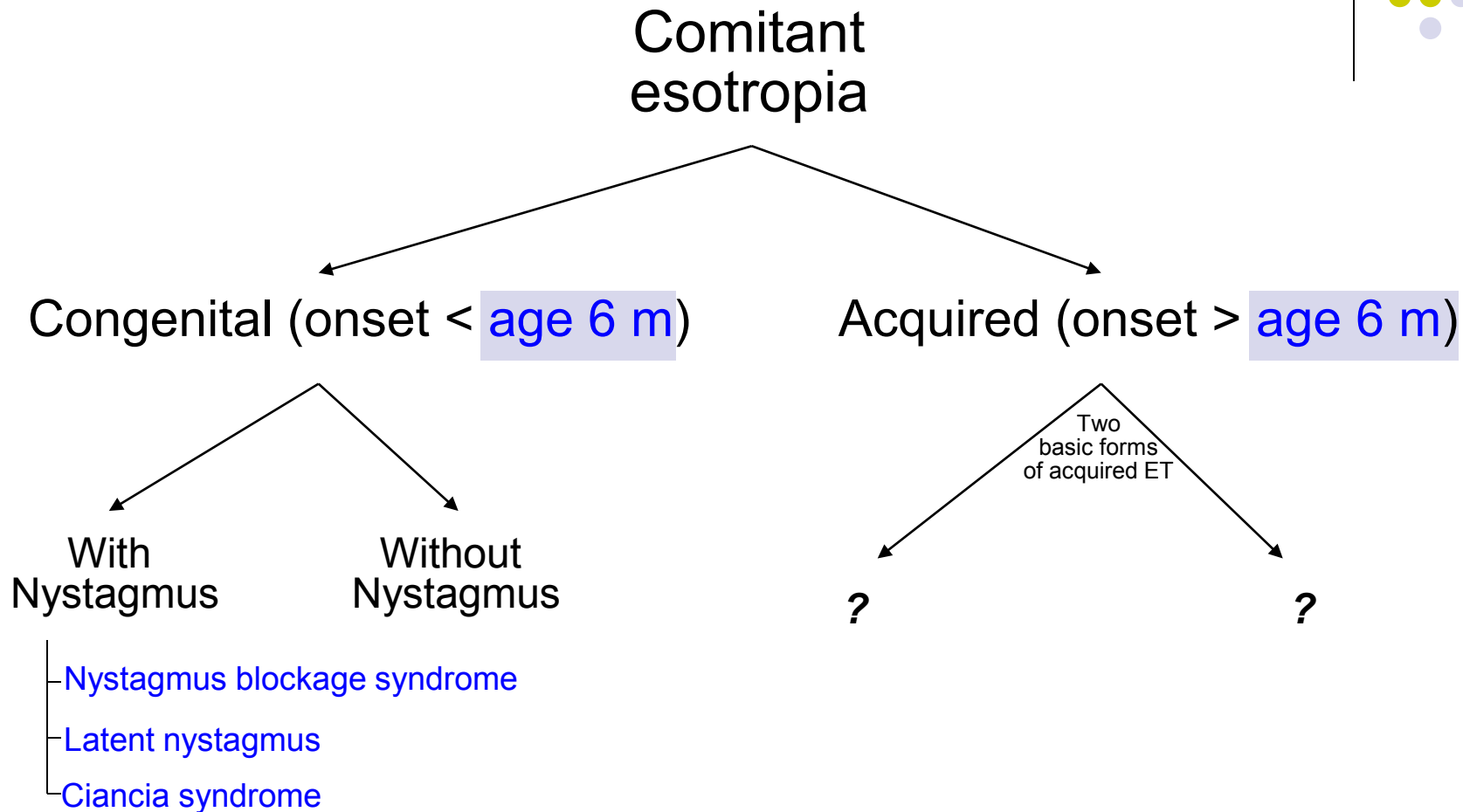
--**M**onofixation syndrome

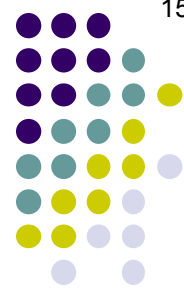
Mnemonic is...**SAM**

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

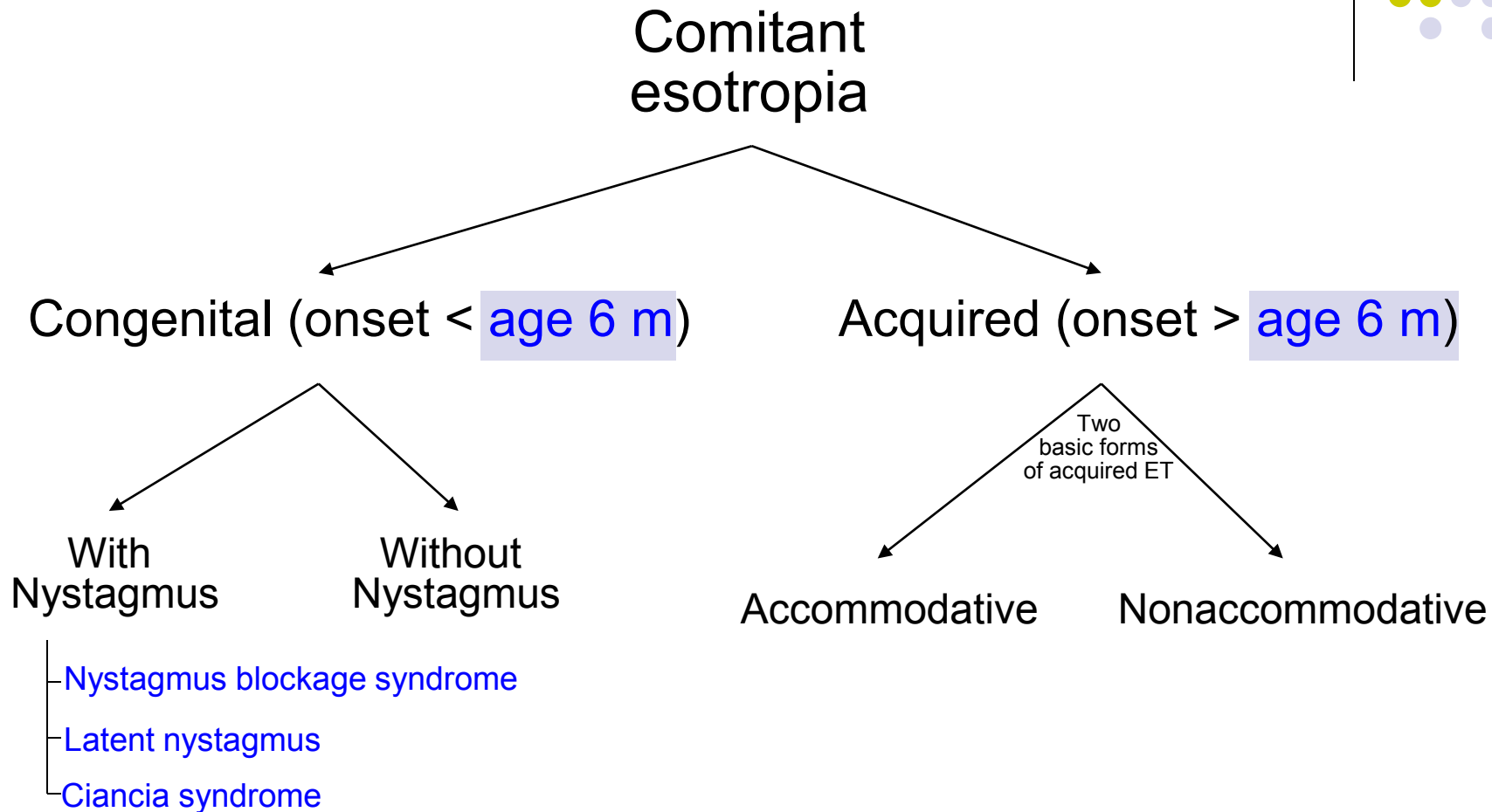


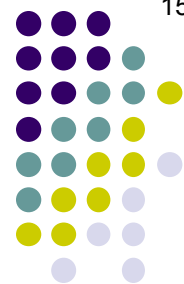
Comitant Esotropia



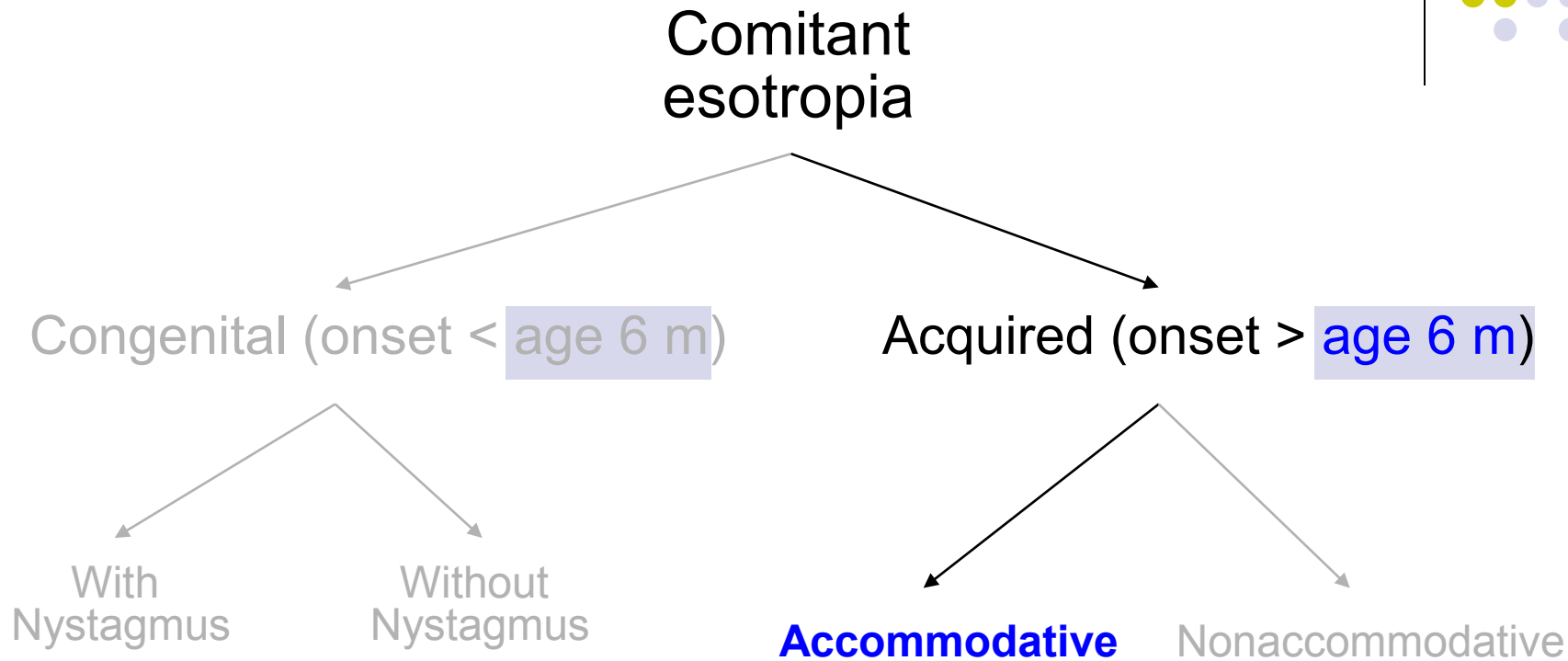


Comitant Esotropia



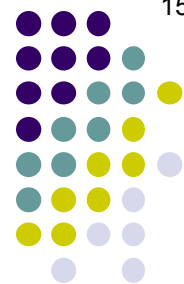


Comitant Esotropia

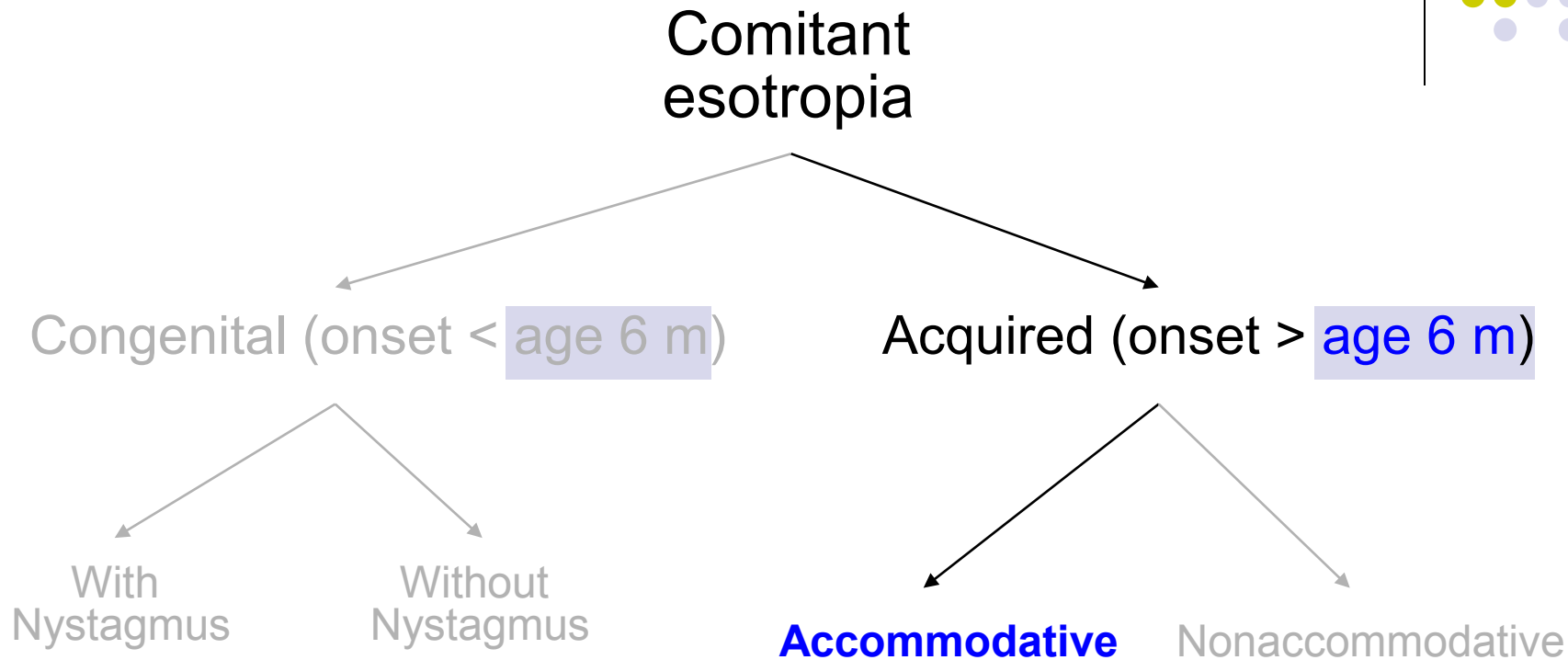


Accommodative

--Onset between ages and ; average age

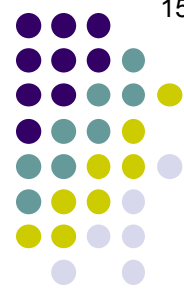


Comitant Esotropia

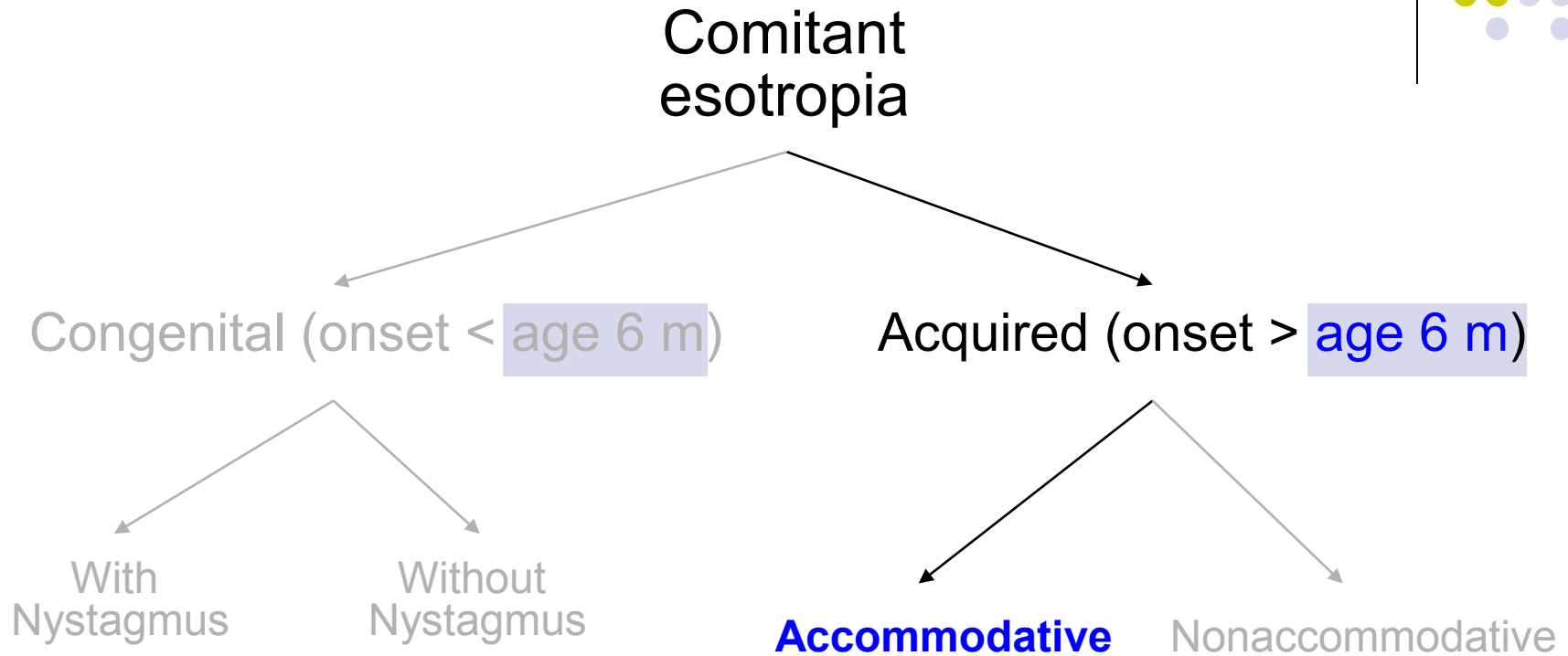


Accommodative

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

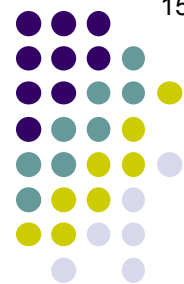


Comitant Esotropia

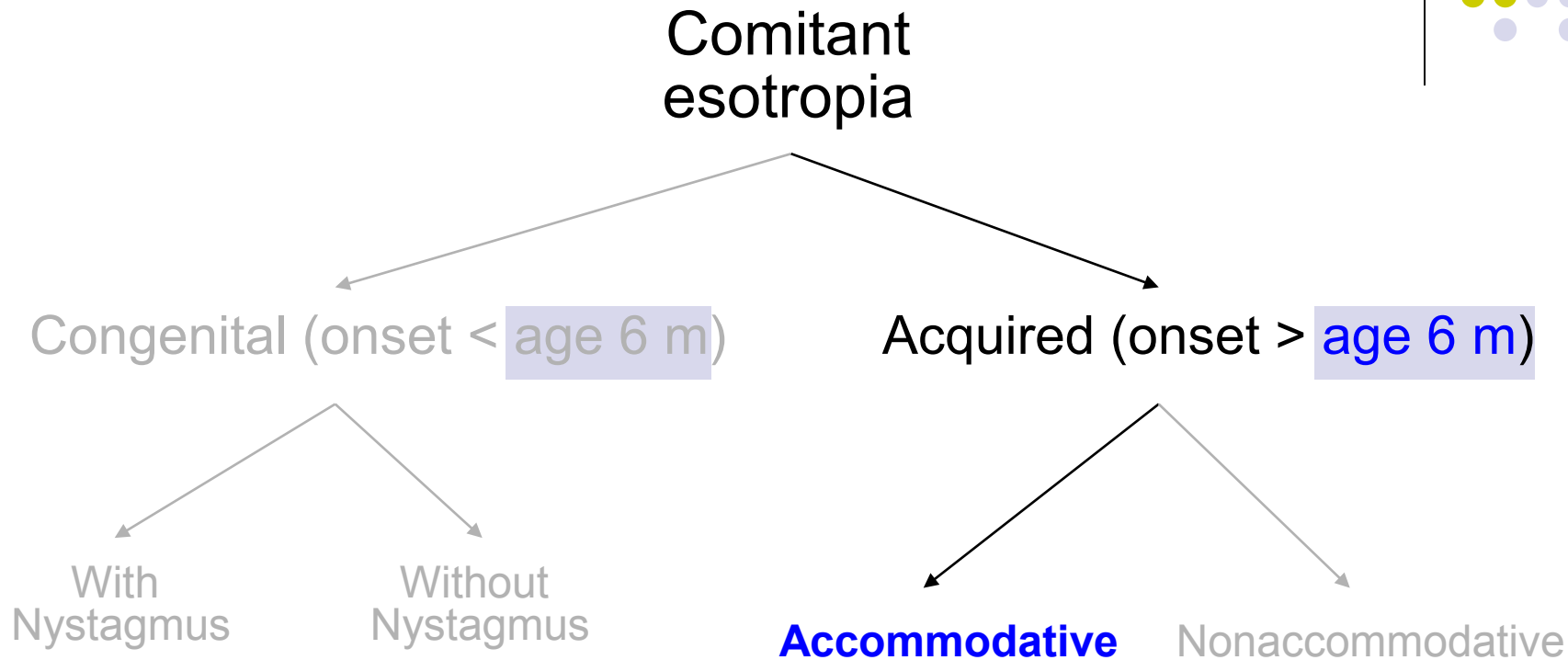


Accommodative

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

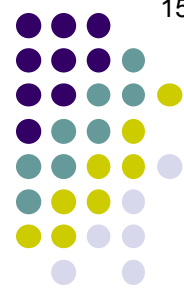


Comitant Esotropia

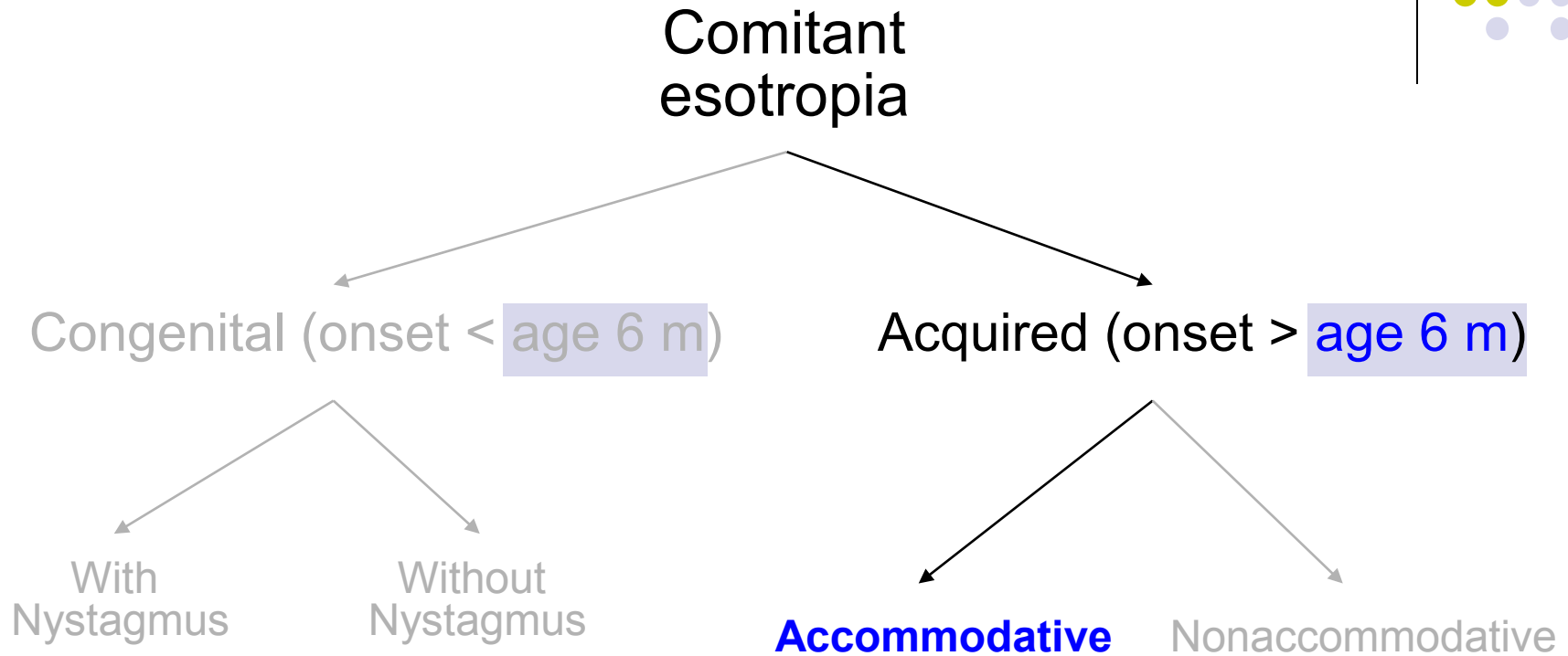


Accommodative

- Onset between ages 6 months and 7 years ; average age 2.5 years
- Initially...intermittent, eventually becoming...constant

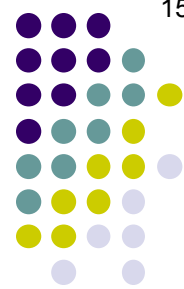


Comitant Esotropia

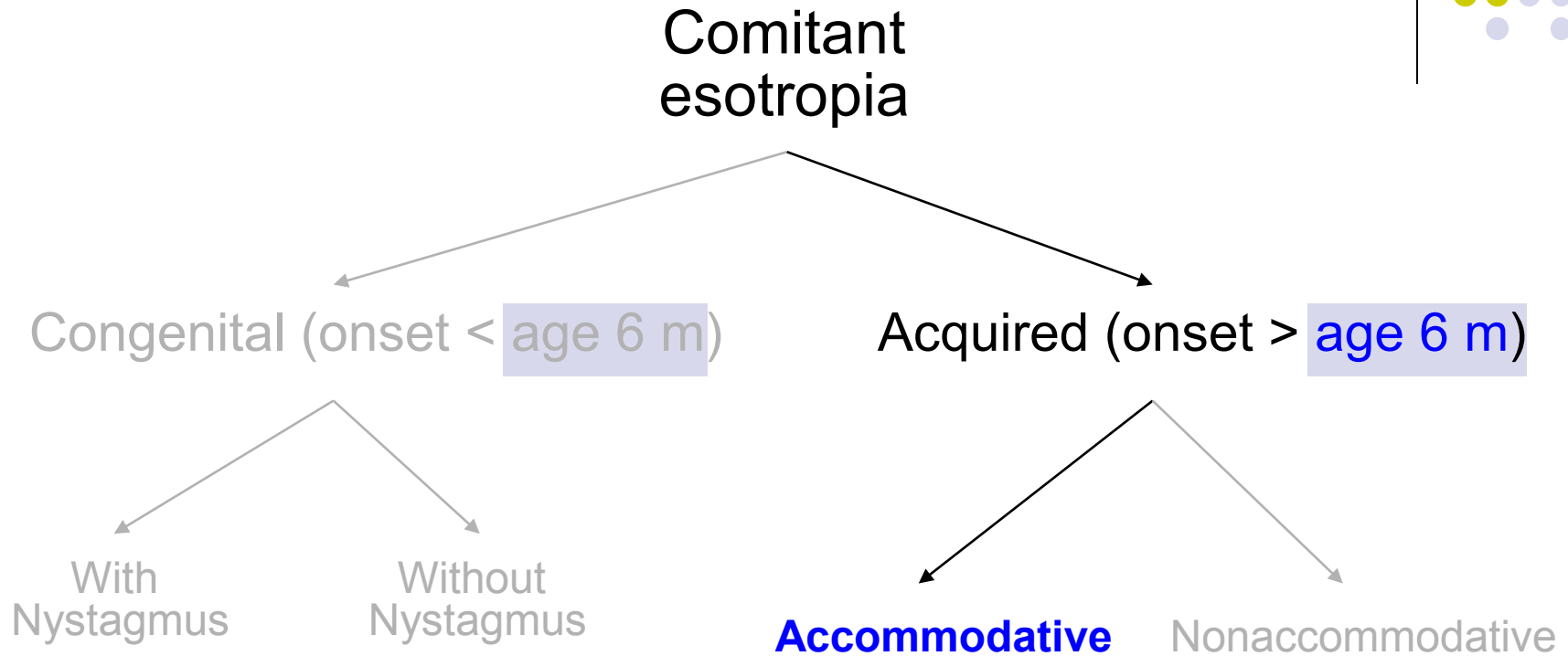


Accommodative

- Onset between ages 6 months and 7 years ; average age 2.5 years
- Initially...intermittent, eventually becoming...constant
- Amblyopia is...[common vs uncommon]

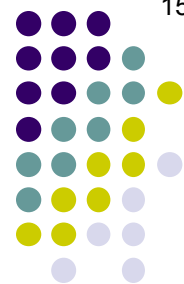


Comitant Esotropia

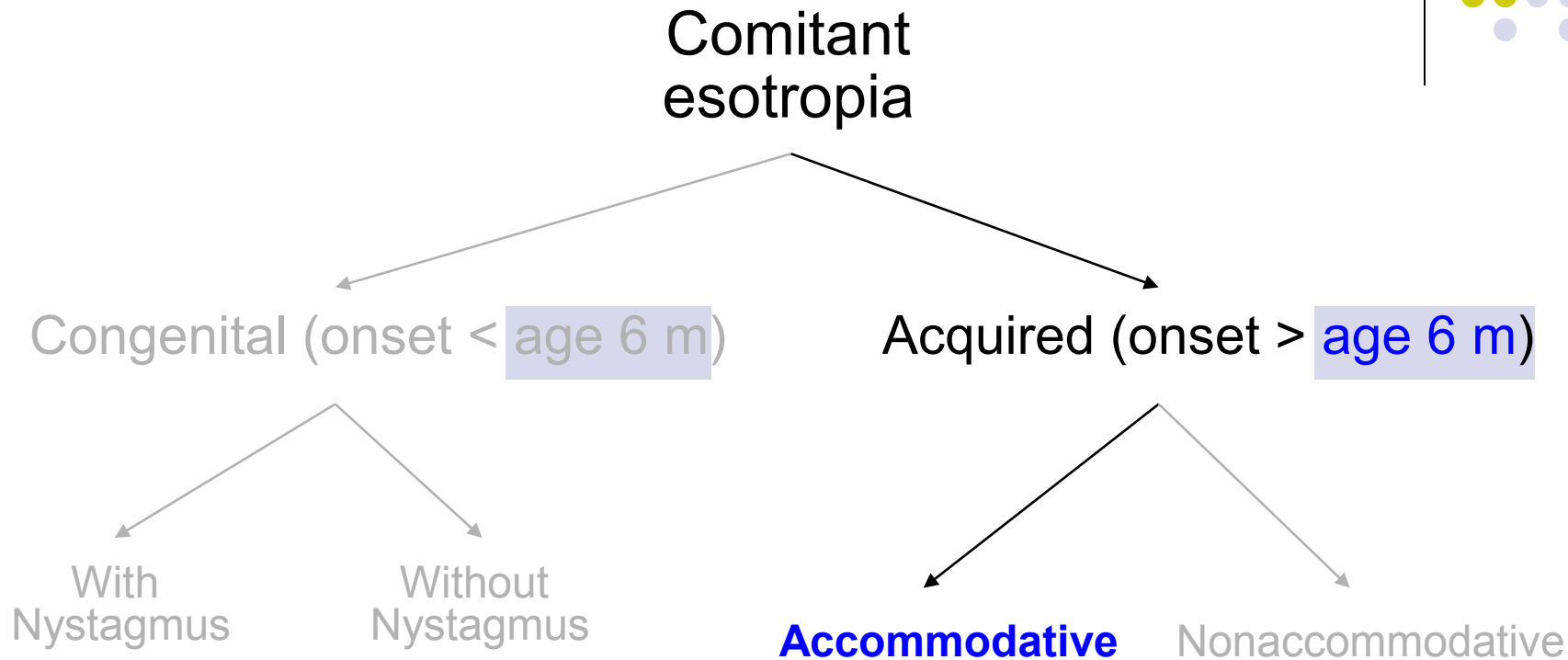


Accommodative

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

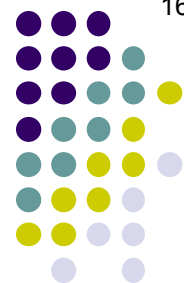


Comitant Esotropia

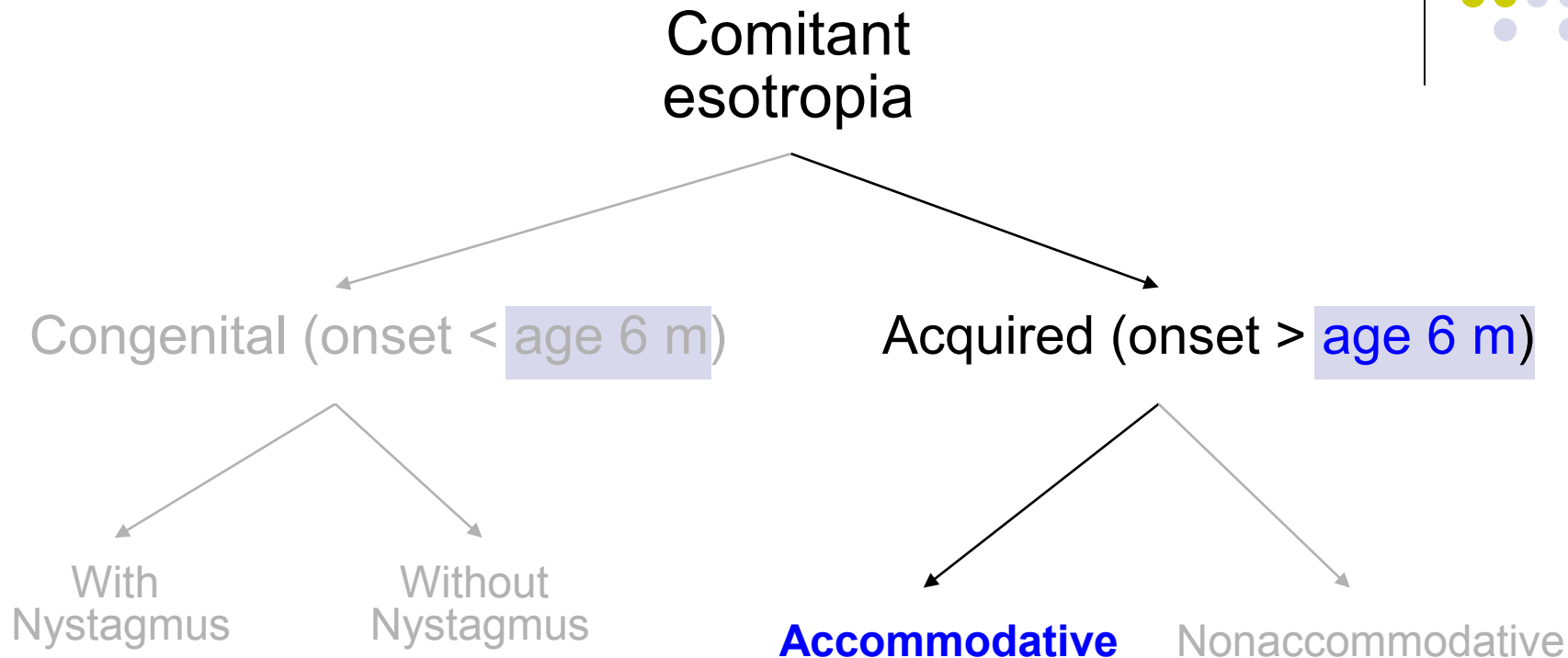


Accommodative

- 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...

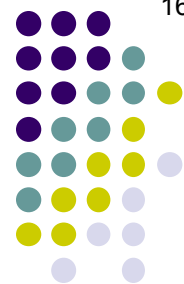


Comitant Esotropia

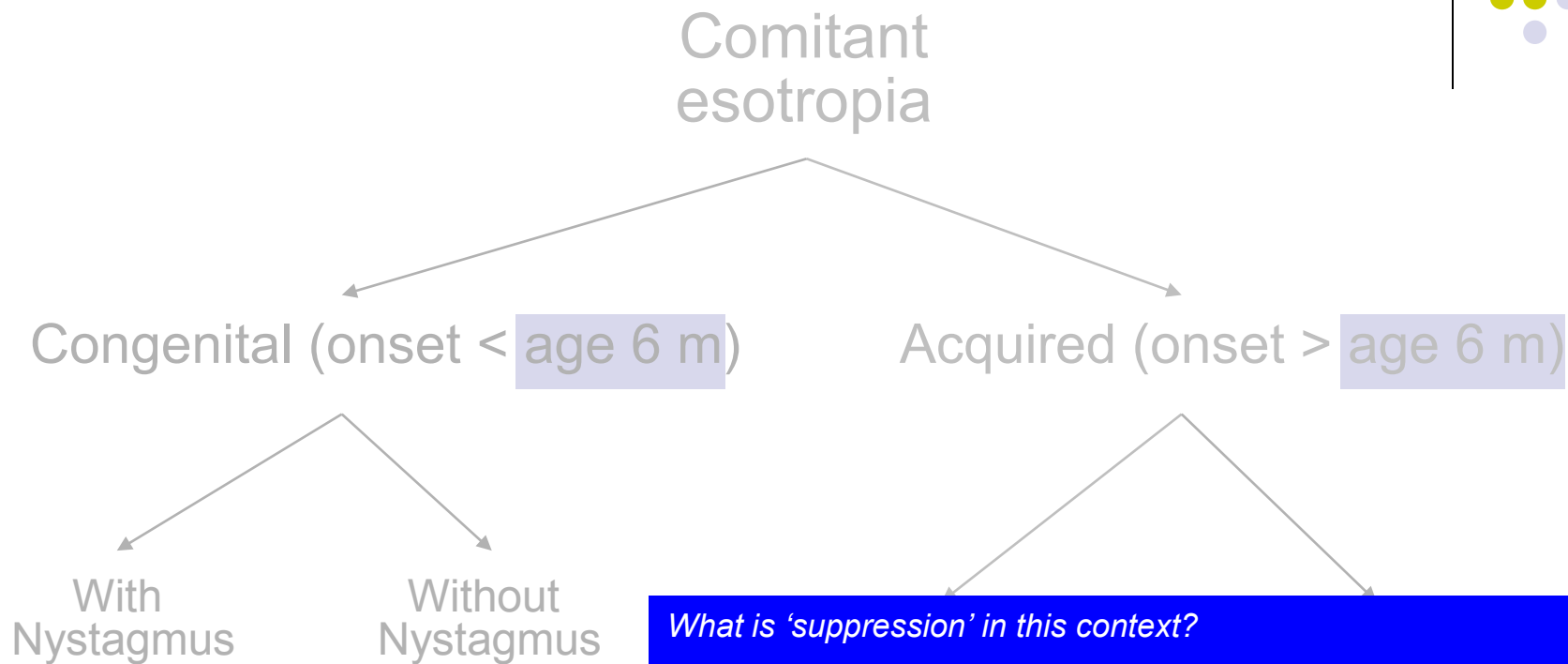


Accommodative

- 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



Comitant Esotropia

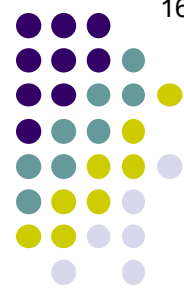


What is 'suppression' in this context?

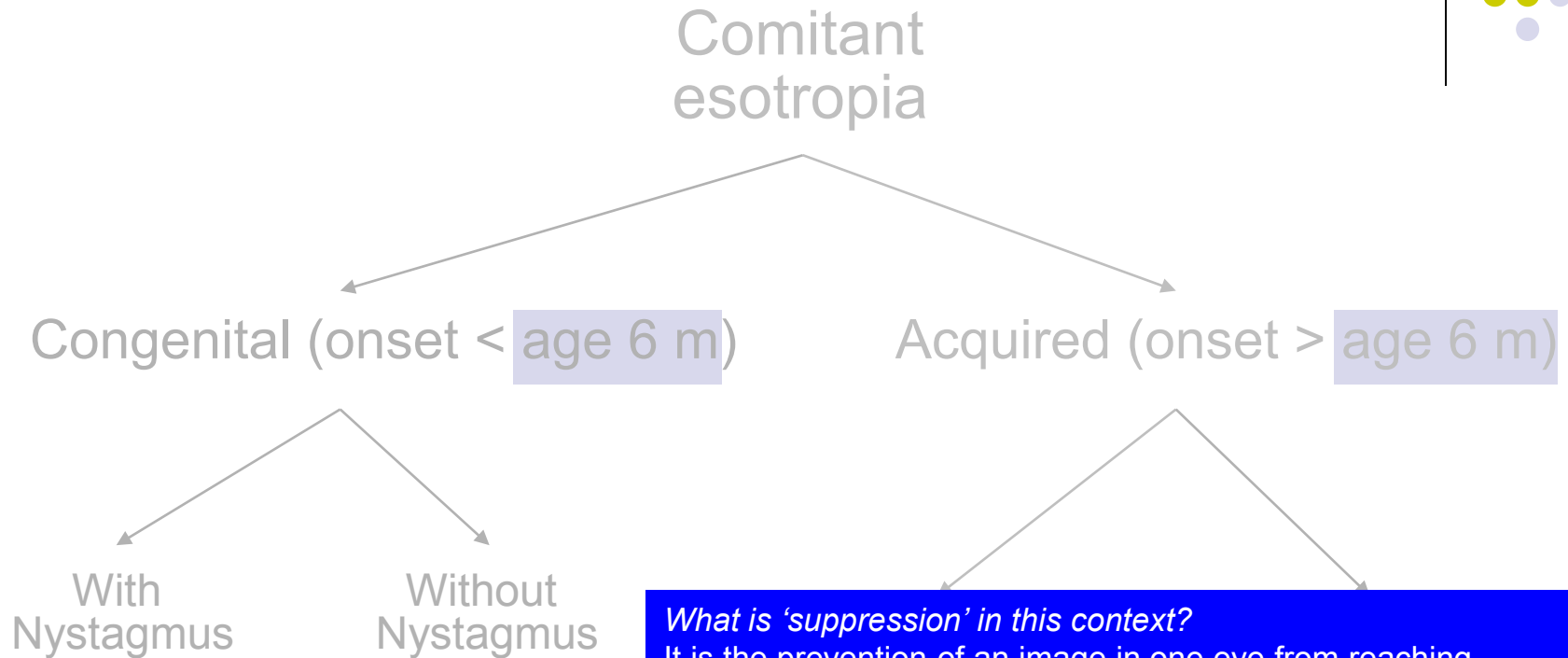
Accommodative

- Onset between ages 6 months
- Initially...intermittent, eventually
- Amblyopia is...common

– c/o diplopia early, but stop after developing a...facultative **suppression** scotoma



Comitant Esotropia



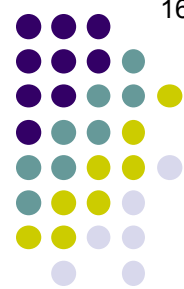
What is 'suppression' in this context?

It is the prevention of an image in one eye from reaching conscious awareness

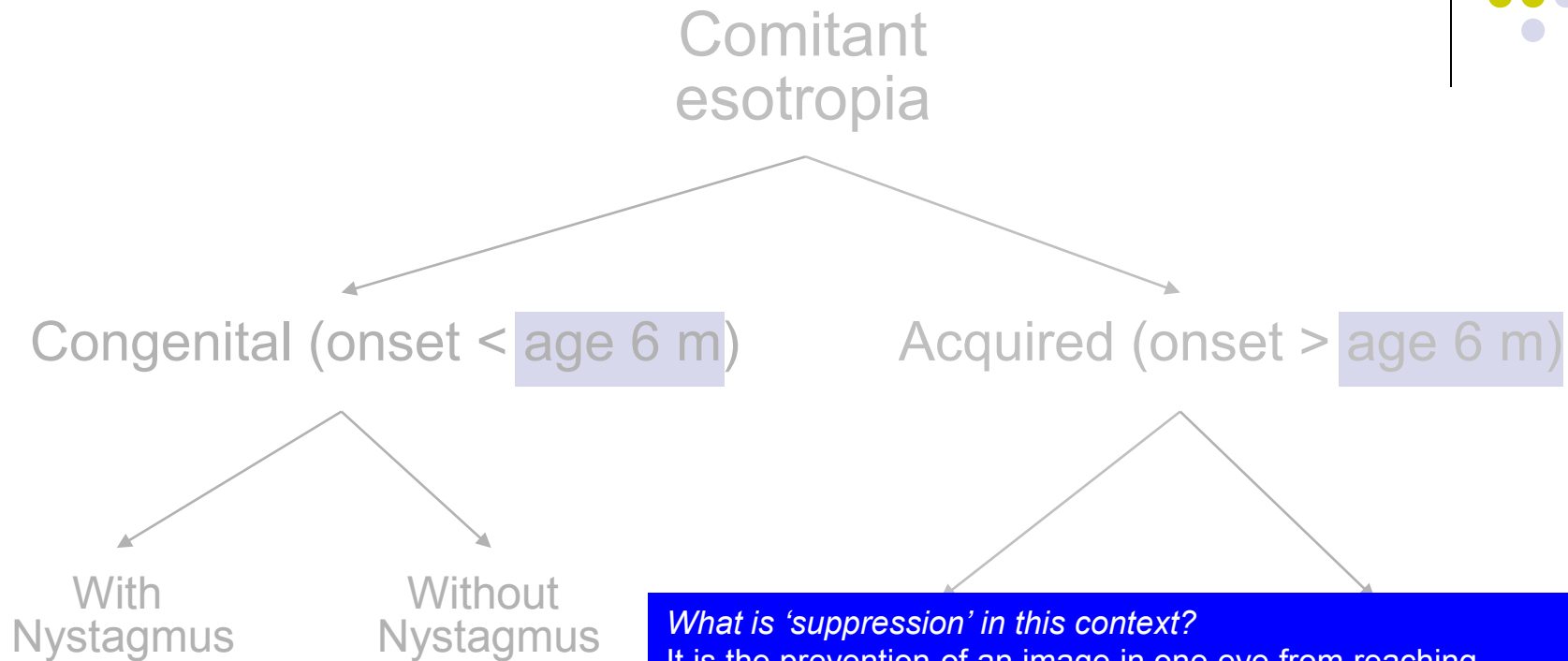
Accommodative

- 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



What is 'suppression' in this context?

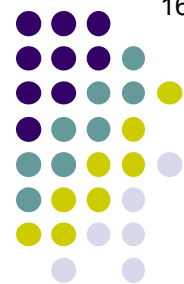
It is the prevention of an image in one eye from reaching conscious awareness

How does the phenomenon of suppression come about?

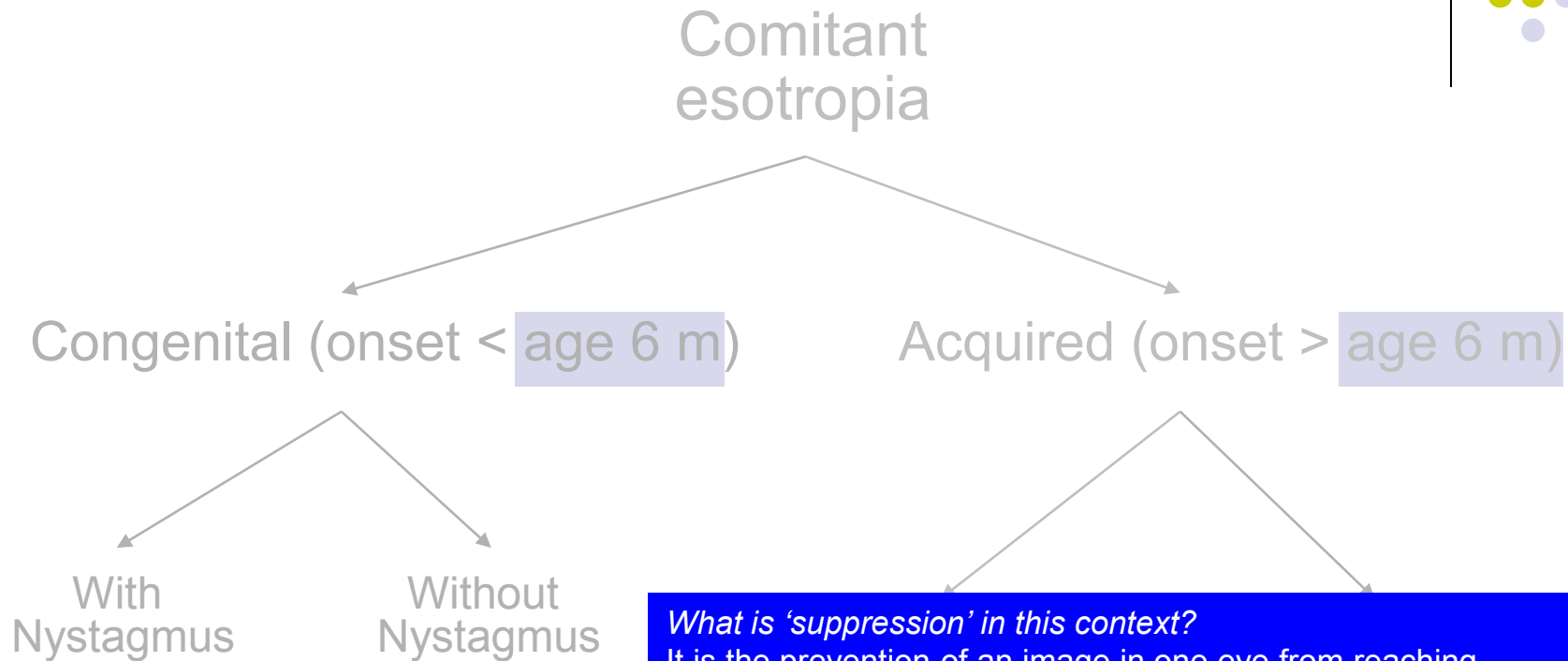
Accommodative

- 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



What is 'suppression' in this context?

It is the prevention of an image in one eye from reaching conscious awareness

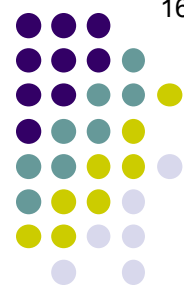
How does the phenomenon of suppression come about?

It is one of the three sensory adaptations to strabismus that was mentioned previously

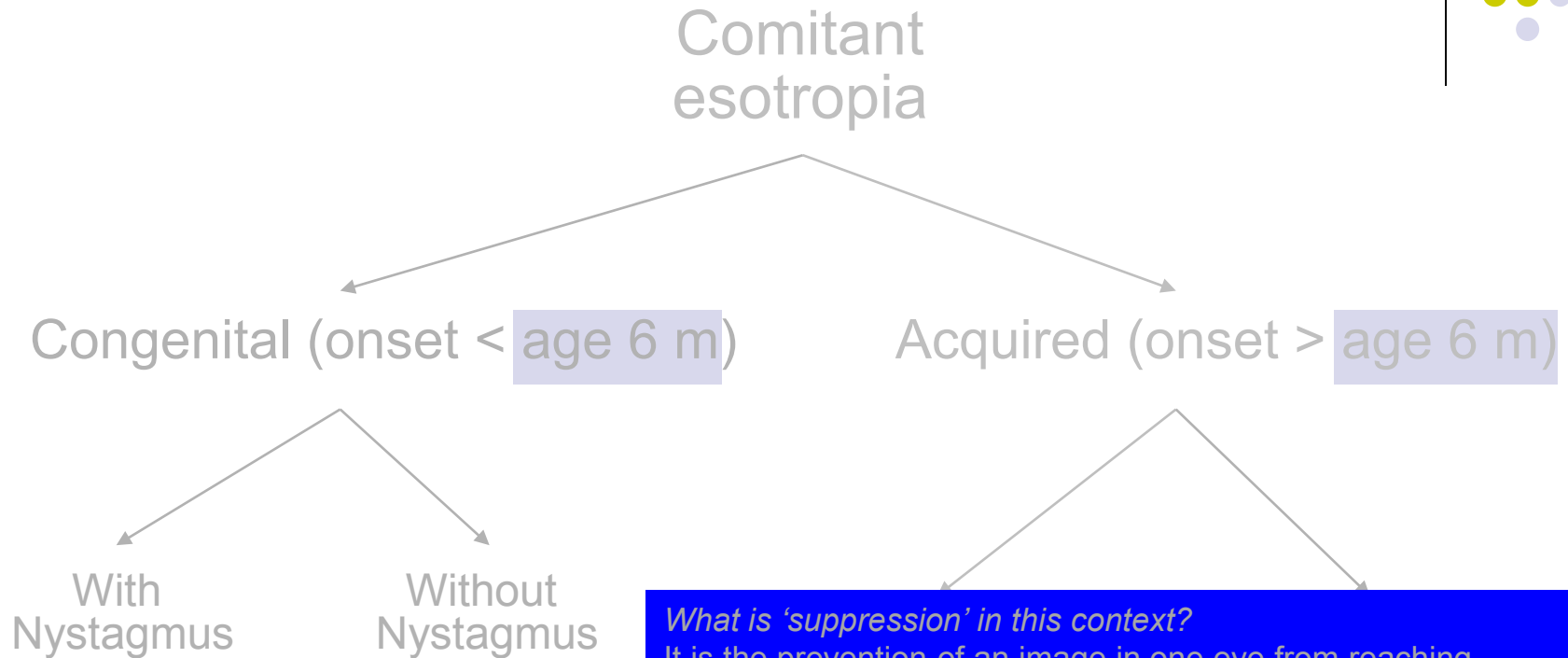
Accommodative

- 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



What is 'suppression' in this context?

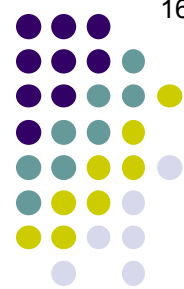
It is the prevention of an image in one eye from reaching conscious awareness

Accommodative

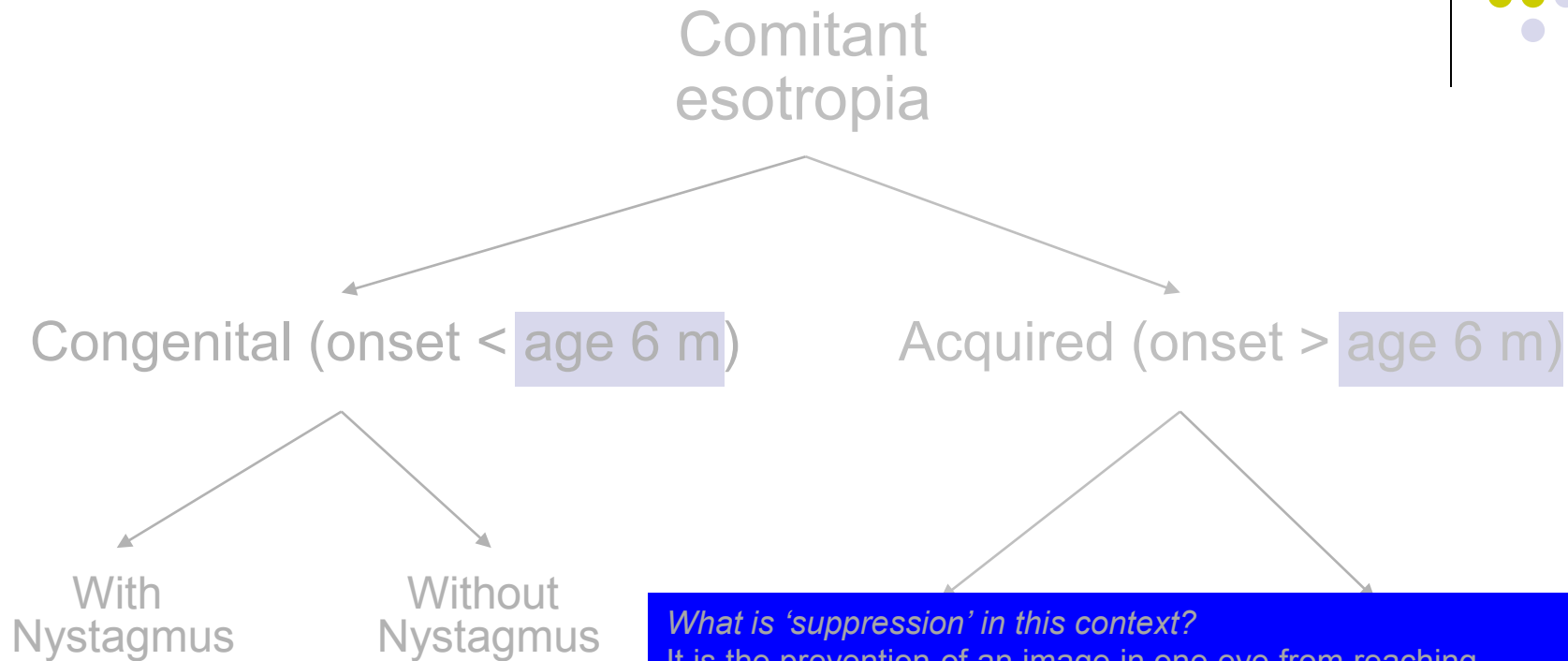
- Onset between ages 6 months - 2 years
- Initially...intermittent, eventually constant
- Amblyopia is...common
- c/o diplopia early, but stop after developing a

What does it mean to say a suppression scotoma is 'facultative'?

facultative suppression scotoma



Comitant Esotropia



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 and 2 years
- Initially...intermittent, eventually constant
- Amblyopia is...common
- c/o diplopia early, but stop after developing a

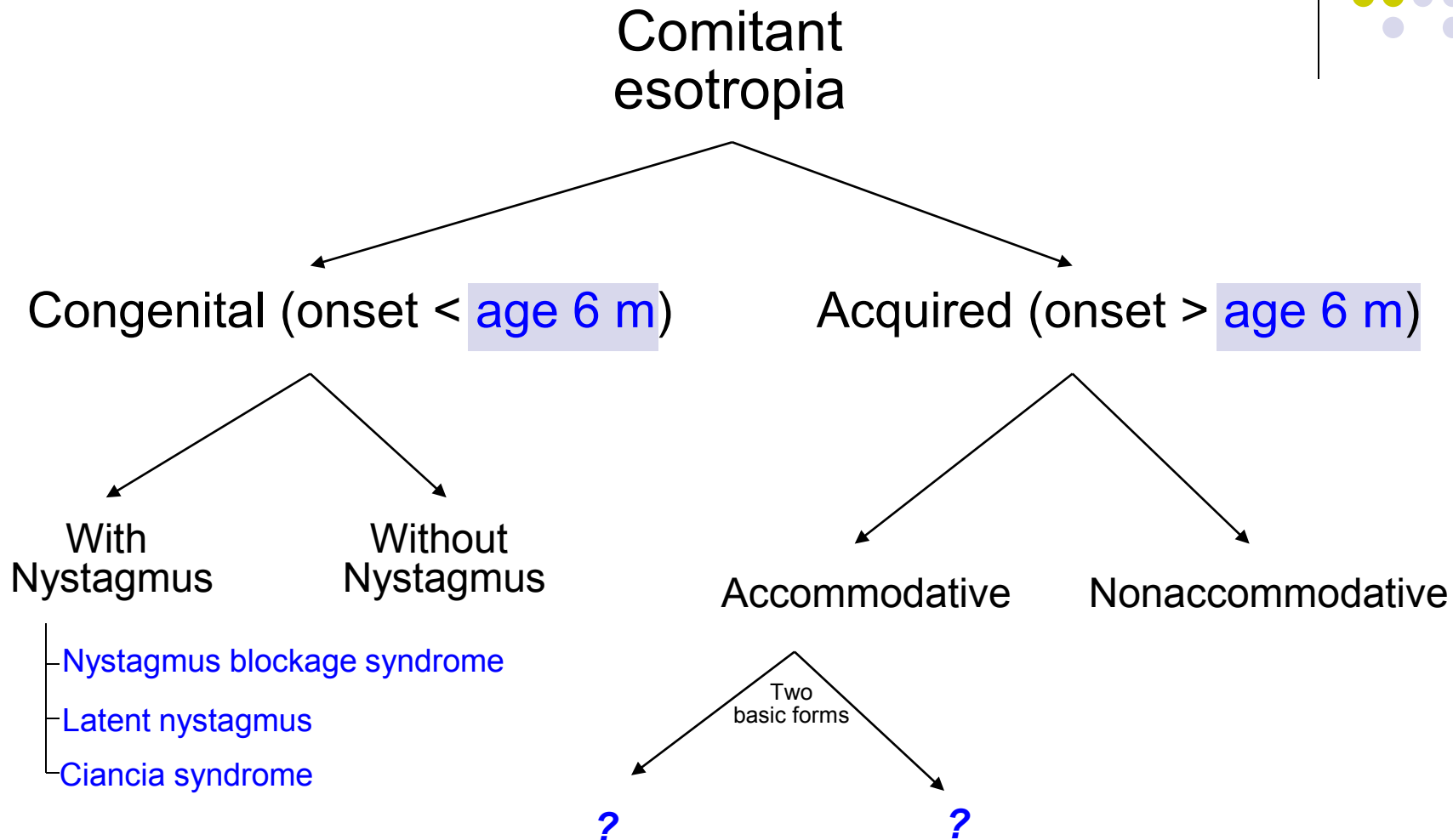
What does it mean to say a suppression scotoma is 'facultative'?

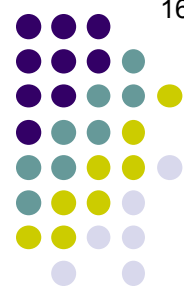
It means suppression occurs only while the eye is deviated

facultative suppression scotoma

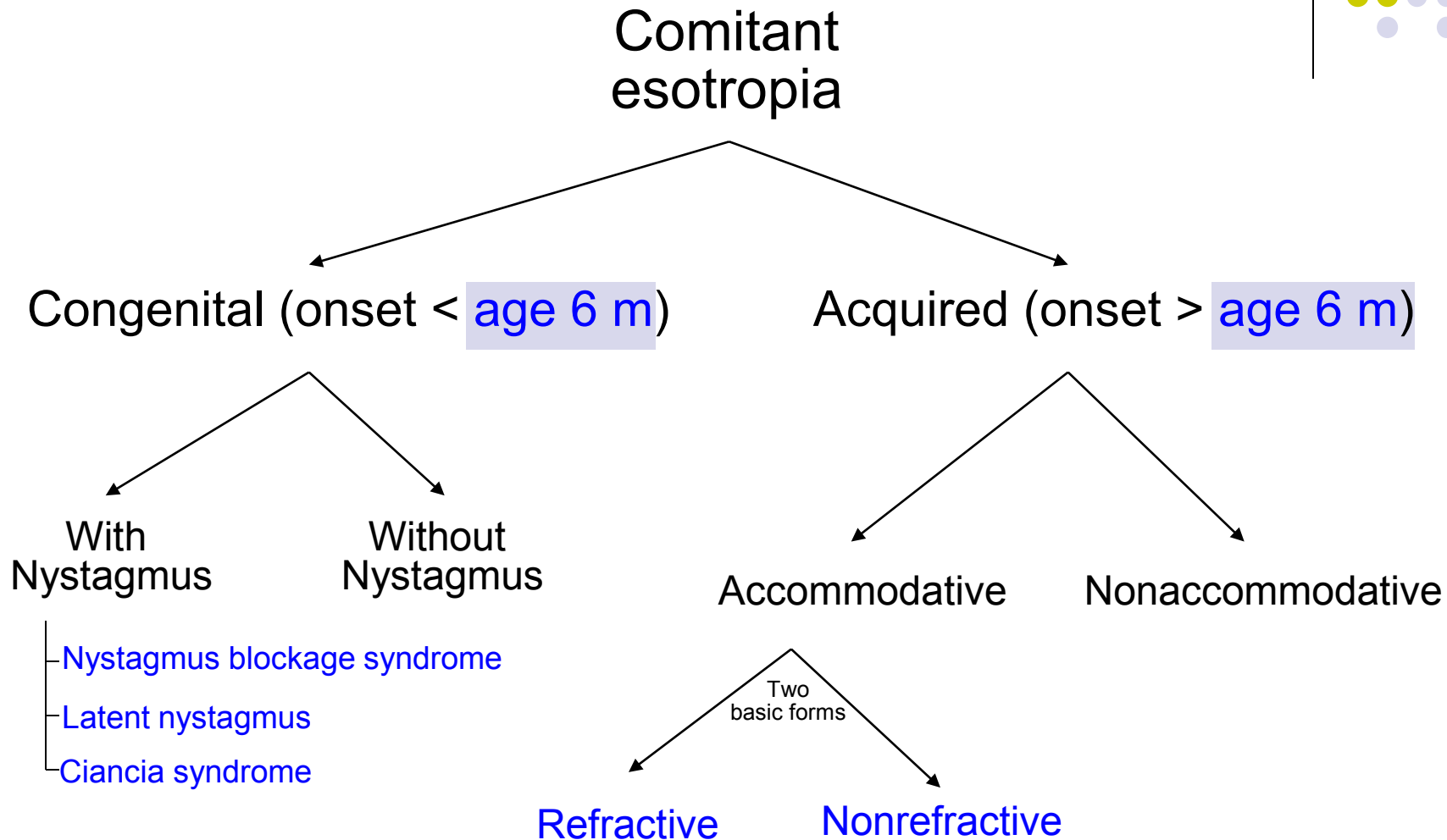


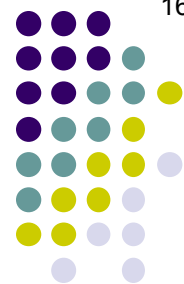
Comitant Esotropia





Comitant Esotropia





Comitant Esotropia

Comitant esotropia

Accommodative: **Refractive**

--Combo of uncorrected [] and inadequate []

Latent nystagmus

Ciancia syndrome

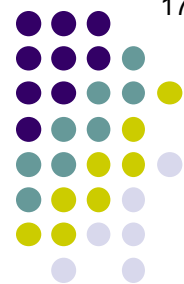
Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

Comitant esotropia

*Accommodative: **Refractive***

--Combo of uncorrected **hyperopia** and inadequate **divergence**

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

Accommodative

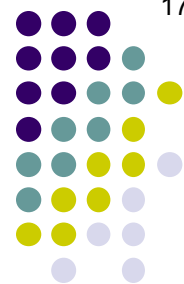
Nonaccommodative

Refractive

Nonrefractive

Latent nystagmus

Ciancia syndrome



Comitant Esotropia

Comitant esotropia

Accommodative: Refractive

–Combo of uncorrected hyperopia and inadequate **divergence**

Acquired (onset > age 6 m)

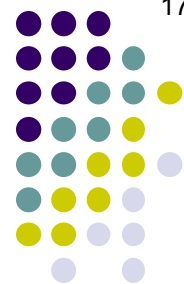
What does the term divergence refer to in this context?

Refractive Nonaccommodative

↳ Ciancia syndrome

Refractive

Nonrefractive



Comitant Esotropia

Comitant esotropia

Accommodative: Refractive

–Combo of uncorrected hyperopia and inadequate **divergence**

Acquired (onset > age 6 m)

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

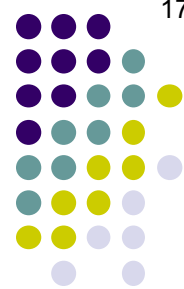
ve

Nonaccommodative

↳ Ciancia syndrome

Refractive

Nonrefractive



Comitant Esotropia

Comitant esotropia

Accommodative: Refractive

–Combo of uncorrected hyperopia and inadequate **divergence**

Acquired (onset > age 6 m)

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?

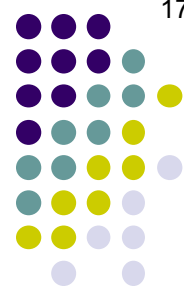
↳ Ciancia syndrome

Refractive

Nonrefractive

ve

Nonaccommodative



Comitant Esotropia

Comitant esotropia

Accommodative: Refractive

–Combo of uncorrected hyperopia and inadequate **divergence**

Acquired (onset > age 6 m)

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

↳ Ciancia syndrome

Refractive

Nonrefractive

ve

Nonaccommodative



Comitant Esotropia

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

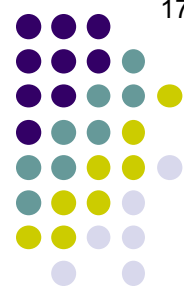
What is the general term for the set of efferent pathways responsible for establishing and maintaining bifixation on objects of regard?

The **supranuclear pathways**

↳ Ciancia syndrome

Refractive

Nonrefractive



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**

Latent nystagmus

Ciancia syndrome

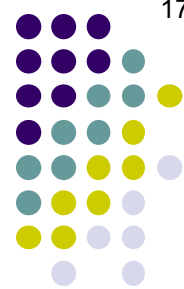
Acquired (onset > **age 6 m**)

Accommodative

Nonaccommodative

Refractive

Nonrefractive




Comitant Esotropia

Comitant esotropia

Accommodative: **Refractive**

--Combo of uncorrected **hyperopia** and inadequate **divergence**

--Average refractive error: **+4**

--Strabismus usually measures ET  ET'

Latent nystagmus

Ciancia syndrome

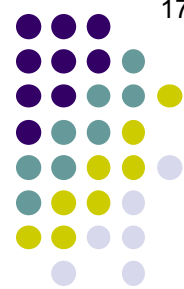
Acquired (onset > **age 6 m**)

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

Comitant esotropia

Accommodative: **Refractive**

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

- Latent nystagmus
- Ciarcia 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
- Strabismus usually measures ET \approx ET'

Management

- Prescribe...[refraction]

- Latent nystagmus
- Ciancia syndrome

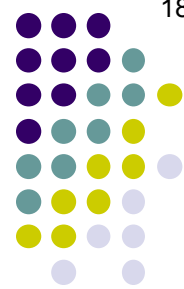
Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

Comitant esotropia

Accommodative: **Refractive**

--Combo of uncorrected **hyperopia** and inadequate **divergence**

--Average refractive error: **+4**

--Strabismus usually measures ET \approx ET'

Management

--Prescribe...**full CR**

Latent nystagmus

Ciancia syndrome

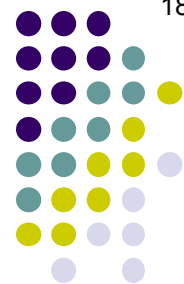
Acquired (onset > **age 6 m**)

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

Comitant esotropia

Accommodative: **Refractive**

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

Management

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

- Latent nystagmus
- Ciancia syndrome

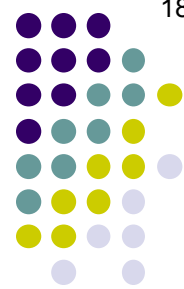
Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

Comitant esotropia

Accommodative: **Refractive**

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

Management

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

- Latent nystagmus
- Ciancia syndrome

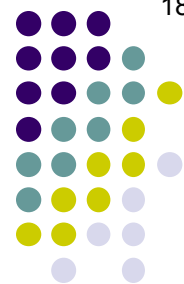
Acquired (onset > **age 6 m**)

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

Comitant esotropia

Accommodative: **Refractive**

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

Latent nystagmus

Ciancia syndrome

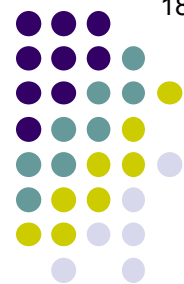
Acquired (onset > **age 6 m**)

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

Comitant esotropia

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

> age 6 m)

Management

--Prescribe...**full CR**

--If residual ET' with full CR: Rx...**bifocal**

--Try to wean off plus over time

Latent nystagmus

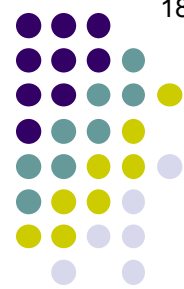
Ciancia syndrome

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

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.

> age 6 m)

Management

--Prescribe...**full CR**

--If residual ET' with full CR: Rx...**bifocal**

--Try to wean off plus over time

Latent nystagmus

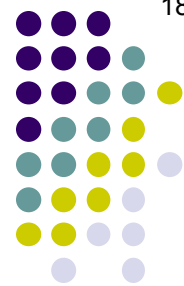
Ciancia syndrome

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

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 drug to paralyze accommodation, thereby making the child more accepting of the full-CR spectacles.

> age 6 m)

Management

--Prescribe...**full CR**

--If residual ET' with full CR: Rx...**bifocal**

--Try to wean off plus over time

└ Latent nystagmus

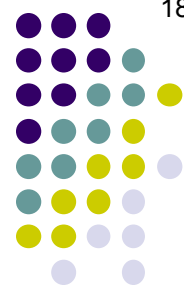
└ Ciancia syndrome

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

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** to paralyze accommodation, thereby making the child more accepting of the full-CR spectacles.

> age 6 m)

Management

--Prescribe...**full CR**

--If residual ET' with full CR: Rx...**bifocal**

--Try to wean off plus over time

Latent nystagmus

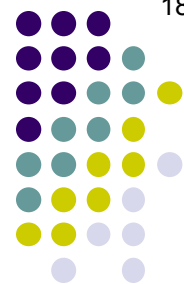
Ciancia syndrome

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

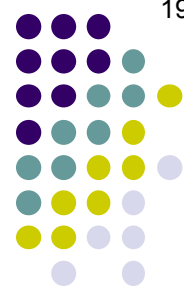
*Accommodative: **Nonrefractive***
--ET secondary to...

Accommodative

Nonaccommodative

Refractive

Nonrefractive



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

Refractive

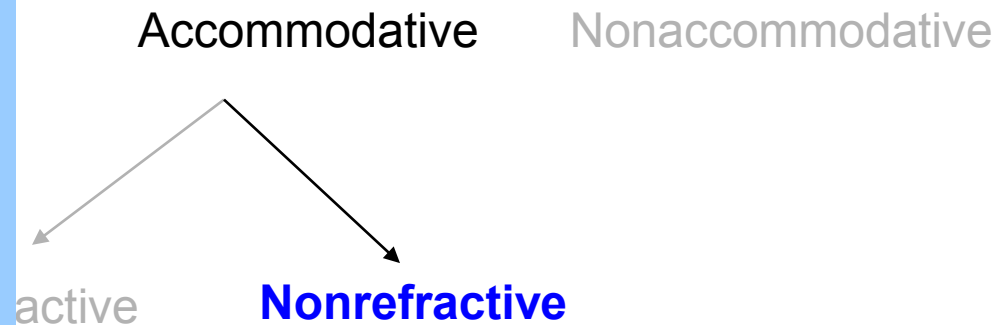
Nonrefractive

Comitant Esotropia



What is the AC/A ratio?

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



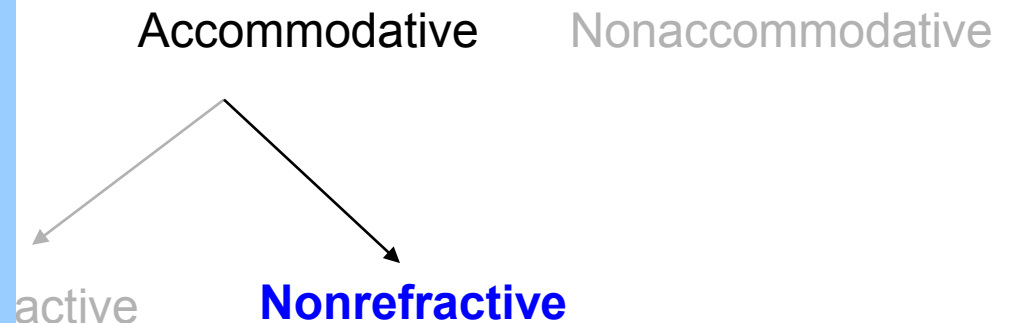
Comitant Esotropia



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**.

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



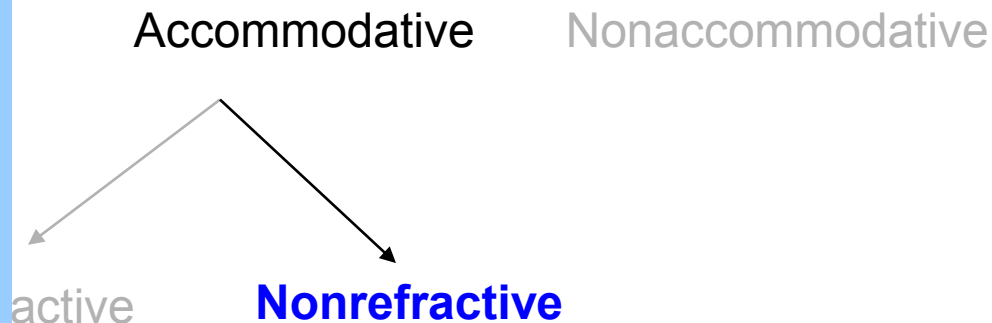


Comitant Esotropia

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**



Comitant Esotropia

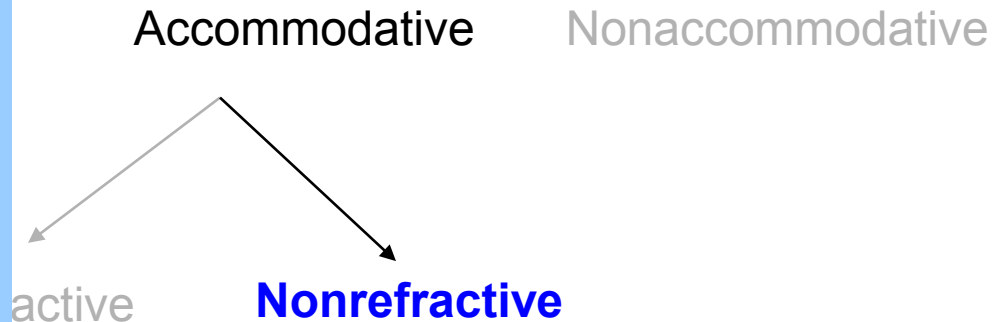


What is the AC/A ratio?

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**

What are the units for:
--AC?
--A?



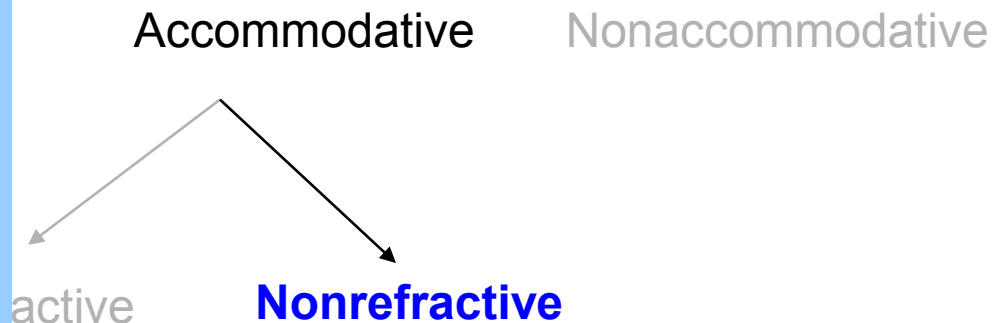
Comitant Esotropia

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**

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





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~~

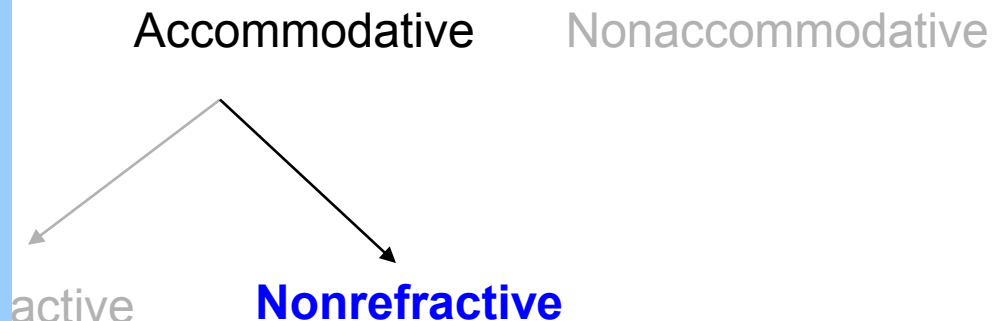
--ET secondary to... **high AC/A ratio**

What are the units for:

--AC? **Prism diopters**

--A? **Diopters**

What is a normal AC/A?



Comitant Esotropia



What is the AC/A ratio?

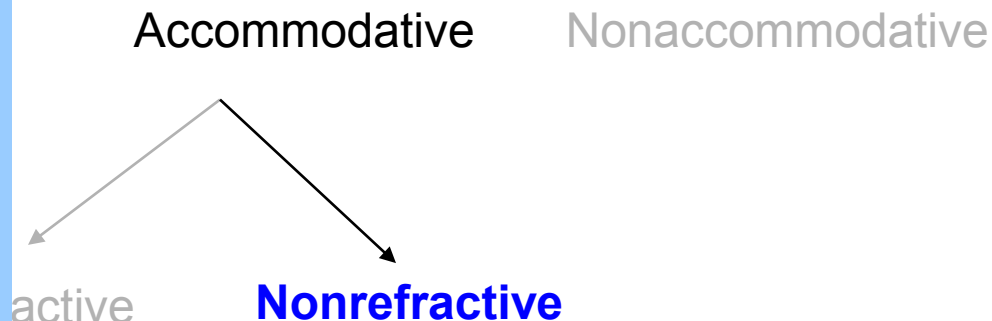
The *near triad* consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative 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**

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

What is a normal AC/A?
Around 3:1 to 5:1





Comitant Esotropia

What is the AC/A ratio?

How is the AC/A ratio measured?

When there is more accommodation than distance vision, the ET is greatest at near.)

Accommodative: ~~Nonrefractive~~

--ET secondary to... **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

Accommodative

Nonaccommodative

active

Nonrefractive



Comitant Esotropia

What is the AC/A ratio?

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.

$$\text{AC/A ratio} = \frac{(\text{ET}' \text{ without add} - \text{ET}' \text{ with add})}{3}$$

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

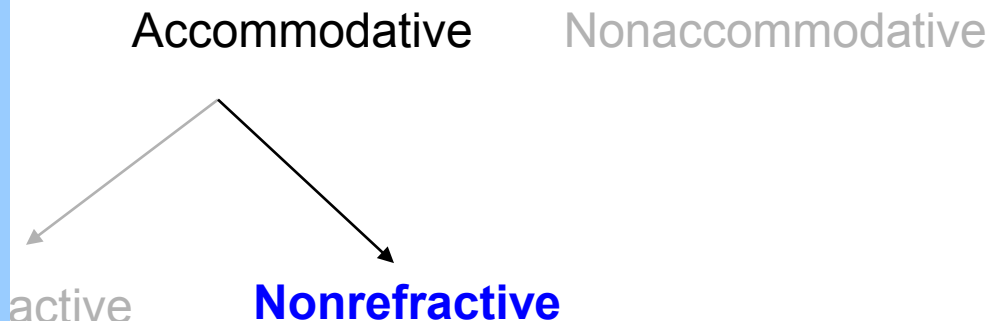
Children with more accommodation than distance vision, the ET is greatest at near.

Accommodative: ~~Nonrefractive~~

--ET secondary to... **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

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

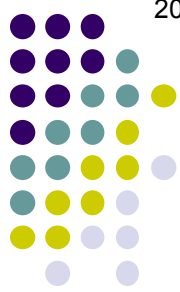
Accommodative: Nonrefractive
 --ET secondary to...high AC/A ratio
 --ET $\begin{matrix} > \\ < \\ = \end{matrix}$ ET'

Accommodative

Nonaccommodative

active

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

active

Nonrefractive

Comitant Esotropia

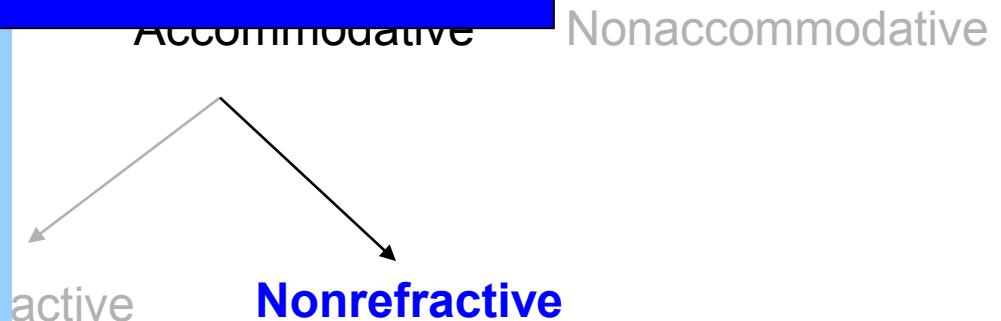
What is the AC/A ratio?

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'





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'

How much greater is the ET at near?

Accommodative

Nonaccommodative

active

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'

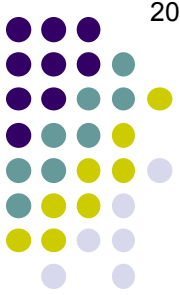
How much greater is the ET at near?
At least 10Δ

Accommodative

Nonaccommodative

active

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 #, but can be anything, even **myopic**

Accommodative

Nonaccommodative

active

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**

Accommodative

Nonaccommodative

active

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... #

Accommodative

Nonaccommodative

active

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

active

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

Nonaccommodative

active

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

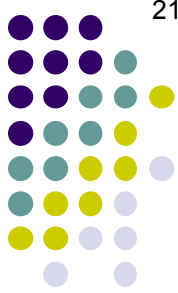
- No consensus on optimum treatment
- Give bifocal of about...+3
- Reasonable treatment goals:
 - Distance: **Fusion**
 - Near: **<10Δ ET**

Accommodative

Nonaccommodative

active

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: **Fusion**
 - Near: **<10Δ ET**

*Can a high AC/A ratio be a component of an **exo**tropia?*

active

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: **Fusion**

--Near: **<10Δ ET**

Can a high AC/A ratio be a component of an **exo**tropia?
Yes

active

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: **Fusion**

--Near: **<10Δ ET**

Can a high AC/A ratio be a component of an **exo**tropia?
Yes

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

active

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: **Fusion**

--Near: **<10Δ ET**

Can a high AC/A ratio be a component of an **exo**tropia?
Yes

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

ET (by a lot)

active

Nonrefractive



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?

active

Nonrefractive



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

active

Nonrefractive



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?

active

Nonrefractive



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?

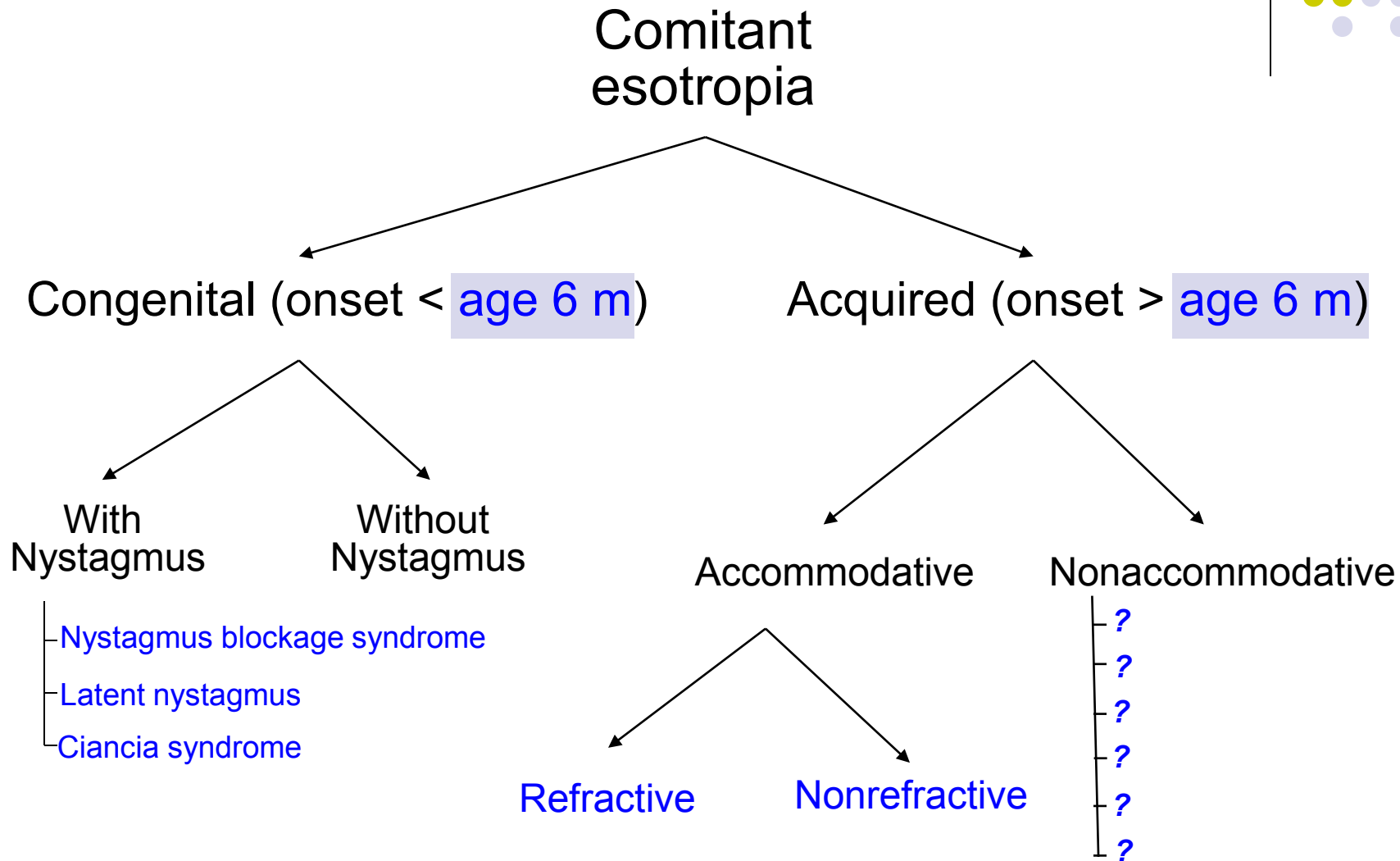
XT (by a lot)

active

Nonrefractive

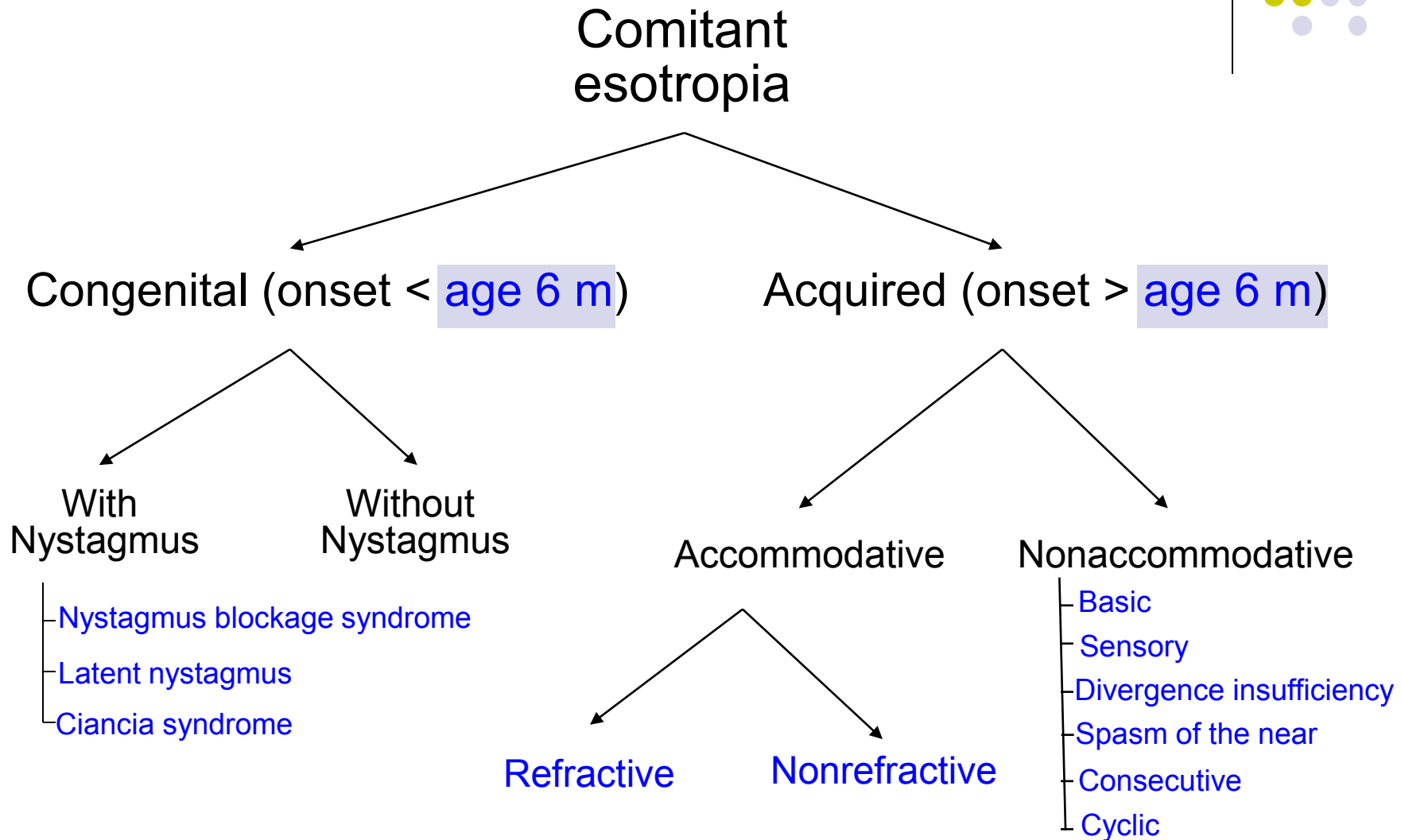


Comitant Esotropia



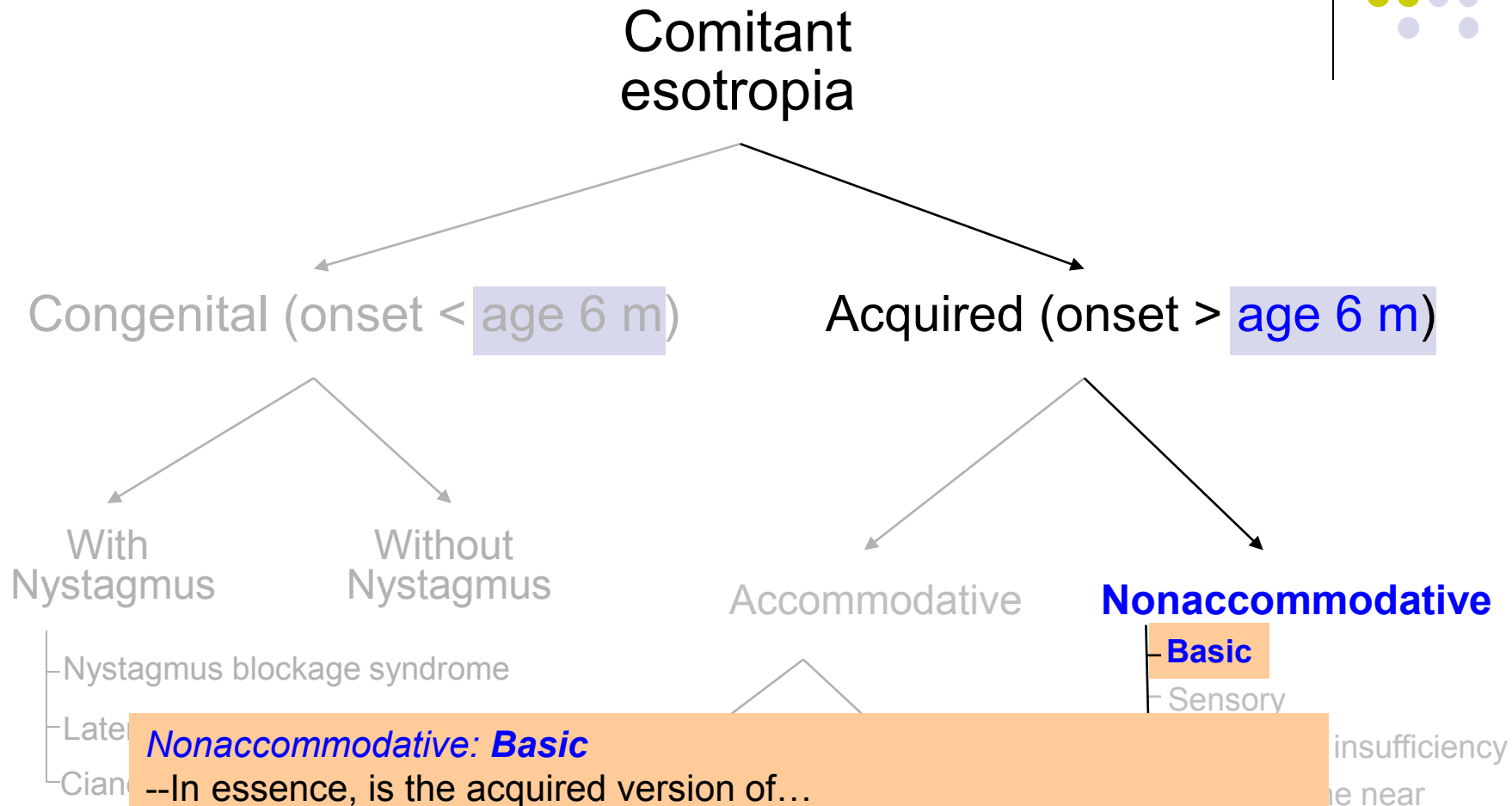


Comitant Esotropia



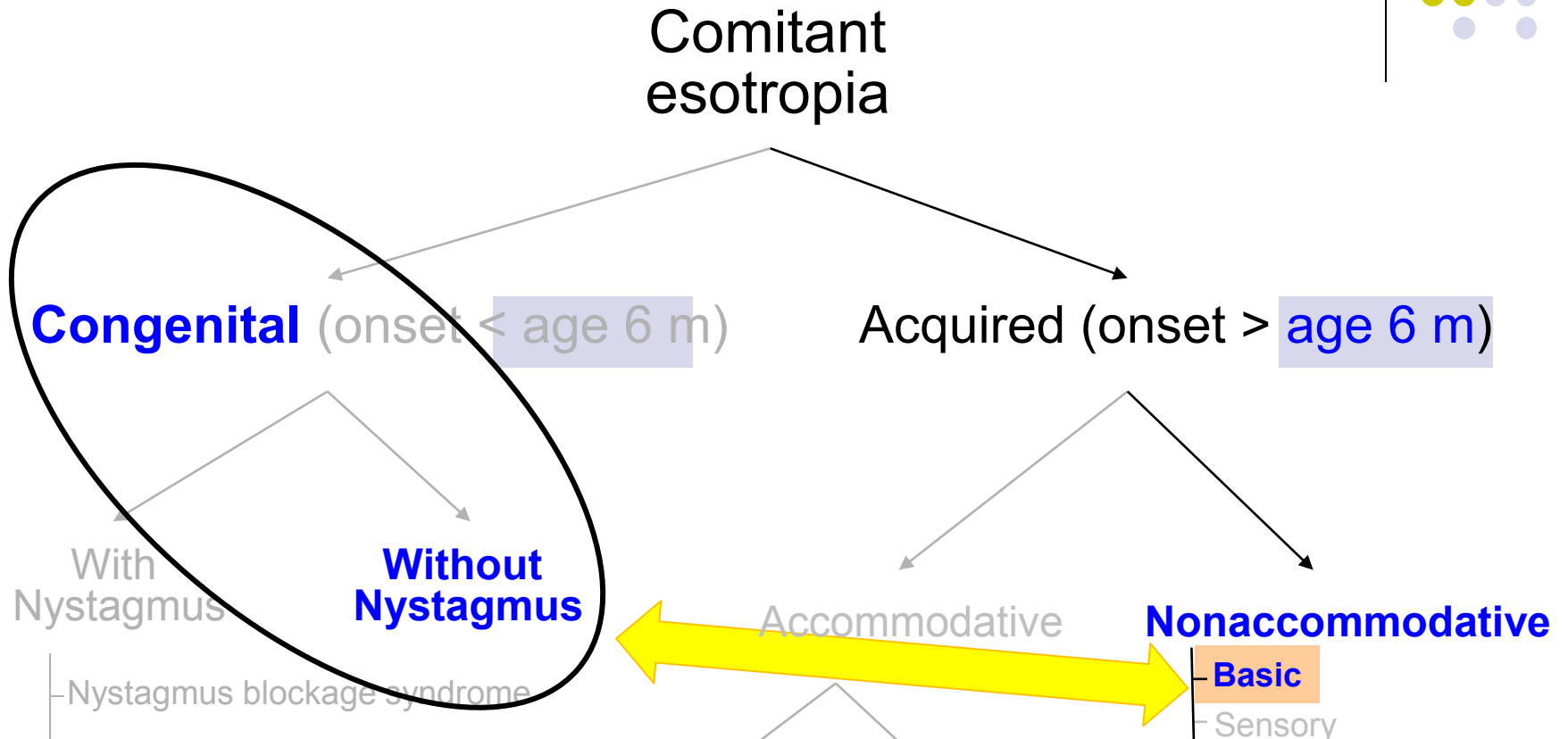


Comitant Esotropia





Comitant Esotropia



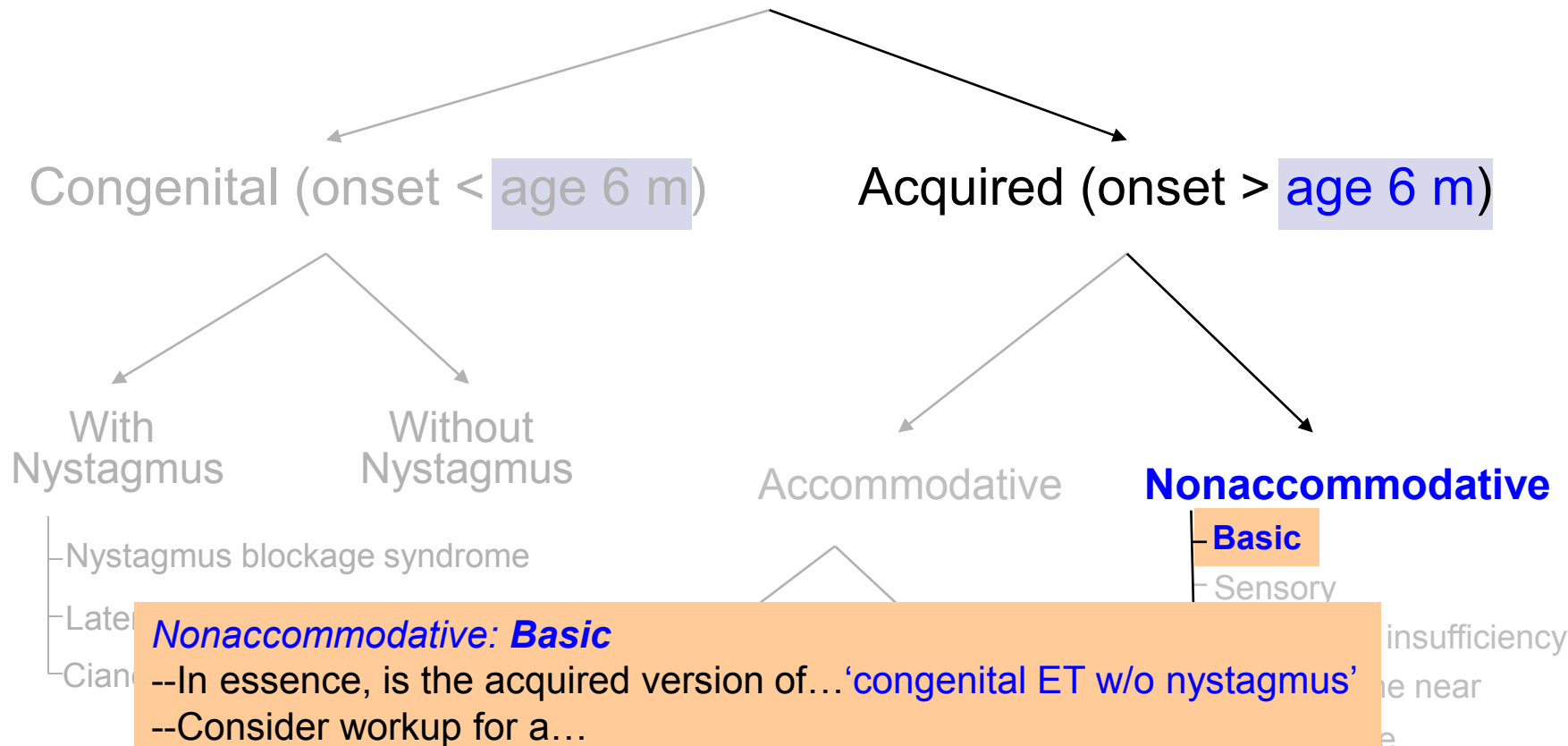
Nonaccommodative: Basic

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



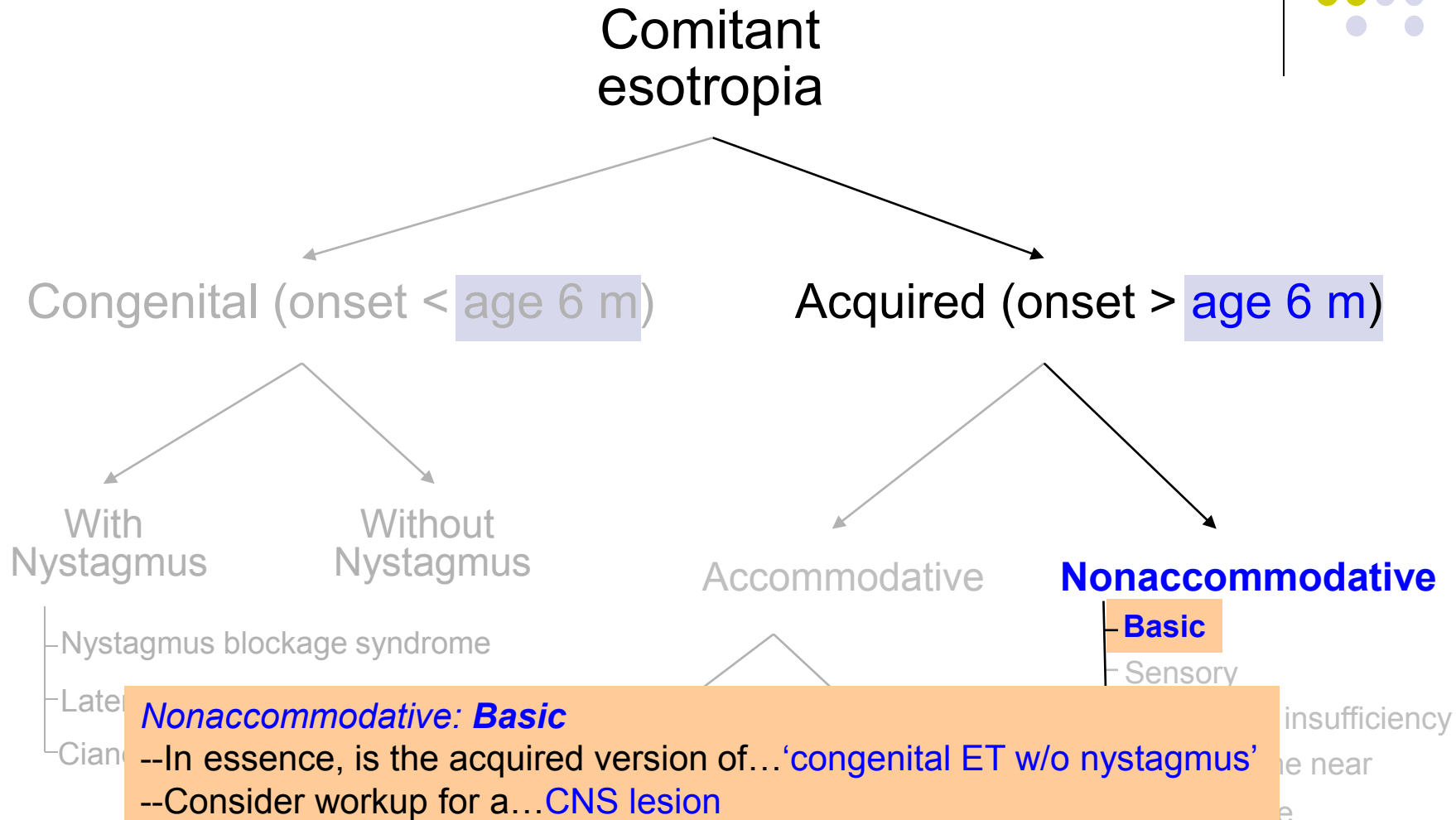
Comitant Esotropia

Comitant esotropia





Comitant Esotropia





Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Nystagmus blockage syndrome

Late

Cian

Nonaccommodative: Basic

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

--Consider workup for a **CNS lesion**

What would clue you in that a workup is warranted?

Accommodative

Nonaccommodative

Basic

Sensory

insufficiency

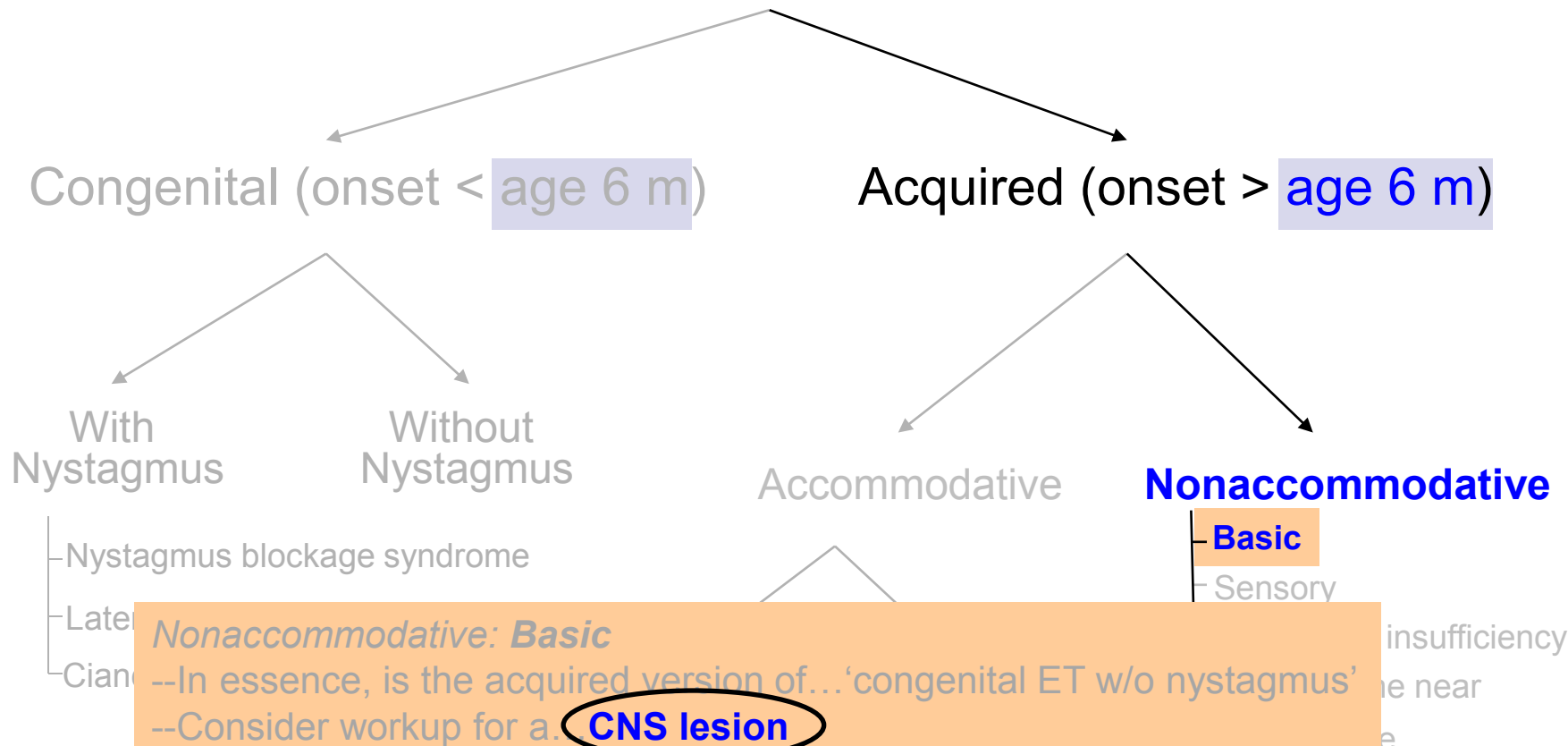
he near

e



Comitant Esotropia

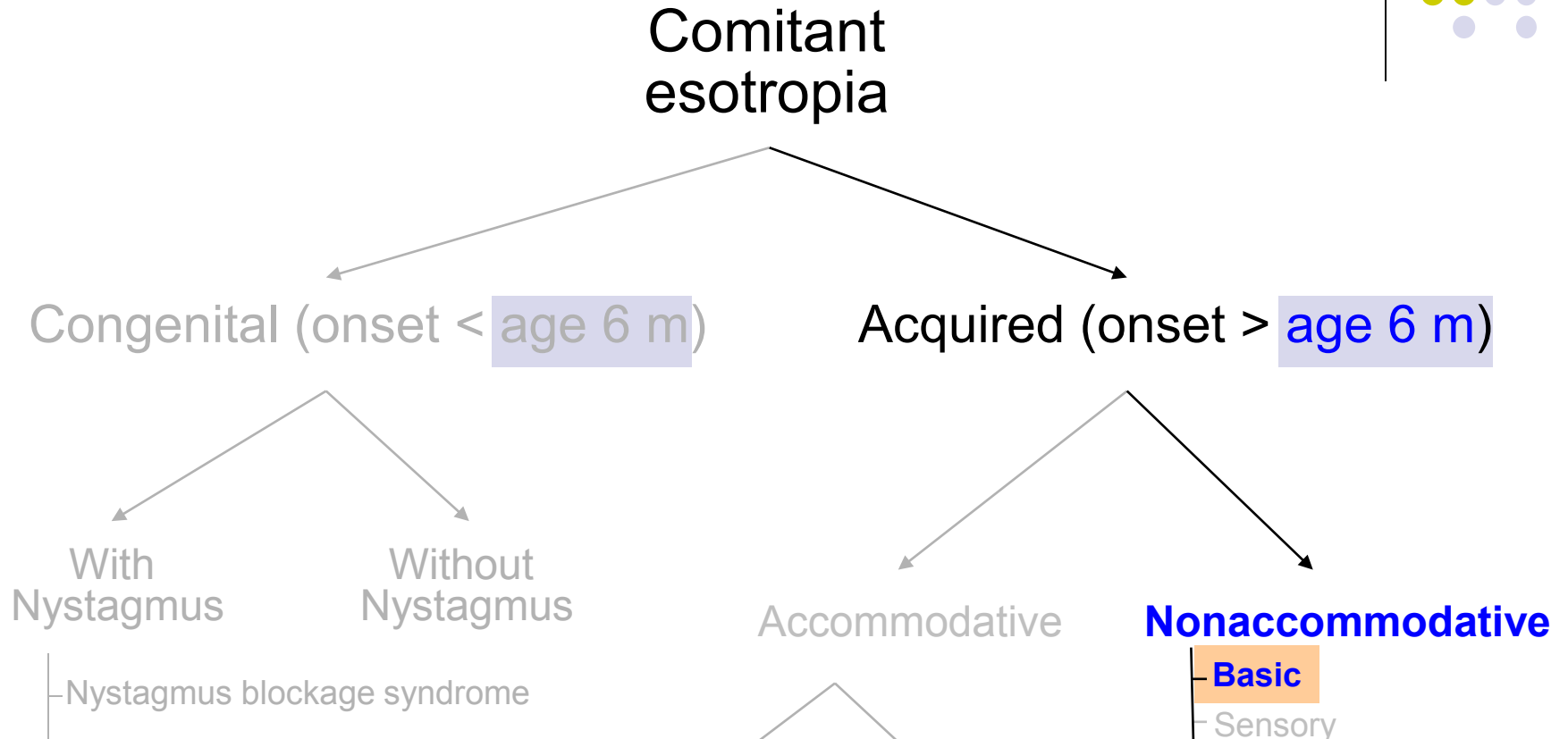
Comitant esotropia



What would clue you in that a workup is warranted?
 If there is anything hinky about the presentation, eg,
 neuro signs/symptoms; face turn; c/o HA; etc.



Comitant Esotropia



Nonaccommodative: Basic

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

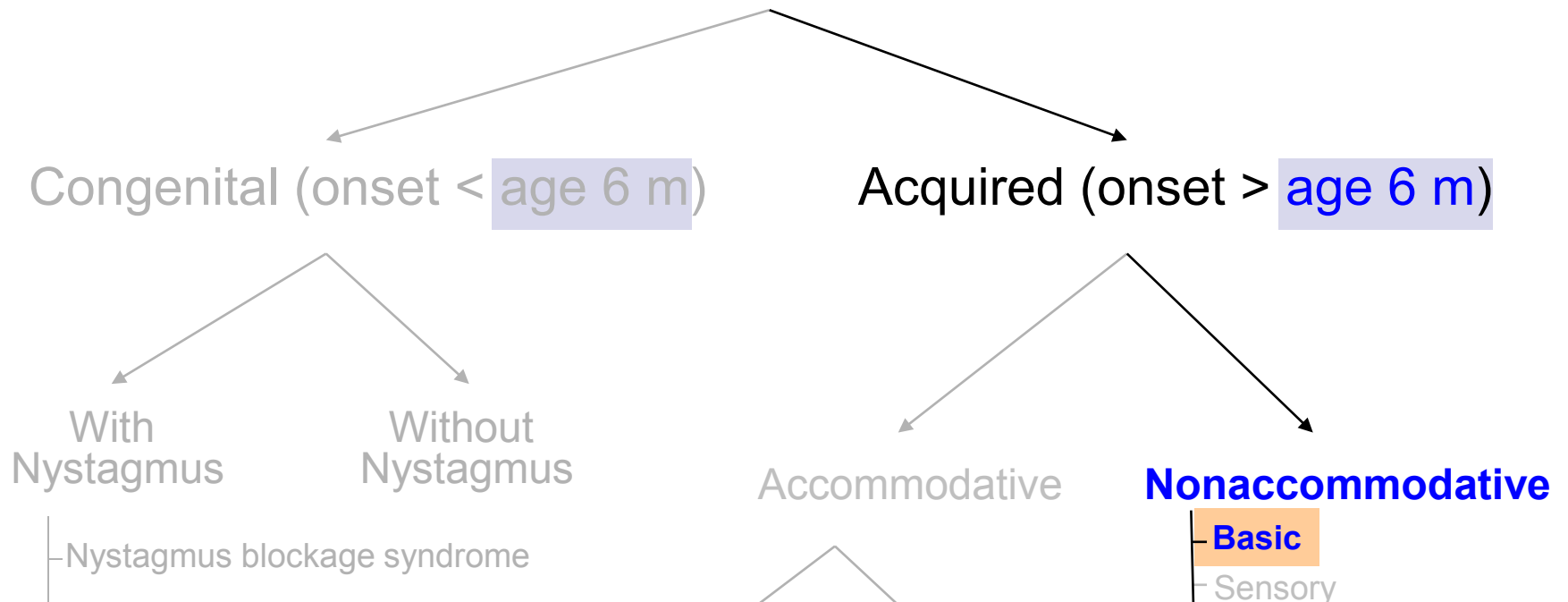
Management

--CR for any accommodative component



Comitant Esotropia

Comitant esotropia



Nonaccommodative: Basic

--In essence, is the acquired version of... 'congenital ET w/o nystagmus'
 --Consider workup for a... CNS lesion

Management

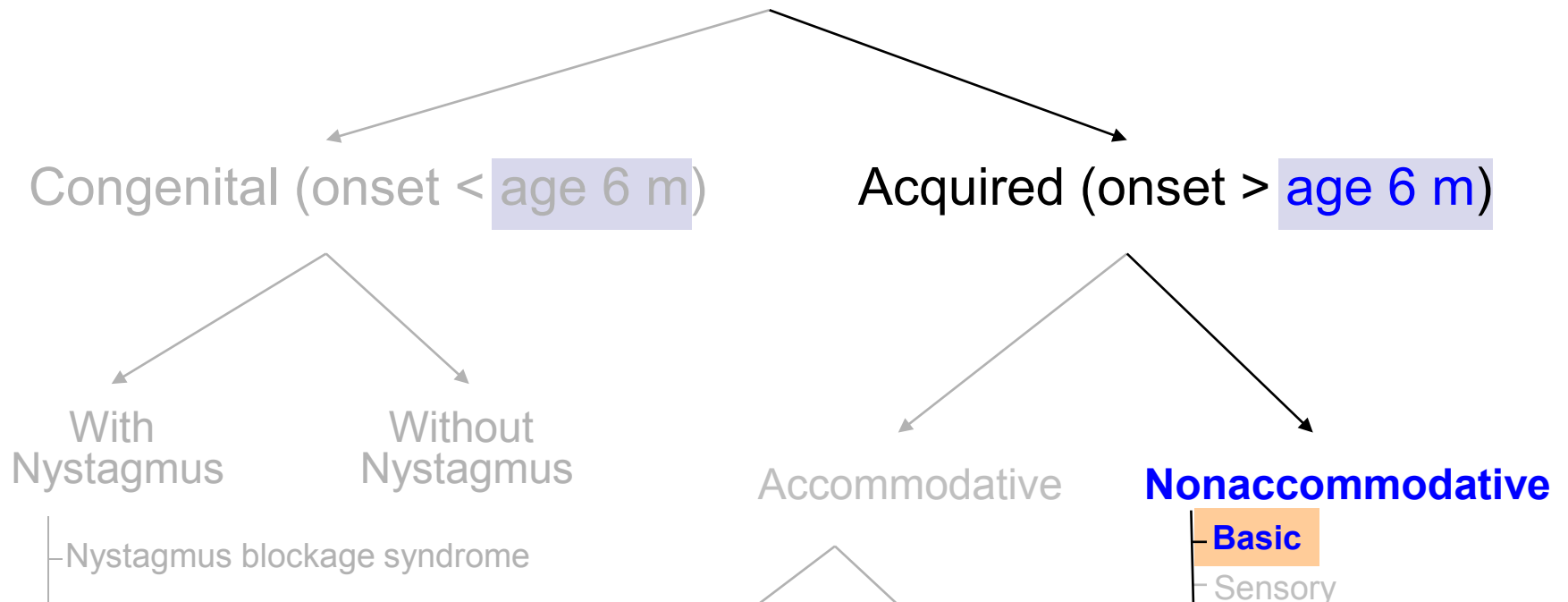
--CR for any accommodative component

--Consider two words (non-surg proc.) prior to four words (surgical procedure)



Comitant Esotropia

Comitant esotropia



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



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Nystagmus blockage syndrome

Accommodative

Nonaccommodative

Basic

What is prism adaptation?

--Consider **prism adaptation** prior to bilateral medial rectus recession



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Nystagmus blockage syndrome

Accommodative

Nonaccommodative

Basic

What is prism adaptation?

It is a process in which the pt is prescribed the full prism needed to nullify their 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.

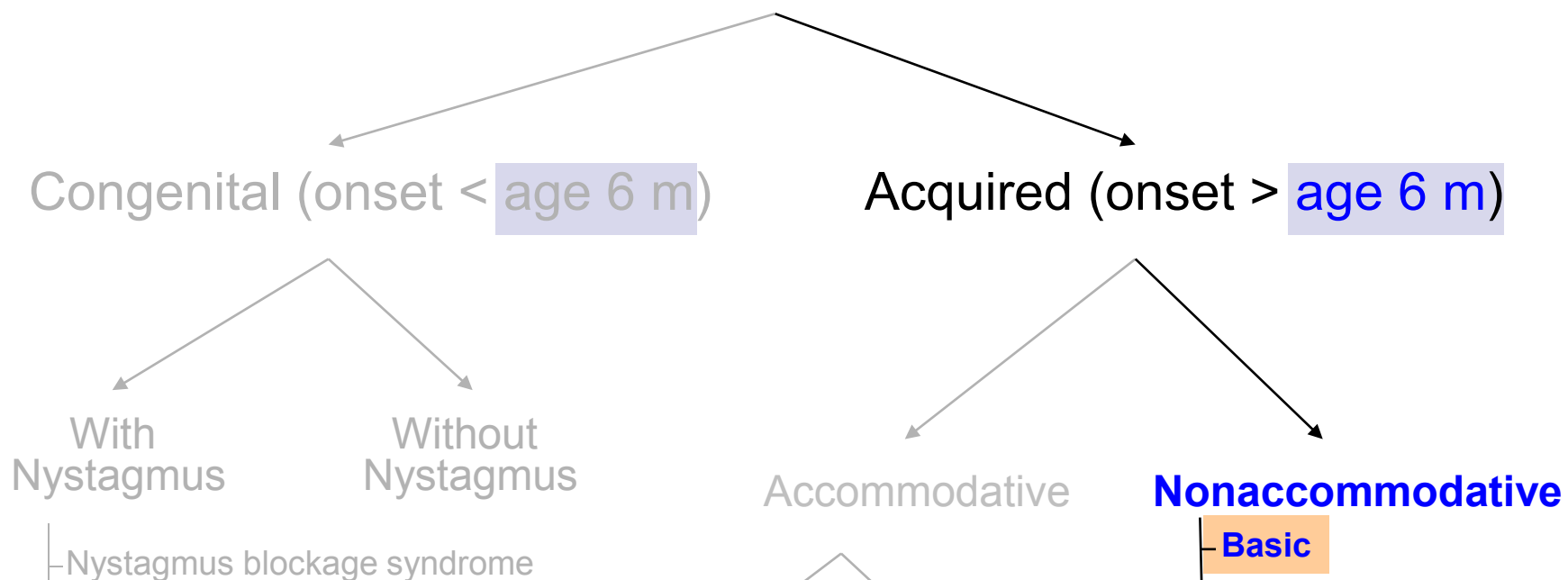
--Consider **prism adaptation** prior to bilateral medial rectus recession



Comitant Esotropia

Comitant Esotropia

Comitant esotropia



What is prism adaptation?

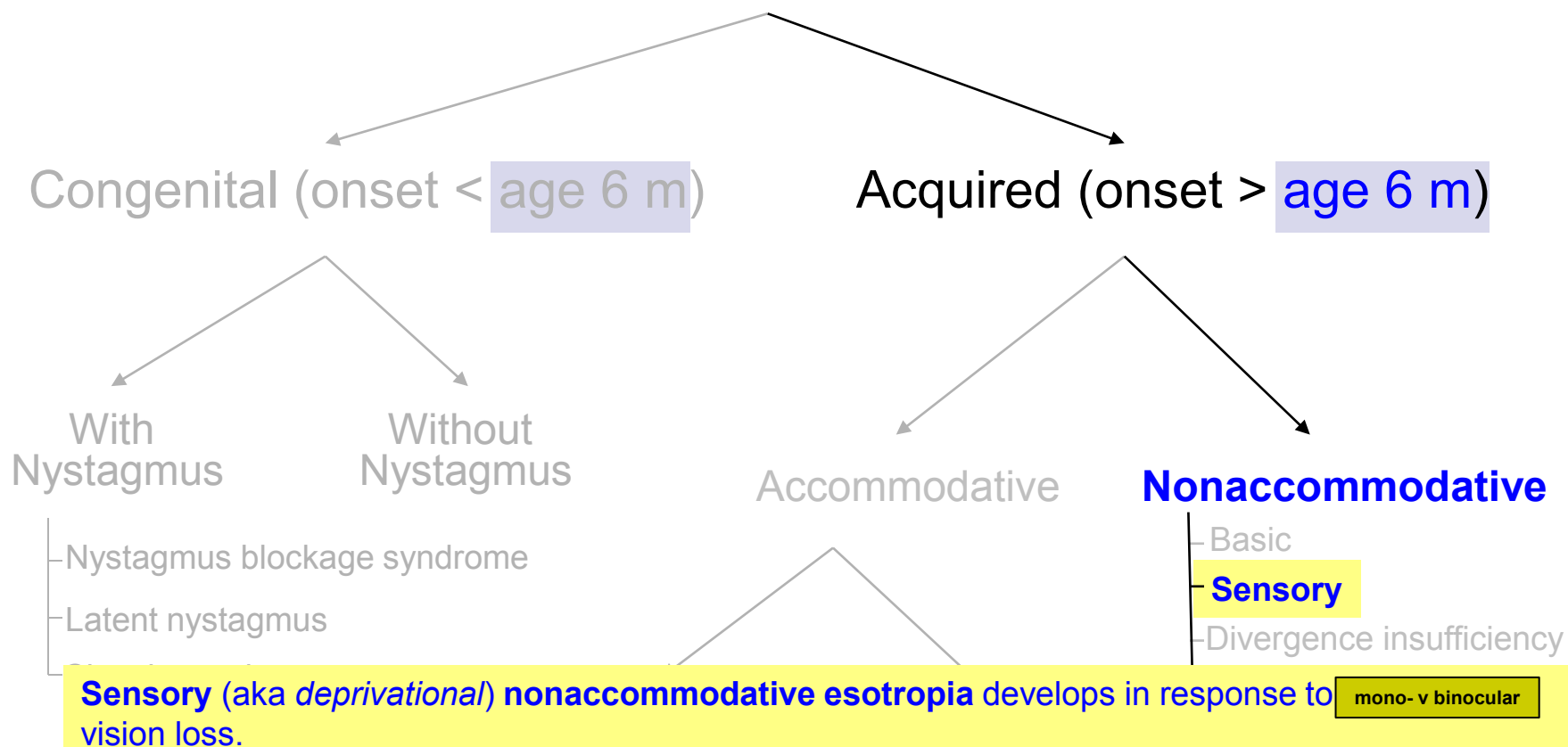
It is a process in which the pt is prescribed the full prism needed to nullify their ET, then re-evaluated periodically to determine whether additional ET has been 'uncovered.' If it has, their prescription is updated to nullify the additional ET. This is repeated until the prism prescription is stable,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

--Consider **prism adaptation** prior to bilateral medial rectus recession



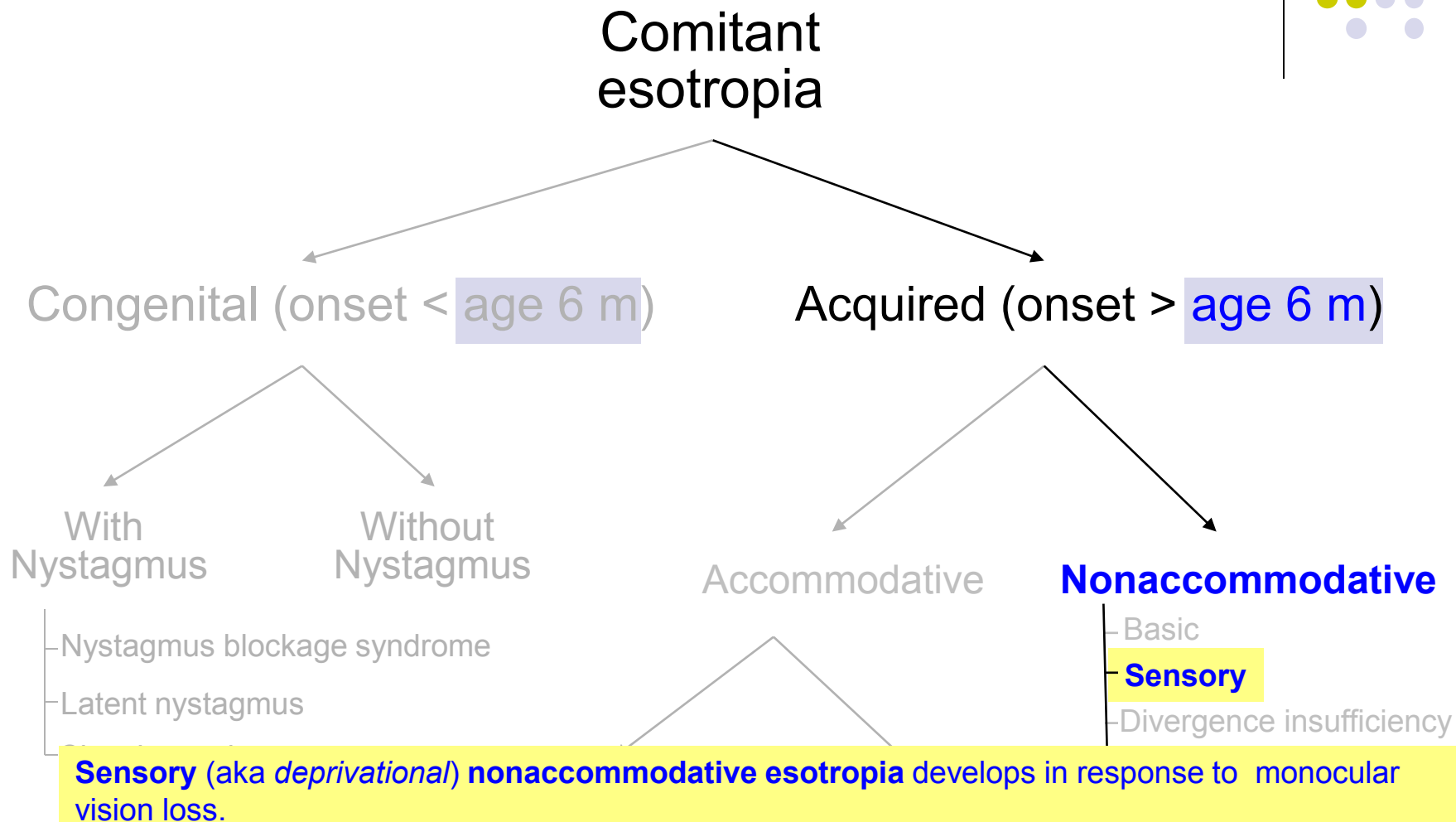
Comitant Esotropia

Comitant esotropia



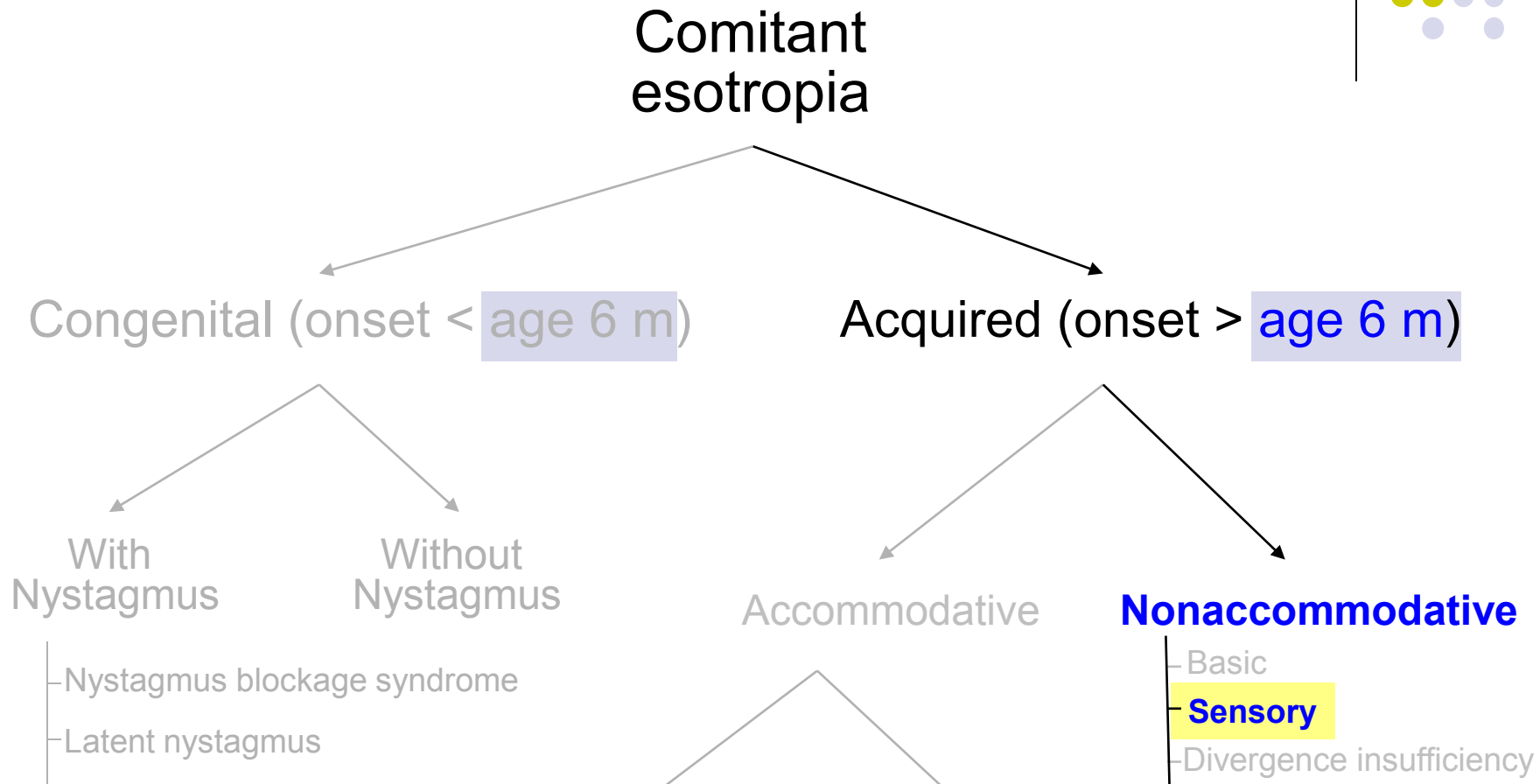


Comitant Esotropia





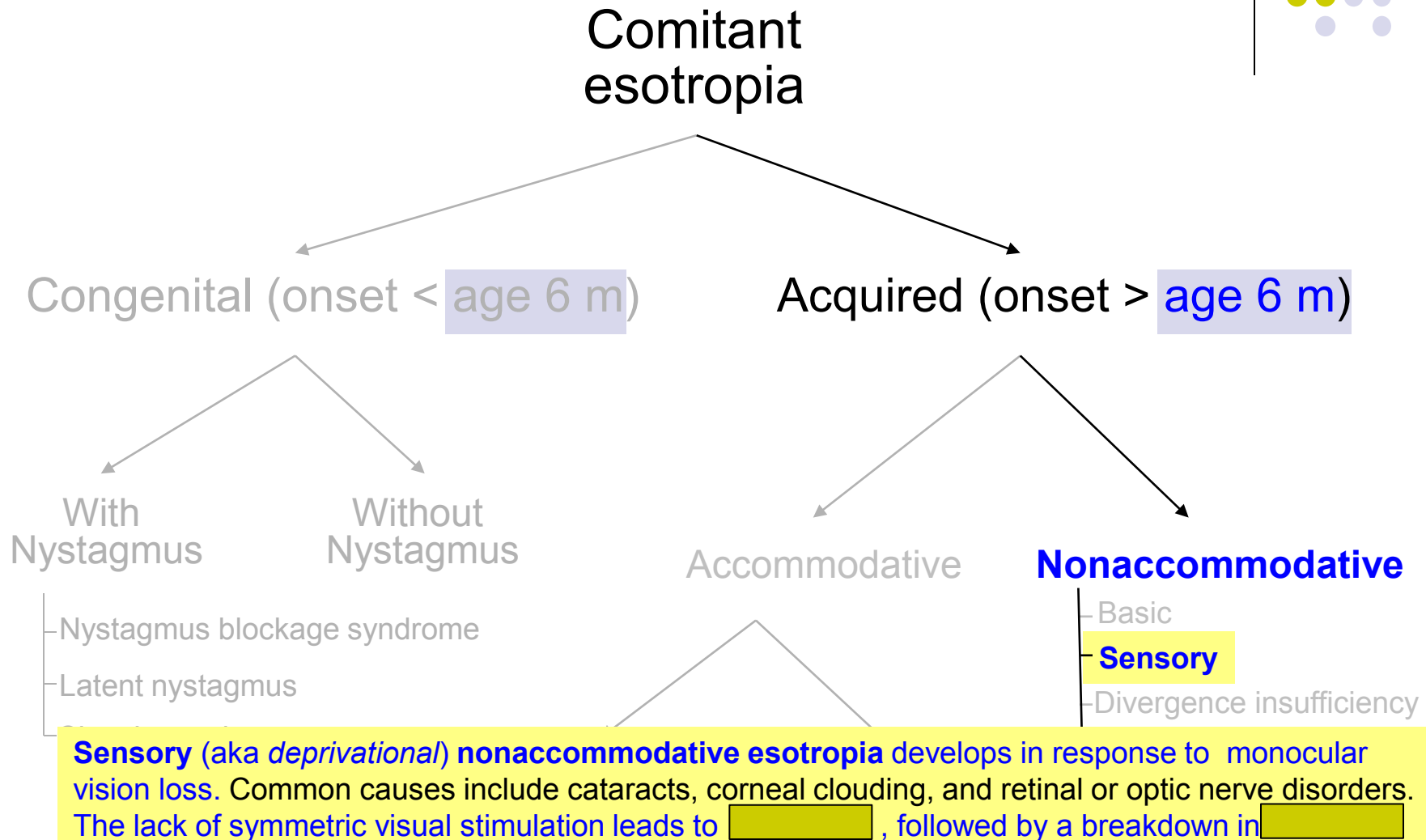
Comitant Esotropia



Sensory (aka *deprivational*) nonaccommodative esotropia develops in response to monocular vision loss. Common causes include cataracts, corneal clouding, and retinal or optic nerve disorders.

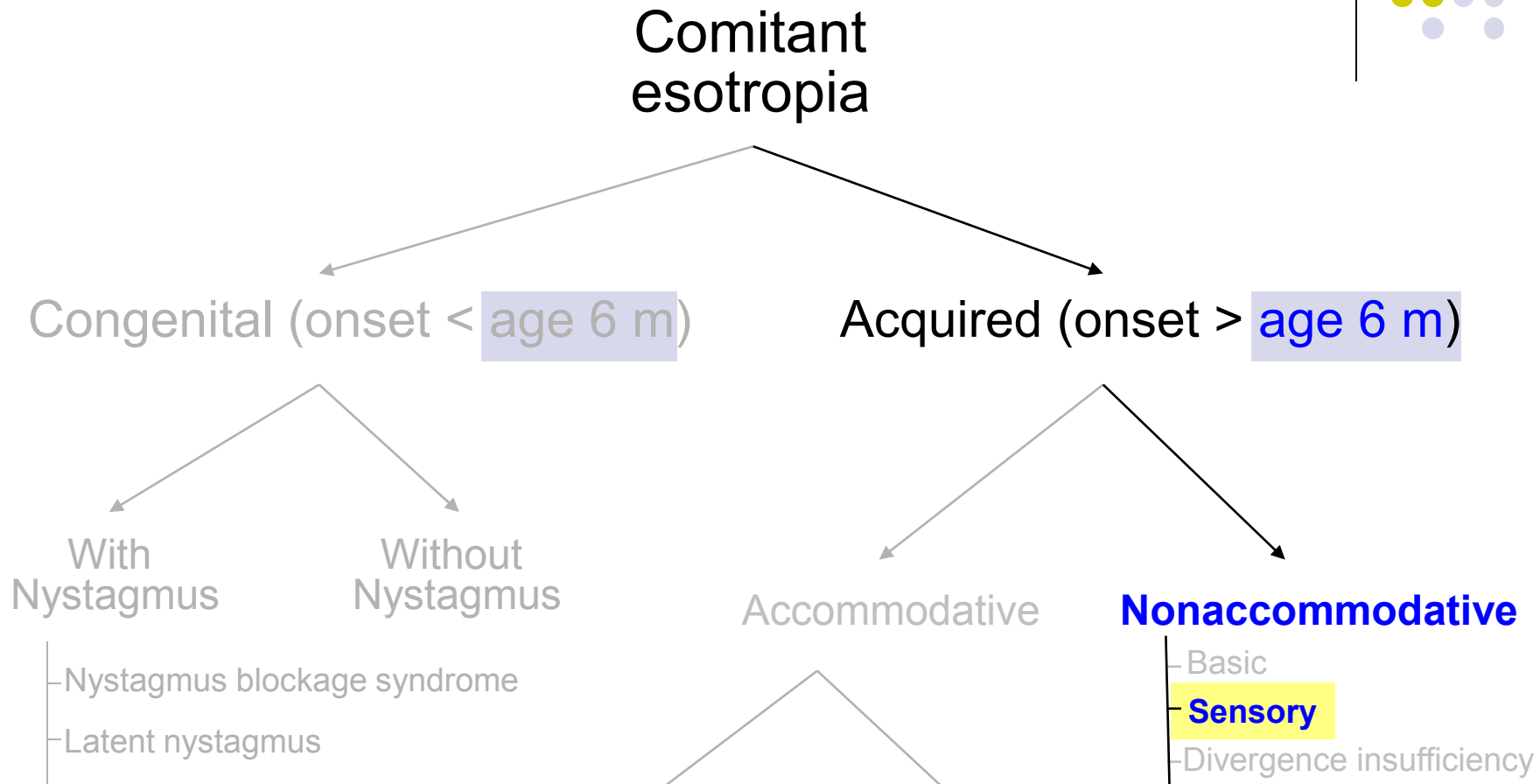


Comitant Esotropia





Comitant Esotropia



Sensory (aka *deprivational*) nonaccommodative esotropia develops in response to monocular vision loss. Common causes include cataracts, corneal clouding, and retinal or optic nerve disorders. The lack of symmetric visual stimulation leads to amblyopia, followed by a breakdown in fusion.



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With
Nystagmus

Without
Nystagmus

— Nystagmus blockage syndrome

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.

Accommodative

Nonaccommodative

— 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

— Nystagmus blockage syndrome

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 dist vs near**, but not **at dist vs near**

Accommodative

Nonaccommodative

— 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

— Nystagmus blockage syndrome

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.

Accommodative

Nonaccommodative

— Basic
— Sensory

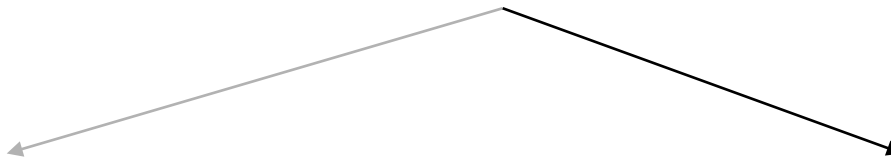
Divergence insufficiency

— Spasm of the near
— Consecutive
— Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to word + abb. or .

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**

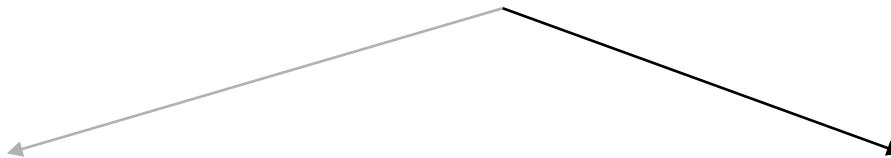
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP .

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**

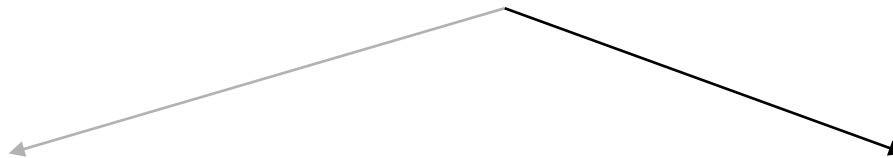
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or **increased ICP**.

What does ICP stand for in this context?

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**

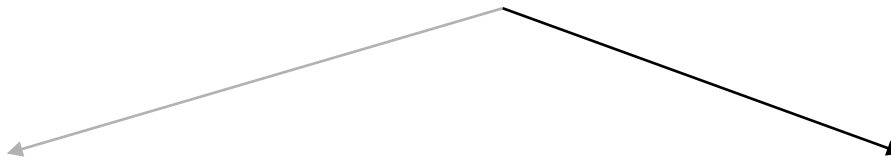
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



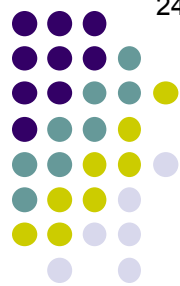
That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or **increased ICP**.

What does ICP stand for in this context?
Intracranial pressure

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**

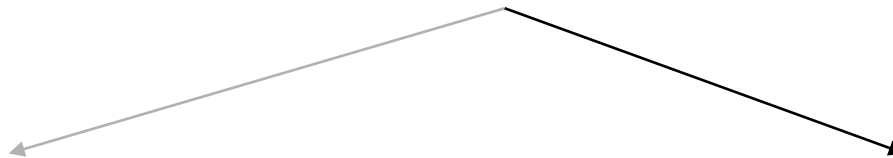
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures responsible for suspending the globe within the orbital space—ie, the [two words], [two words], and/or [two words].

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**

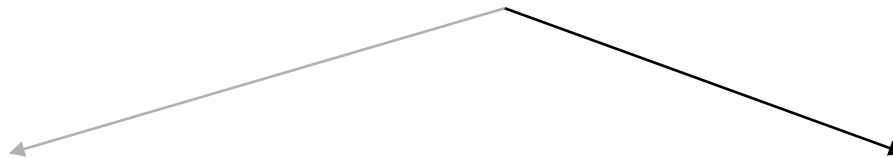
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP . Another cause to be aware of is 2ndry to involutional changes of the orbital structures responsible for suspending the globe within the orbital space—ie, the check ligaments , intermuscular bands , and/or Tenon's capsule .

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**

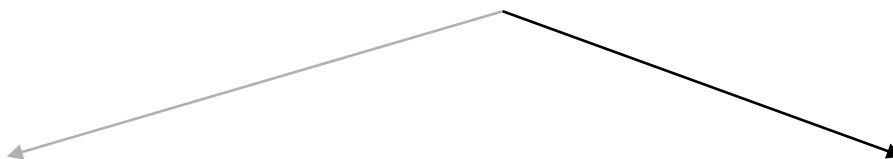
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



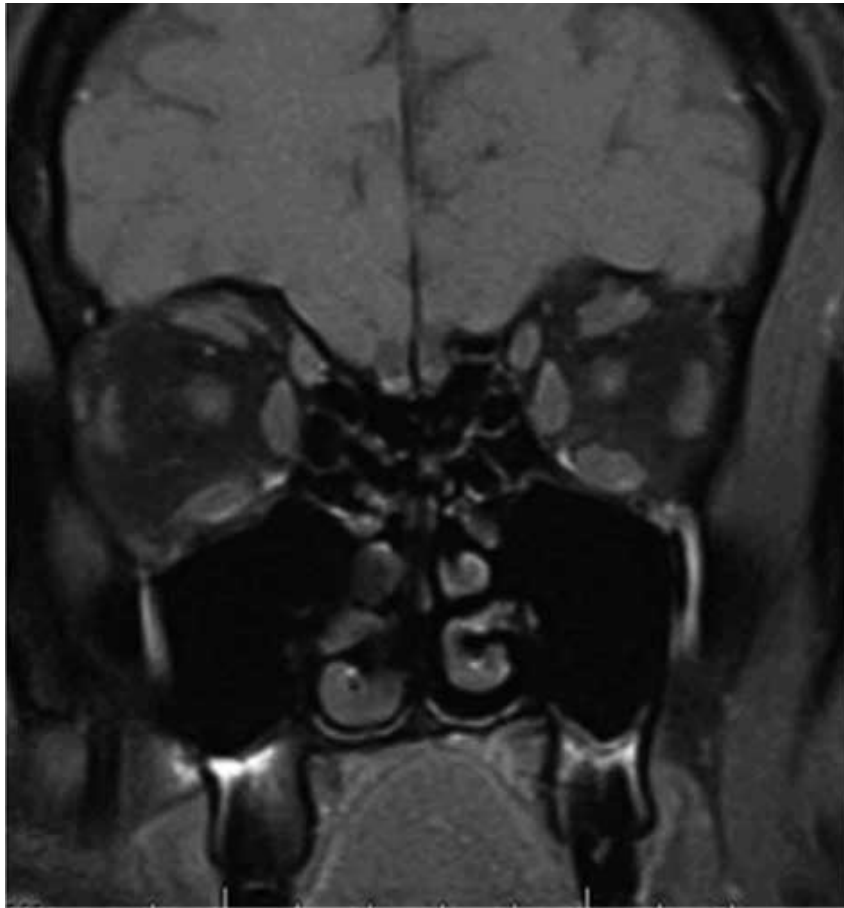
That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures responsible for suspending the globe within the orbital space—ie, the check ligaments, intermuscular bands, and/or Tenon's capsule. Involutional changes to these structures allow the globe to literally sag, and the too-inferior position of the globe alters the line-of-force between the LR and the globe. This in turn renders 'normal' levels of LR innervation inadequate to completely offset MR inputs, the result being the eyes are slightly ET at distance.

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**

Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic

Comitant Esotropia

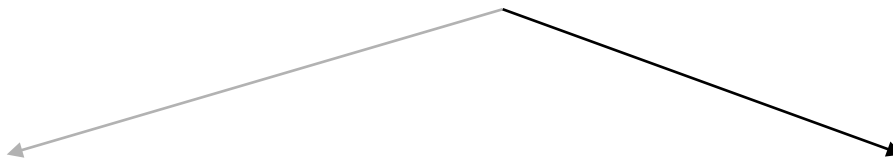


Left, normal LR muscle positioning in pt without involutinal changes. Right, inferomedial displacement of the LRs in a pt with them.



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures responsible for suspending the globe within the orbital space—ie, the check ligaments, intermuscular bands, and/or Tenon's capsule. Involutional changes to these structures allow the globe to literally sag, and the too-inferior position of the globe alters the line-of-force between the LR and the globe. This in turn renders 'normal' levels of LR innervation inadequate to completely offset MR inputs, the result being the eyes are slightly ET at distance. Because of its origin in involutional changes, this condition is called three words *esotropia*. (It is known also by the more precise but less diplomatic term three words).

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

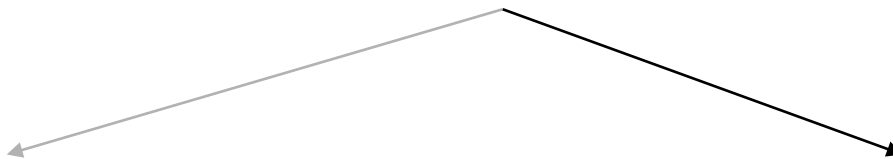
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures responsible for suspending the globe within the orbital space—ie, the check ligaments, intermuscular bands, and/or Tenon's capsule. Involutional changes to these structures allow the globe to literally sag, and the too-inferior position of the globe alters the line-of-force between the LR and the globe. This in turn renders 'normal' levels of LR innervation inadequate to completely offset MR inputs, the result being the eyes are slightly ET at distance. Because of its origin in involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the more precise but less diplomatic term *sagging eye syndrome*).

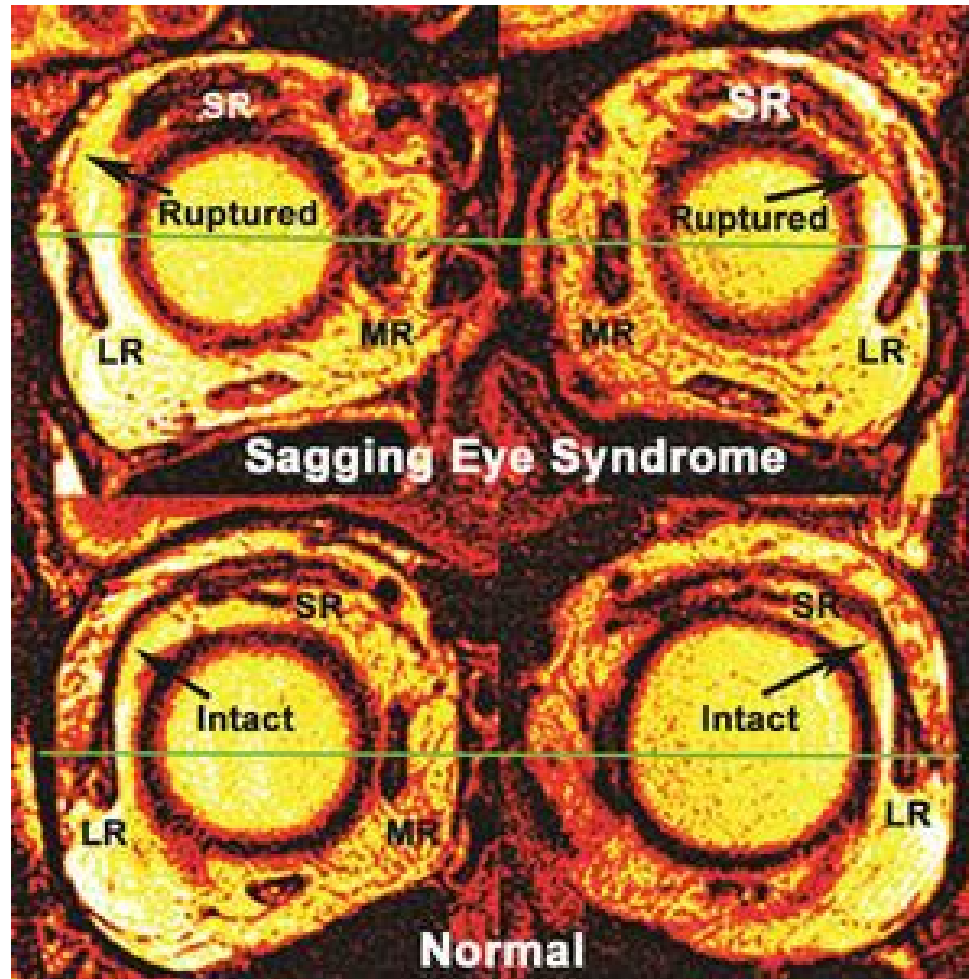
robustness on the part of these inputs allows the eyes to turn in a bit, resulting in a modest esotropia. The classic presentation is that of an

esotropia that is present at distance, but not at near

Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic

Comitant Esotropia

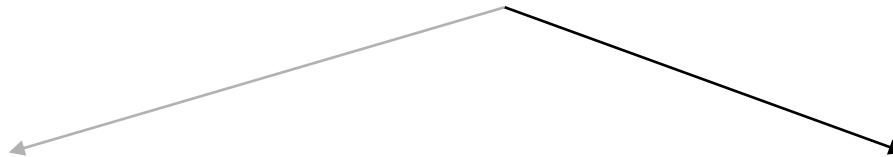


MRI demonstrates inferior “sagging” of the lateral rectus (LR) with rupture of the LR–superior rectus (SR) band bilaterally. The horizontal line depicts the center of the medial rectus (MR) muscle, which intersects the upper pole of the LR muscle.



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures responsible for suspending the globe within the orbital space—ie, the check ligaments, intermuscular bands, and/or Tenon's capsule. Involutional changes to these structures allow the globe to literally sag, and the too-inferior position of the globe alters the line-of-force between the LR and the globe. This in turn renders 'normal' levels of LR innervation inadequate to completely offset MR inputs, the result being the eyes are slightly ET at distance. Because of its origin in involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the more precise but less diplomatic term *sagging eye syndrome*). [redacted], [redacted] two words of the MR muscles, and [redacted] have all proven safe and effective interventions.

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

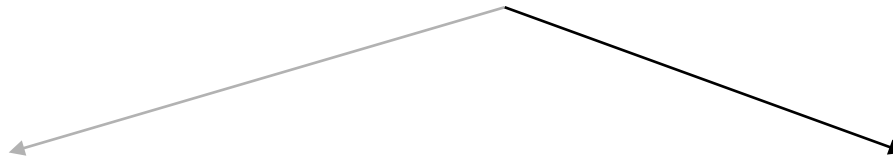
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures responsible for suspending the globe within the orbital space—ie, the check ligaments, intermuscular bands, and/or Tenon's capsule. Involutional changes to these structures allow the globe to literally sag, and the too-inferior position of the globe alters the line-of-force between the LR and the globe. This in turn renders 'normal' levels of LR innervation inadequate to completely offset MR inputs, the result being the eyes are slightly ET at distance. Because of its origin in involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the more precise but less diplomatic term *sagging eye syndrome*). Prisms, Botox injection of the MR muscles, and surgery have all proven safe and effective interventions.

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**

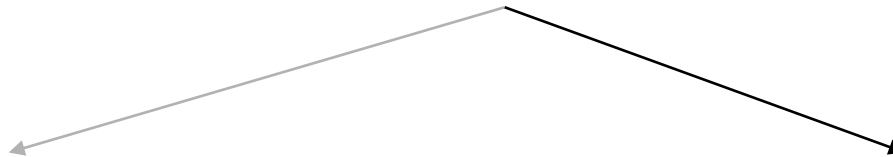
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures.

What other findings will clue you in that your divergence-insufficiency pt has SES?

intermuscular --?
globe to l --?
LR and th --?
offset MR --?

involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the more precise but less diplomatic term *sagging eye syndrome*). Prisms, Botox injection of the MR muscles, and surgery have all proven safe and effective interventions.

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

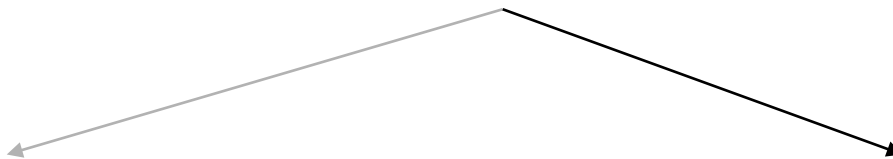
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures.

What other findings will clue you in that your divergence-insufficiency pt has SES?

--The pt will be older than # (often significantly older)
 globe to l --?
 LR and th --?
 offset MR --?

involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the more precise but less diplomatic term *sagging eye syndrome*). Prisms, Botox injection of the MR muscles, and surgery have all proven safe and effective interventions.

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

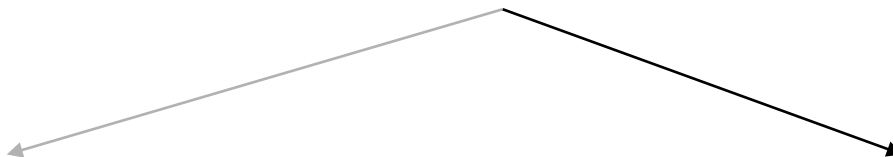
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures.

What other findings will clue you in that your divergence-insufficiency pt has SES?

--The pt will be older than 50 (often significantly older)

globe to l --?

LR and th --?

offset MR --?

involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the more precise but less diplomatic term *sagging eye syndrome*). Prisms, Botox injection of the MR muscles, and surgery have all proven safe and effective interventions.

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

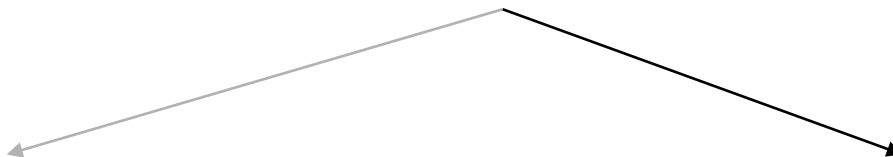
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures.

What other findings will clue you in that your divergence-insufficiency pt has SES?

--The pt will be older than 50 (often significantly older)

--The onset will be

sudden vs
gradual

--?

--?

involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the more precise but less diplomatic term *sagging eye syndrome*). Prisms, Botox injection of the MR muscles, and surgery have all proven safe and effective interventions.

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

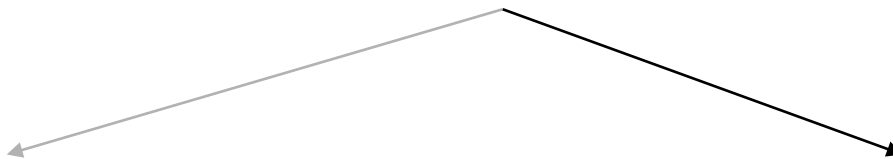
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures.

What other findings will clue you in that your divergence-insufficiency pt has SES?

--The pt will be older than 50 (often significantly older)

--The onset will be gradual

--?

--?

involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the more precise but less diplomatic term *sagging eye syndrome*). Prisms, Botox injection of the MR muscles, and surgery have all proven safe and effective interventions.

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

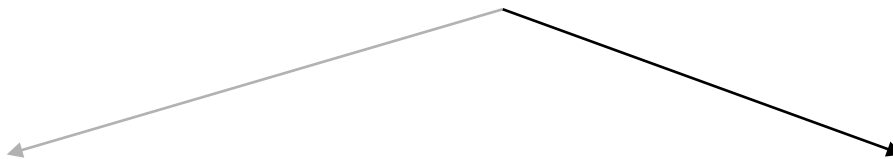
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures.

What other findings will clue you in that your divergence-insufficiency pt has SES?

--The pt will be older than 50 (often significantly older)

--The onset will be gradual

--A small v large vertical deviation may be present

--?

involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the more precise but less diplomatic term *sagging eye syndrome*). Prisms, Botox injection of the MR muscles, and surgery have all proven safe and effective interventions.

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

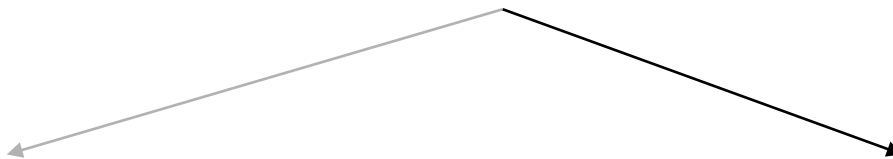
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures.

What other findings will clue you in that your divergence-insufficiency pt has SES?

--The pt will be older than 50 (often significantly older)

--The onset will be gradual

--A small vertical deviation may be present

--?

involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the more precise but less diplomatic term *sagging eye syndrome*). Prisms, Botox injection of the MR muscles, and surgery have all proven safe and effective interventions.

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

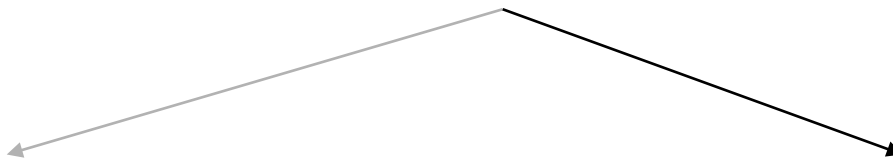
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures.

What other findings will clue you in that your divergence-insufficiency pt has SES?

- The pt will be older than 50 (often significantly older)
- The onset will be gradual
- A small vertical deviation may be present
- Involutional changes of the [] are often present

involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the more precise but less diplomatic term *sagging eye syndrome*). Prisms, Botox injection of the MR muscles, and surgery have all proven safe and effective interventions.

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

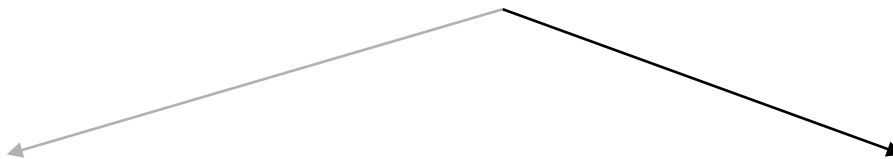
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures.

What other findings will clue you in that your divergence-insufficiency pt has SES?

- The pt will be older than 50 (often significantly older)
- The onset will be gradual
- A small vertical deviation may be present
- Involutional changes of the eyelid are often present

involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the more precise but less diplomatic term *sagging eye syndrome*). Prisms, Botox injection of the MR muscles, and surgery have all proven safe and effective interventions.

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

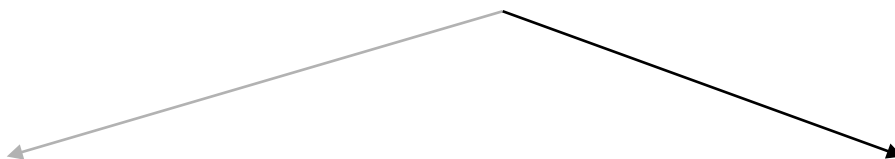
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures responsible for suspending the globe within the orbital space—ie, the check ligaments, intermuscular bands, and/or Tenon's capsule. Involutional changes to these structures allow the globe to literally sag, and the too-inferior position of the globe alters the line-of-force between the LR and the globe. This in turn renders 'normal' levels of LR innervation inadequate to completely offset MR inputs, the result being the eyes are slightly ET at distance. Because of its origin in involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the name *divergence insufficiency*). Prisms, Botox injection of the MR muscles, or surgery are the main treatments.

What if, instead of an elderly pt with evidence of orbital involution, the divergence insufficiency pt is a young(er) high myope?

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**

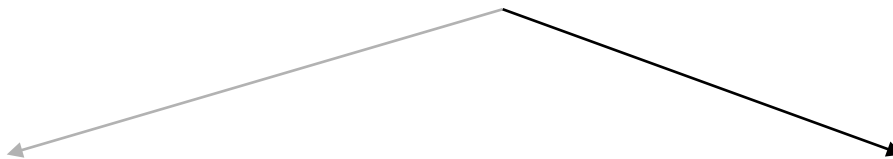
Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia



That said, the more common causes of divergence insufficiency have nothing to do with inadequate supranuclear input. One such cause is mild weakness of one or both LR muscles 2ndry to trauma or increased ICP. Another cause to be aware of is 2ndry to involutional changes of the orbital structures responsible for suspending the globe within the orbital space—ie, the check ligaments, intermuscular bands, and/or Tenon's capsule. Involutional changes to these structures allow the globe to literally sag, and the too-inferior position of the globe alters the line-of-force between the LR and the globe. This in turn renders 'normal' levels of LR innervation inadequate to completely offset MR inputs, the result being the eyes are slightly ET at distance. Because of its origin in involutional changes, this condition is called *age-related distance esotropia*. (It is known also by the

What if, instead of an elderly pt with evidence of orbital involution, the divergence insufficiency pt is a young(er) high myope? Prisms, Botox injection of the MR muscles are interventions.

This pt may have Heavy Eye Syndrome (HES)

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

Divergence insufficiency

- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

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: $ET > ET'$

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

Divergence insufficiency: $ET < ET'$

Refractive

Nonrefractive

Sensory

Divergence insufficiency

Spasm of the near

Consecutive

Cyclic

Latent nystagmus
Ciancia syndrome



Comitant Esotropia

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: $ET > ET'$

Refractive

Nonrefractive

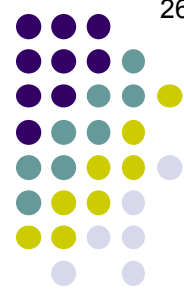
Sensory

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

Accommodative

Nonaccommodative

Spasm of the near (aka *convergence spasm*) is almost always a
[] response to [] .

- 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

Accommodative

Nonaccommodative

Spasm of the near (aka *convergence spasm*) is almost always a functional response to psychosocial stressors.

- 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

Accommodative

Nonaccommodative

Spasm of the near (aka *convergence spasm*) is almost always a functional response to psychosocial stressors. All three components of the **name** triad (**the three components**) can usually be demonstrated. The esotropia may alternate with periods of orthotropia.

- 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

Accommodative

Nonaccommodative

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.

- 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

Accommodative

Nonaccommodative

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.

movement will be poor or absent when the eyes are tested simultaneously, but full when tested monocularly.

- 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

Accommodative

Nonaccommodative

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.

- 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

Accommodative

Nonaccommodative

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 **two words** and/or **two diff words** can be tried.

- 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

Accommodative

Nonaccommodative

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, cycloplegic agents and/or hyperopic correction can be tried.

- 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

Accommodative

Nonaccommodative

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, cycloplegic agents and/or hyperopic correction can be tried. As a last resort, Botox or surgery can be considered, with caution.

- 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

— Nystagmus blockage syndrome

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

Accommodative

Nonaccommodative

- 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

— Nystagmus blockage syndrome

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

Accommodative

Nonaccommodative

- 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

— Nystagmus blockage syndrome

Consecutive esotropia refers to esotropia that develops in someone with a history of exotropia. In almost all cases, consecutive esotropia is

two-words

Accommodative

Nonaccommodative

- 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

— 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

Accommodative

Nonaccommodative

- 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

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.

Accommodative

Nonaccommodative

- 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

Nystagmus blockage syndrome

Accommodative

Nonaccommodative

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. **Consecutive esotropia** often resolves spontaneously, so unless it is very large (in which case it likely represents a **two words**), observation for **amount of time** is usually the preferred management option.

- 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

Nystagmus blockage syndrome

Accommodative

Nonaccommodative

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. **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.

- 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

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Cyclic esotropia is a rare disorder in which a comitant ET is present intermittently, usually { cycle time }.

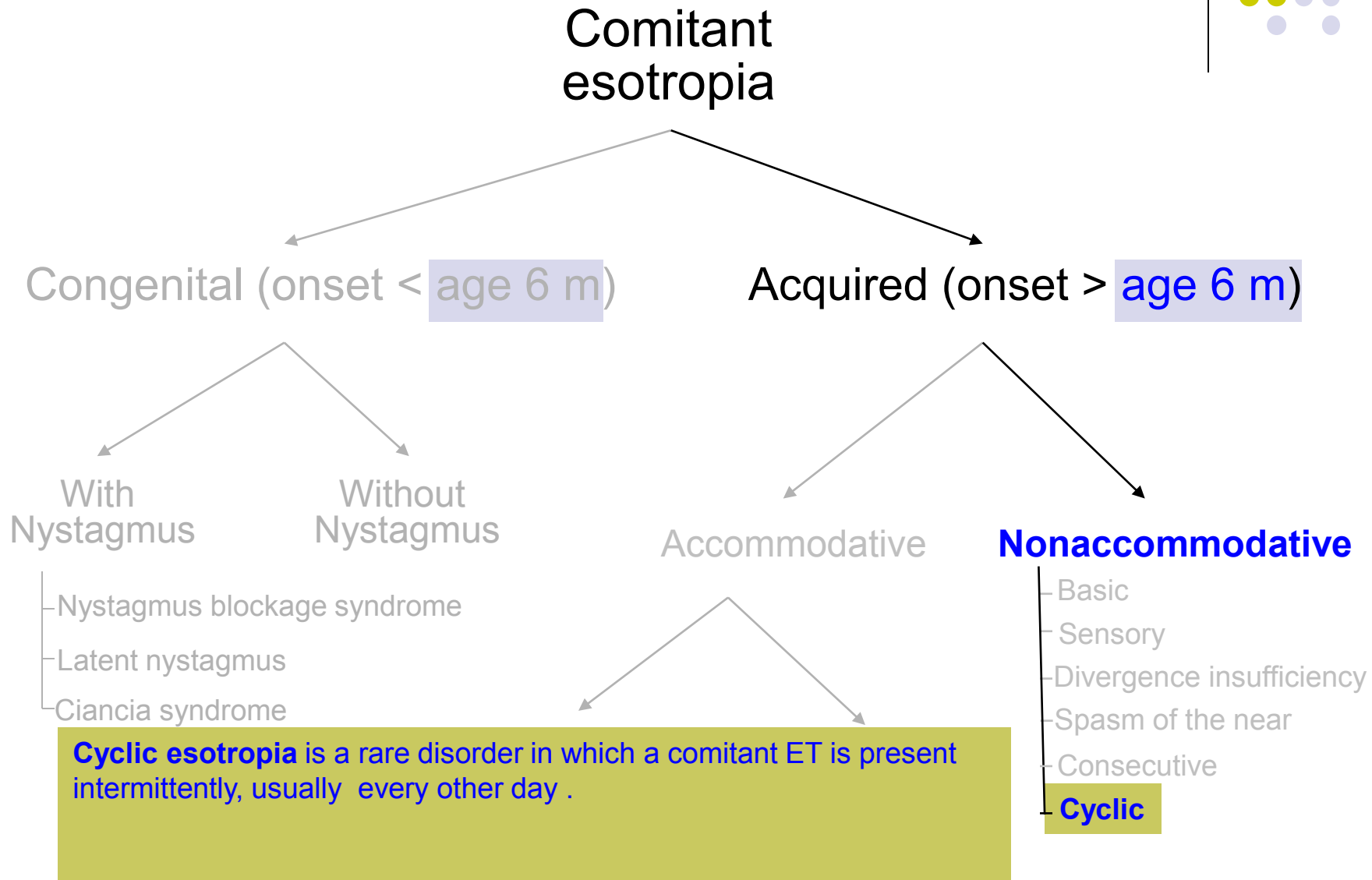
Accommodative

Nonaccommodative

- Basic
- Sensory
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic**



Comitant Esotropia





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

Cyclic esotropia is a rare disorder in which a comitant ET is present intermittently, usually every other day. The typical pt is of life stage age.

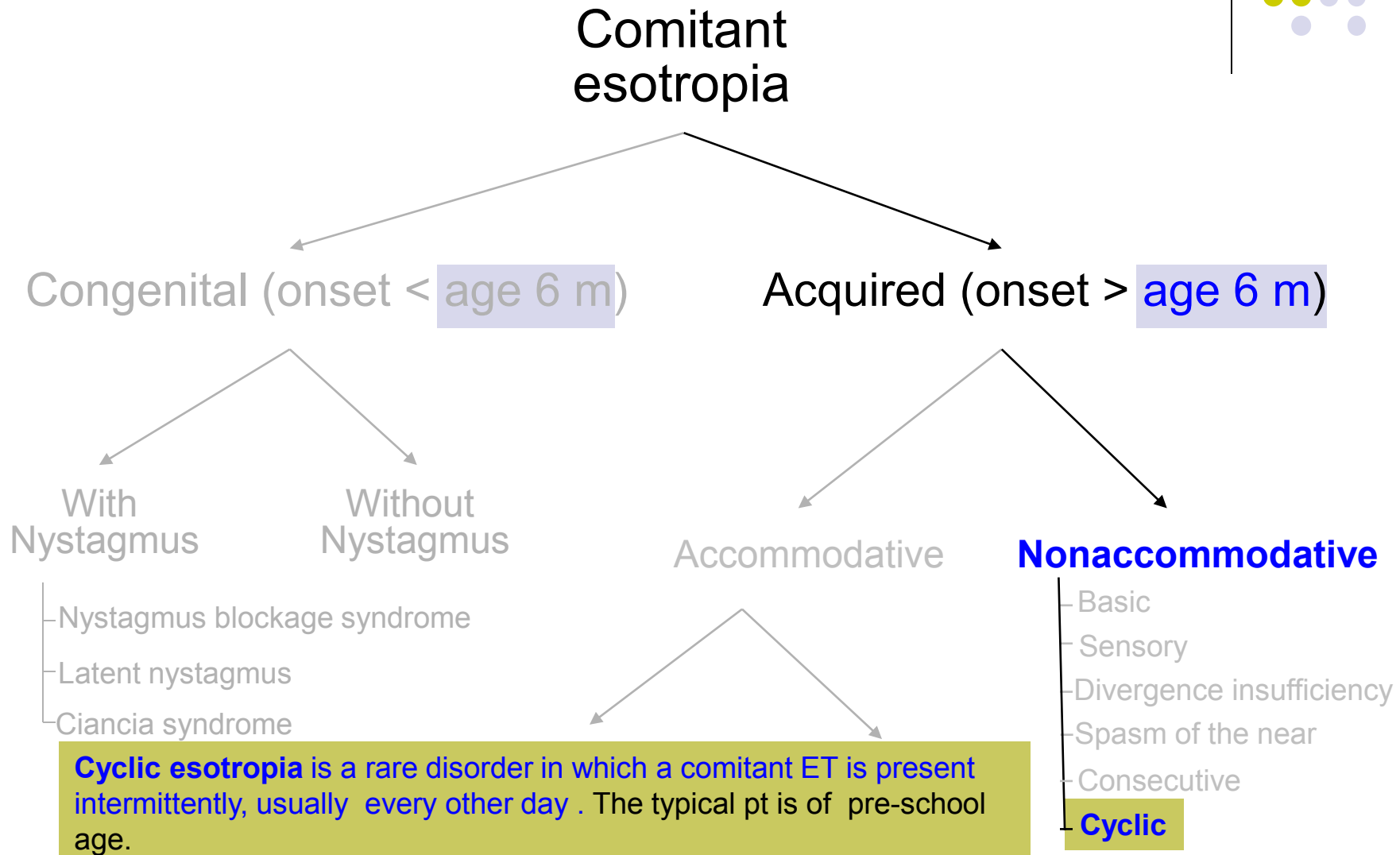
Accommodative

Nonaccommodative

- Basic
- Sensory
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic**



Comitant Esotropia





Comitant Esotropia

