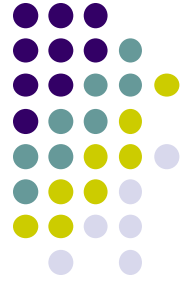


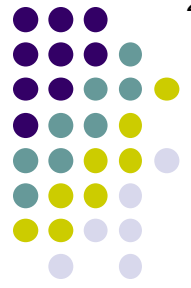
Comitant Esotropia

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Comitant Esotropia



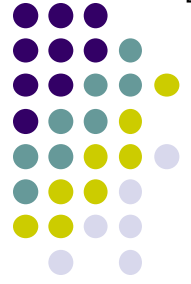
~50PD of comitant esotropia

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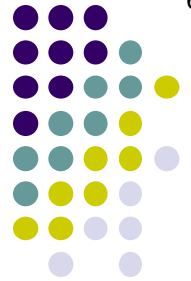
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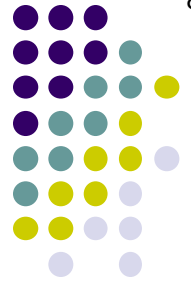
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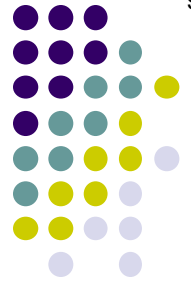
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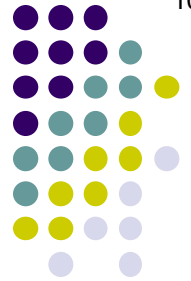
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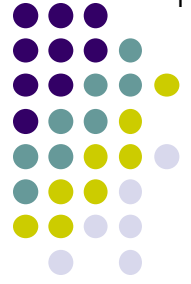
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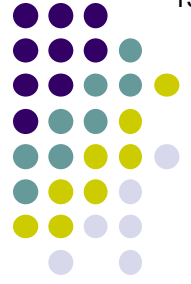
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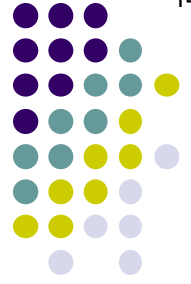
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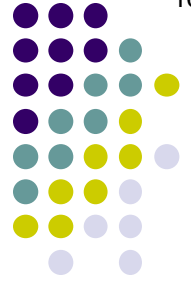
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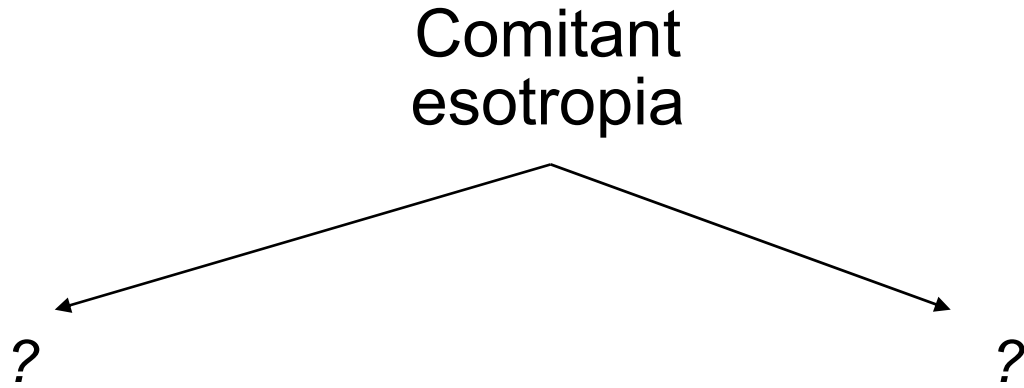
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Which is more common: comitant ET, or comitant XT?

ET is significantly more common



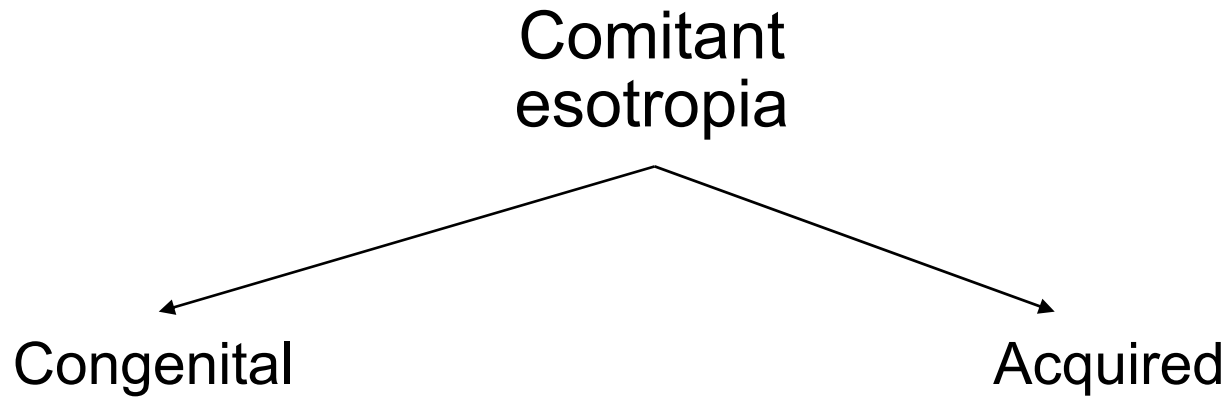
Comitant Esotropia



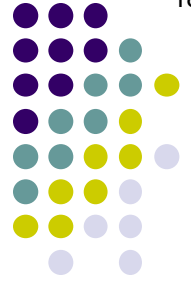
Comitant ETs are divided into two groups—what are they?



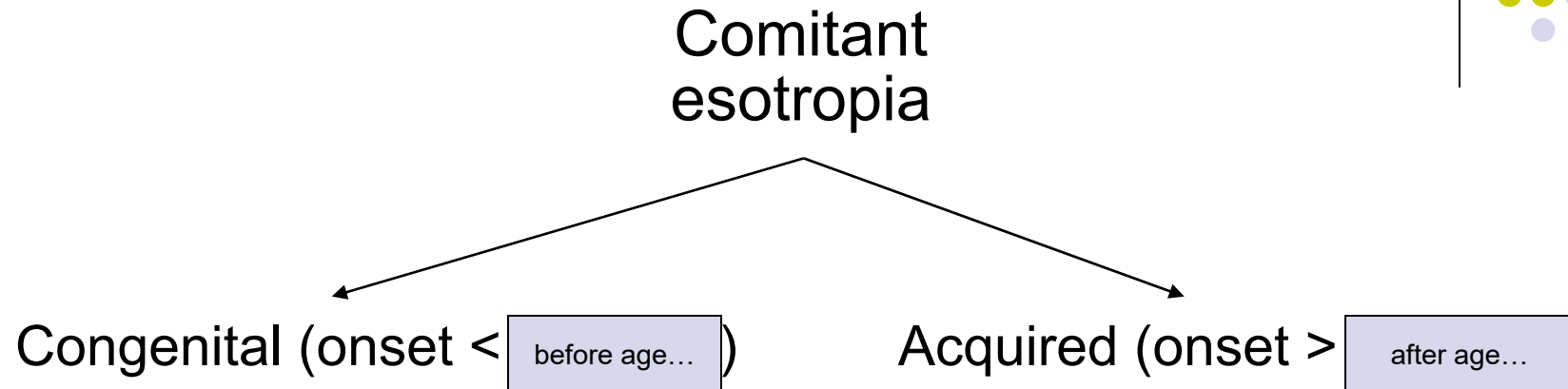
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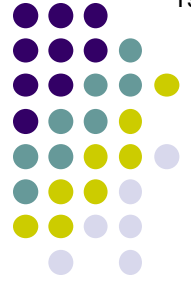
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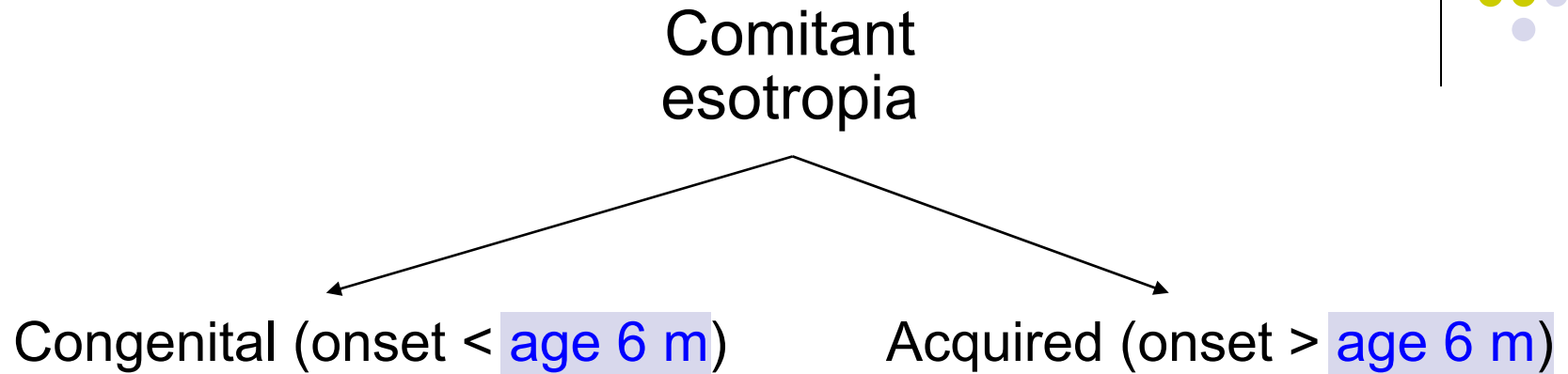
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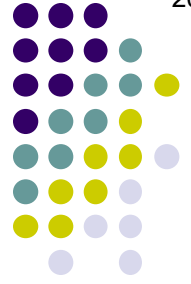
With regards to comitant ETs, 'congenital' doesn't mean congenital, rather, it means 'before a certain age.' What age is used as the cutoff between congenital and acquired ETs?



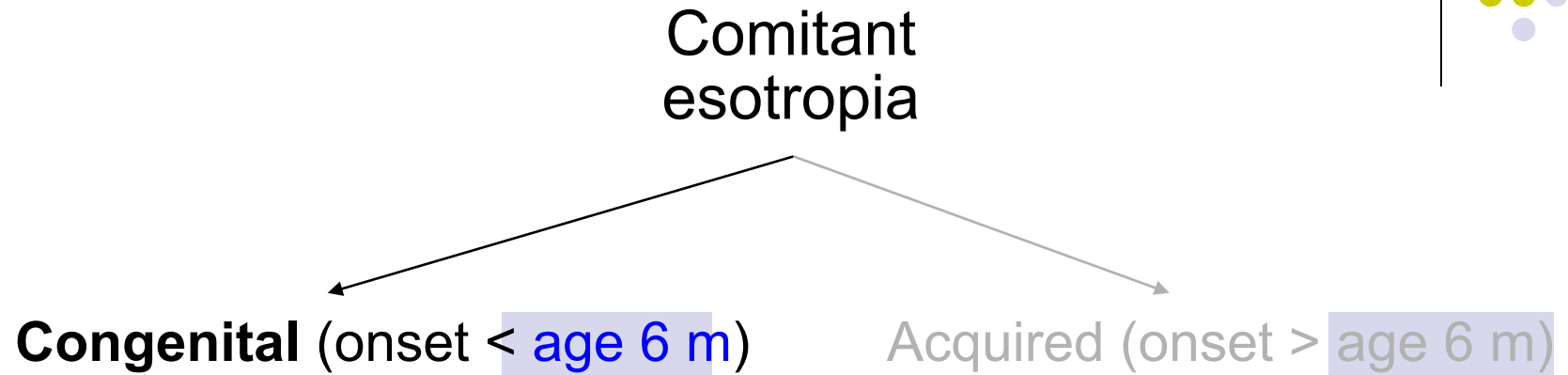
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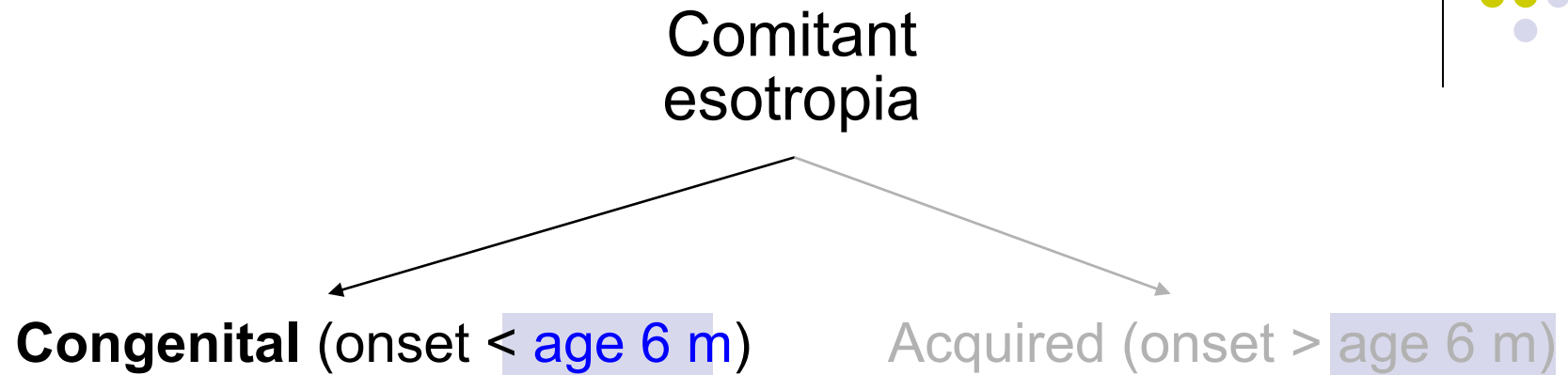
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Why is the term congenital a misnomer here?

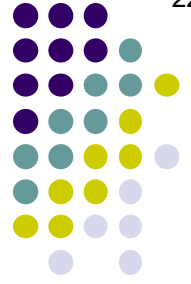


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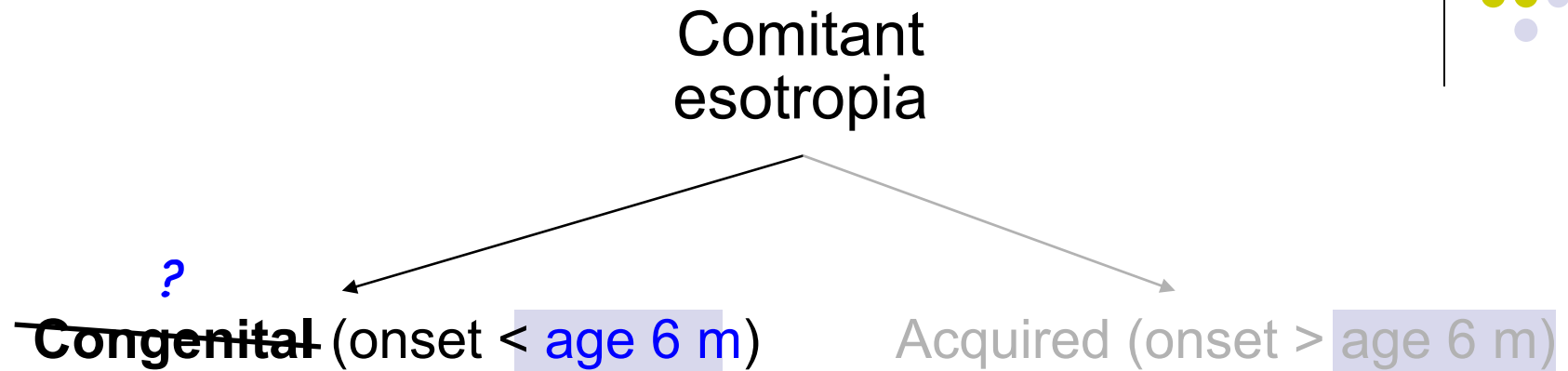


Why is the term congenital a misnomer here?

Technically, a congenital disorder must be present at birth—it can't show up 6 months later



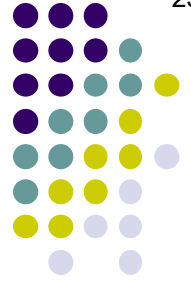
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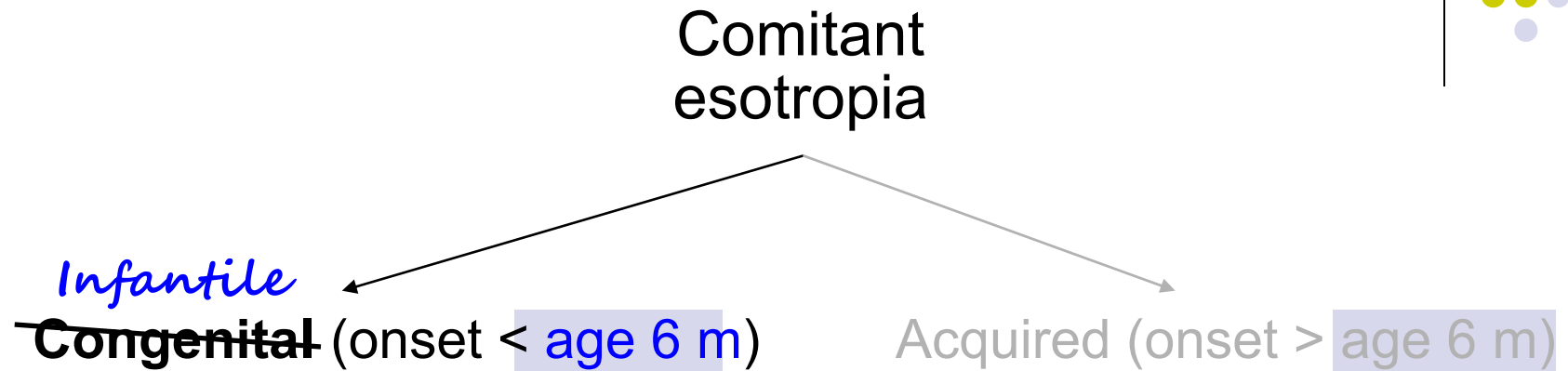
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For this reason, some clinicians refer to these ETs not as 'congenital,' but as what?



Comitant Esotropia



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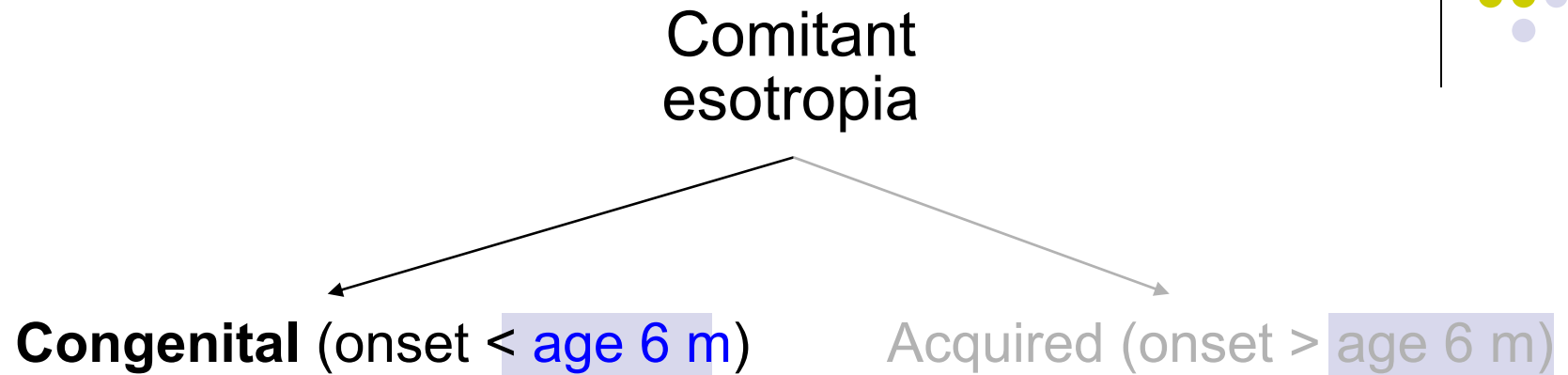
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Infantile esotropia



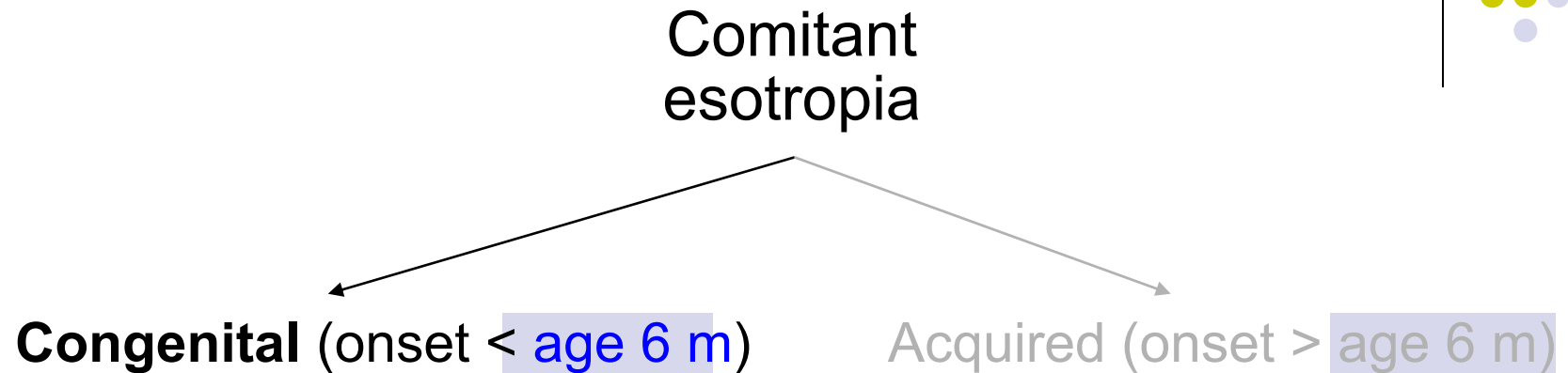
Comitant Esotropia



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

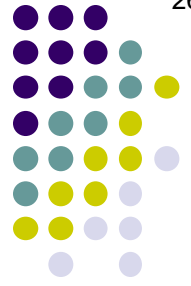


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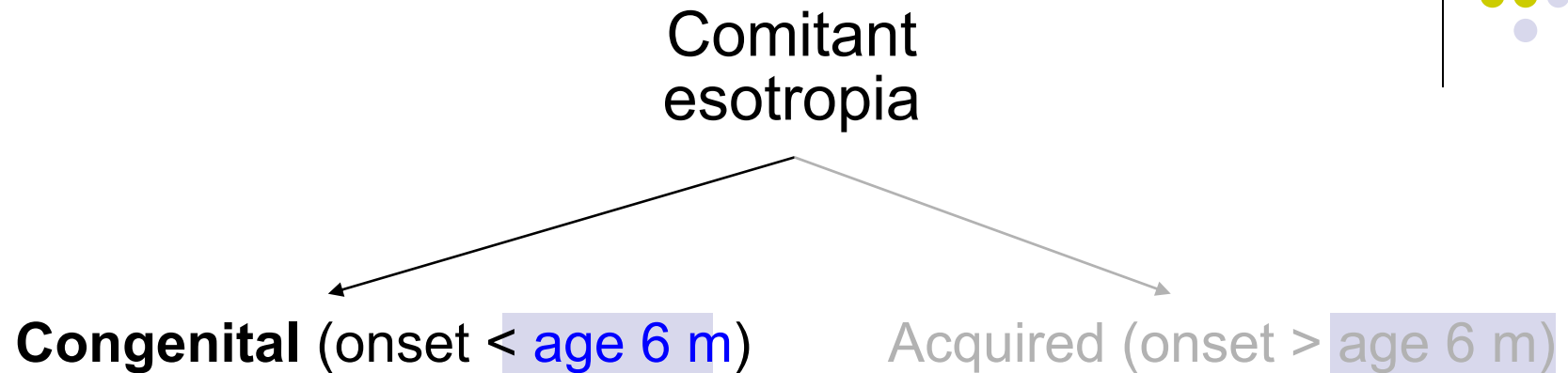


Worried parents call your office to say they observed their two-month-old child's eyes cross briefly. Should you be concerned?

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



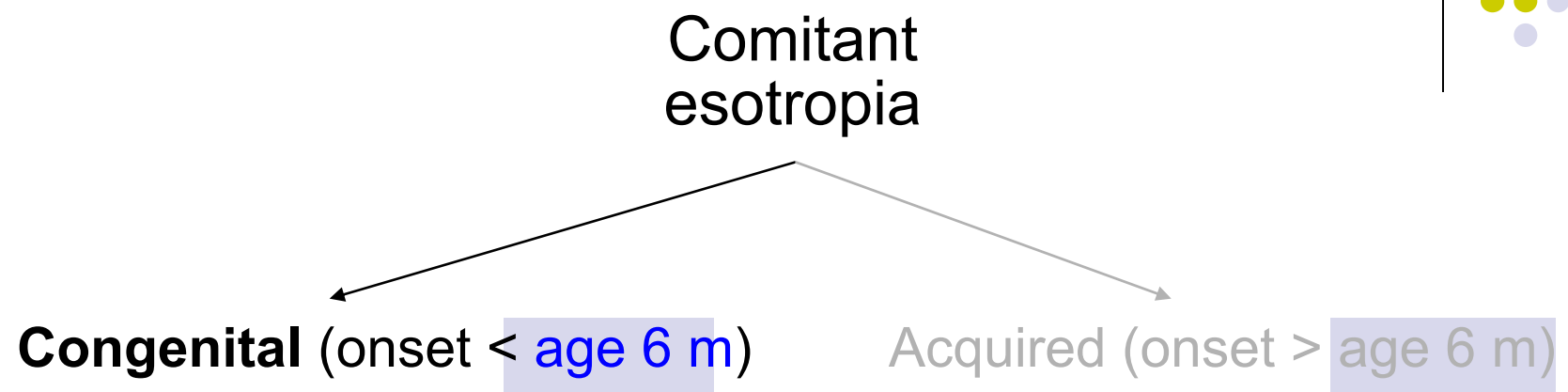
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They call back a week later to report they observed his eyes "turning out [going XT] for a second." As this represented a change from the transient ET they saw previously, they were concerned. Should you be?



Comitant Esotropia

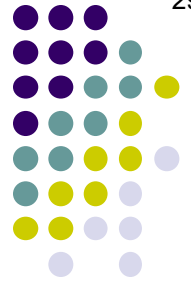


*Given that episodic strabismus is common in infancy, at what **should** make you worry that the infant has a congenital ET?*

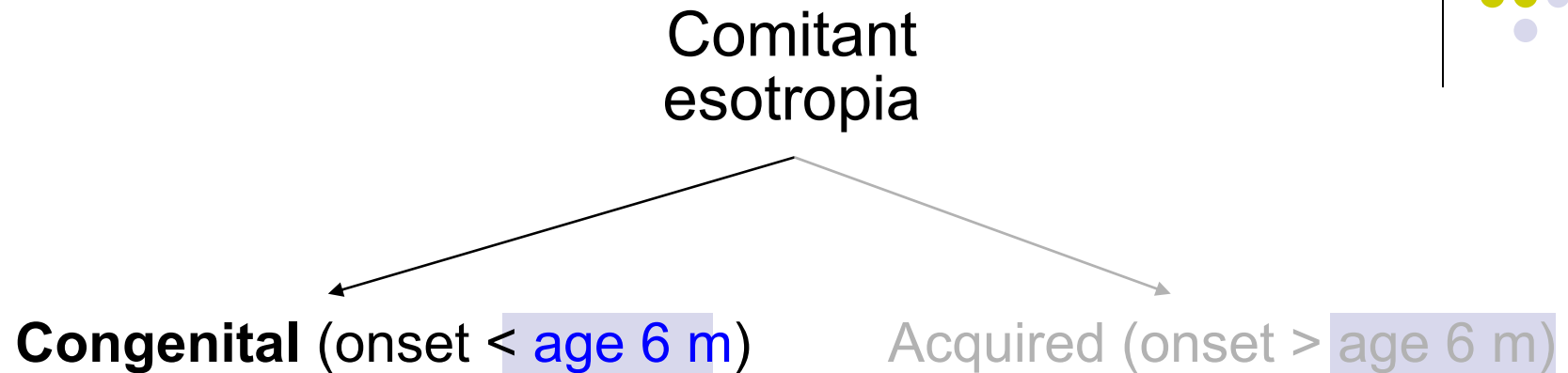
If the ET is...

-
-
-

...it probably represents a congenital ET needing treatment



Comitant Esotropia



*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;

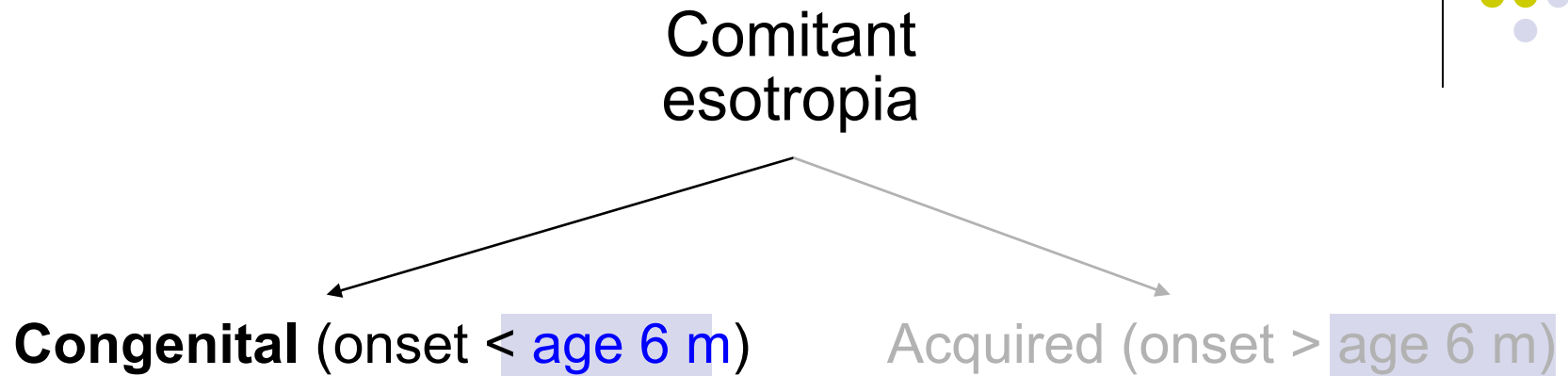
--constant; and

--large (defined as greater than #Δ),

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Comitant Esotropia



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

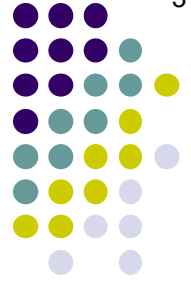
If the ET is...

--present after age 2 months;

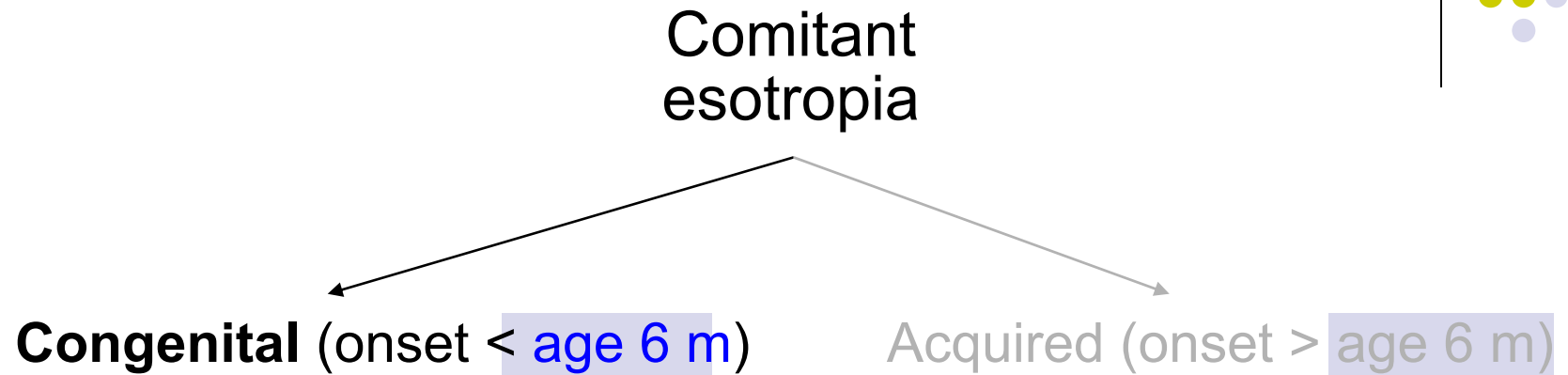
--constant; and

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

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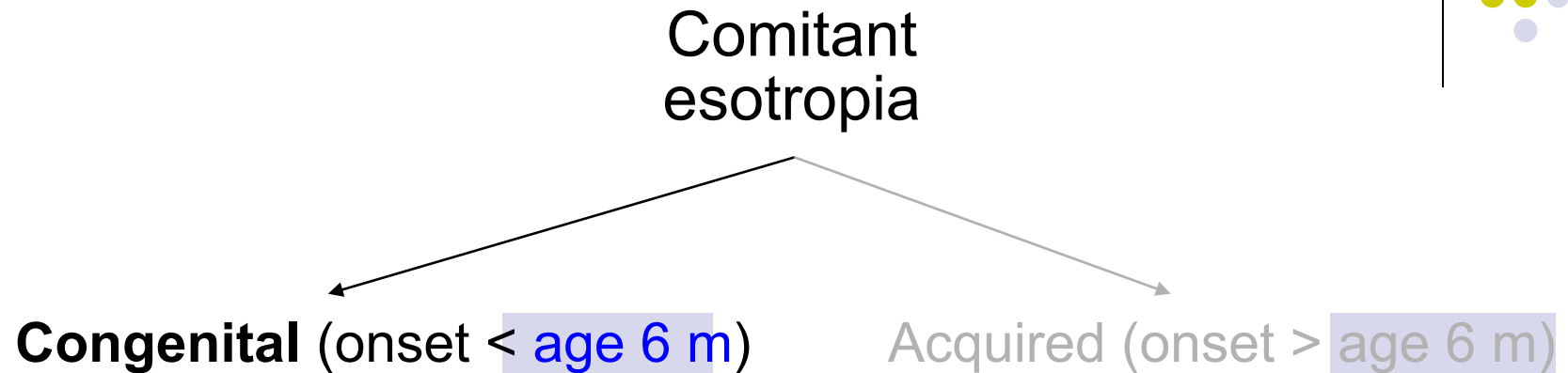
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Congenital ET puts the infant at significant risk of suffering what (very broad) category of non-ophthalmic disease as an adult?



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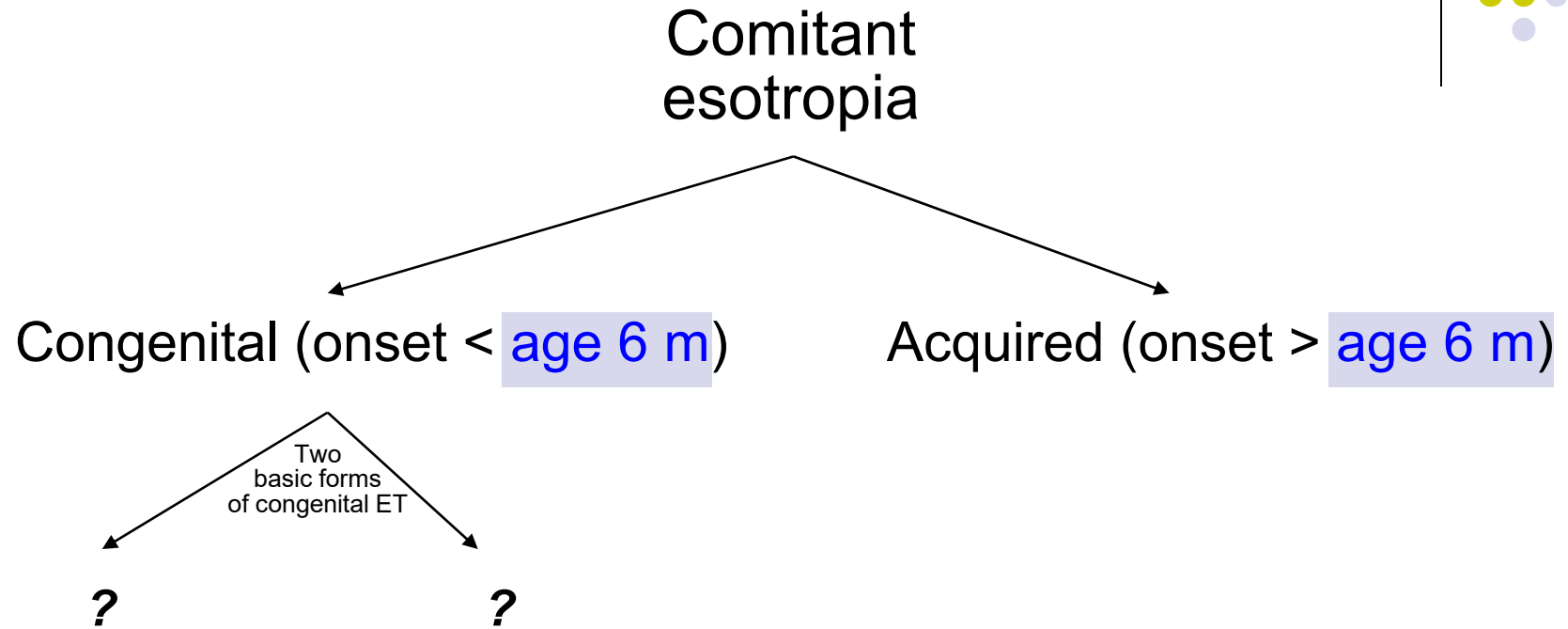


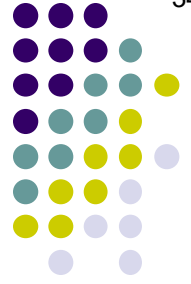
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Mental illness. Congenital ET confers a risk ratio of 2.6! (How or why, I have no idea).

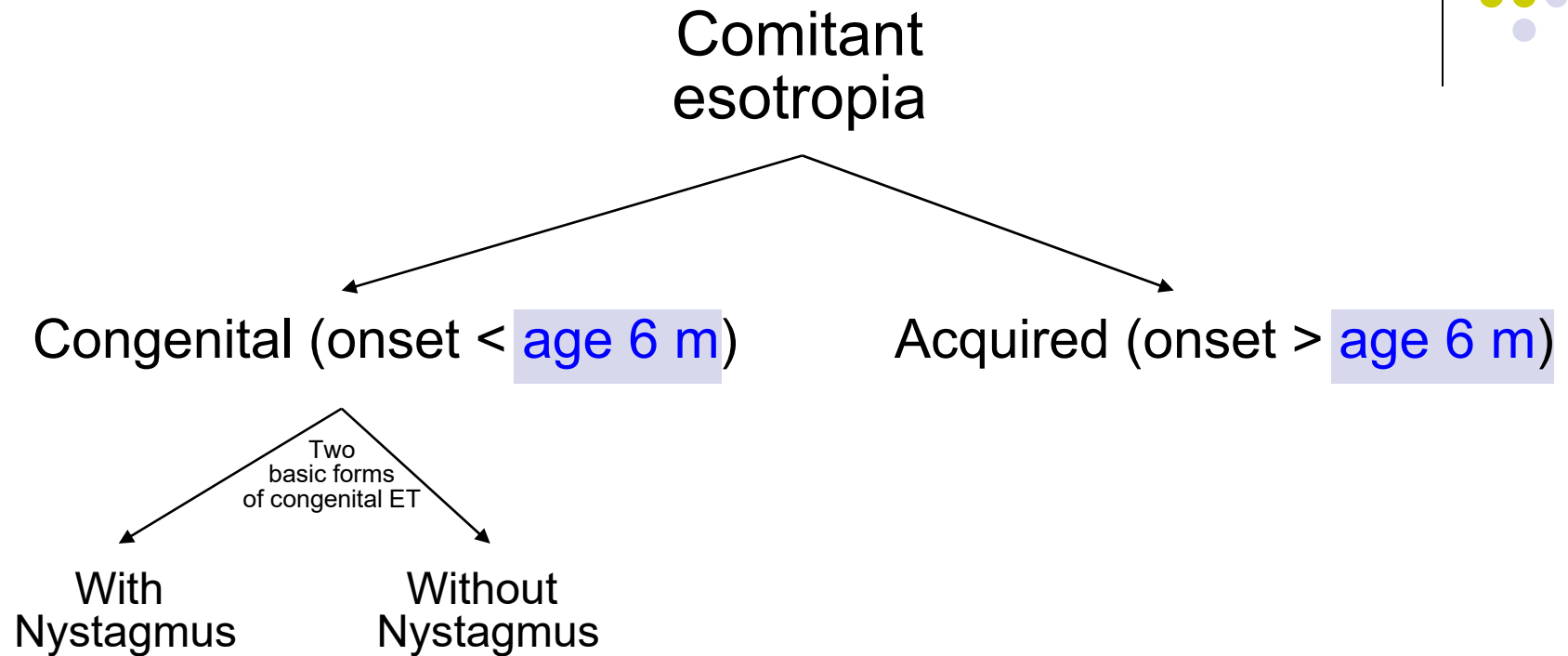


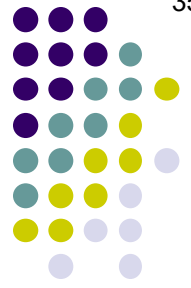
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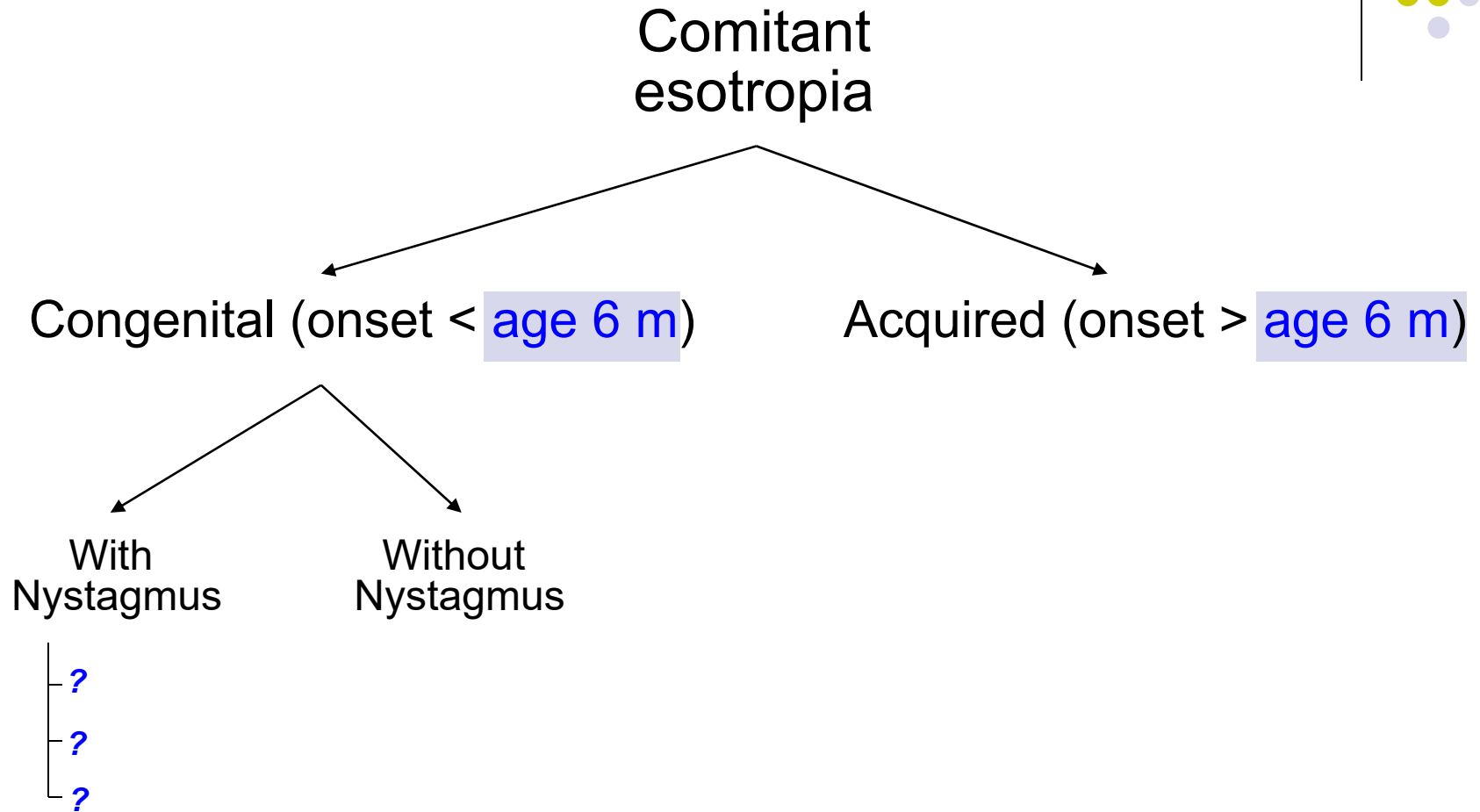


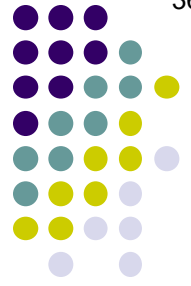
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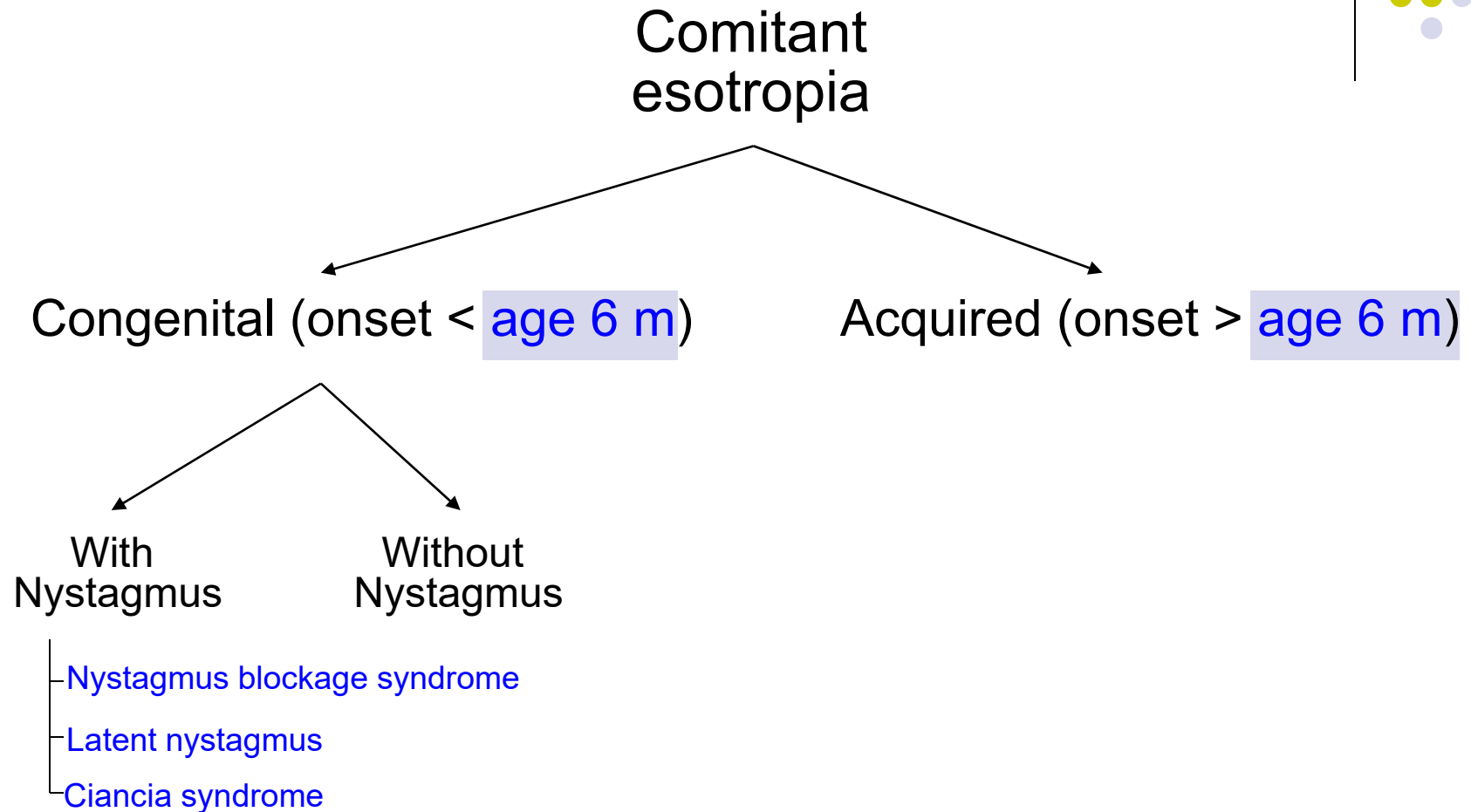


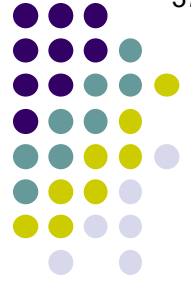
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Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Nystagmus blockage syndrome

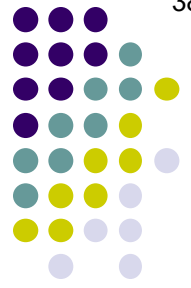
--Arises in pts with...*[a nystagmus syndrome]*

With Nystagmus

Nystagmus blockage syndrome

Latent nystagmus

Ciancia syndrome



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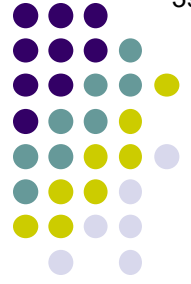
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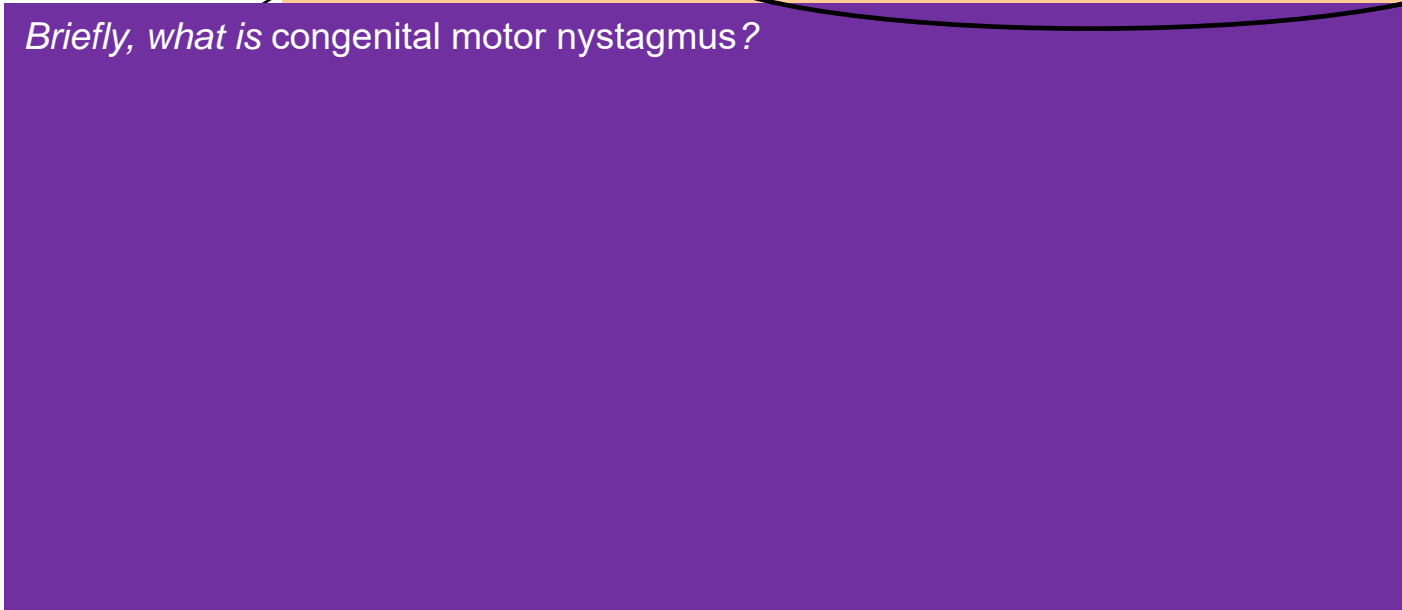
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Briefly, what is congenital motor nystagmus?





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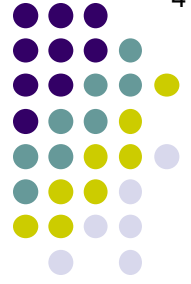
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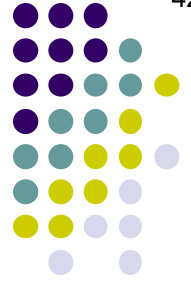
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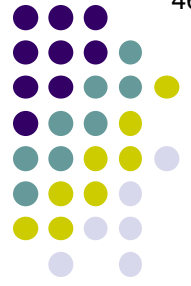
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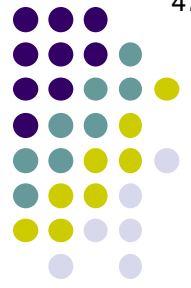
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CMN has a unique finding related to an exam maneuver you're familiar with but don't perform very often. What is this finding?



Comitant Esotropia

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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?

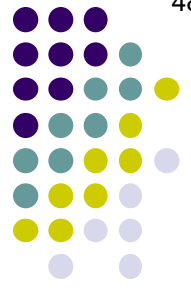
It is virtually always horizontal

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



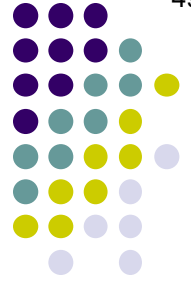
Comitant Esotropia

Comitant
esotropia

What does 'OKN' stand for in this context?

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

A paradoxical **OKN** response

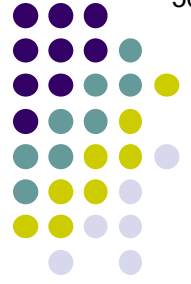


Comitant Esotropia

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

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Comitant Esotropia

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Comitant Esotropia

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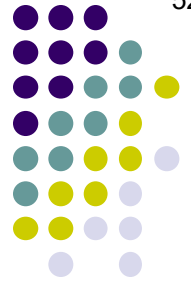
Optokinetic nystagmus

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

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Comitant Esotropia

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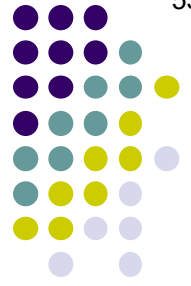
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Usually with an OKN drum that is spun about its axis

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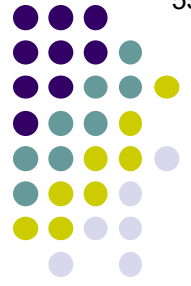
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Comitant Esotropia



#OldSchoolCool: OKN drum



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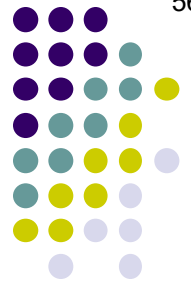
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*What is a **paradoxical** OKN response?*

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*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

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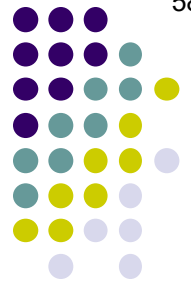
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A phenomenon that occurs when a CMN pt is presented with an OKN drum spinning in the direction congruent with the pt's nystagmus. Spinning in this direction would be expected to amplify (ie, worsen) the pt's nystagmus. However, in a CMN pt the presentation 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)

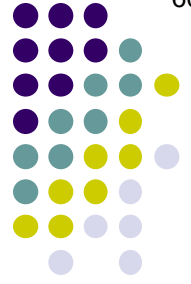
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--Pt 'learns' that their nystagmus is decreased (and thus acuity is increased) when their eyes are...converged

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Comitant Esotropia

Comitant esotropia

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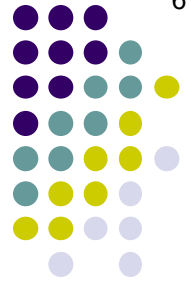
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- Key exam finding: Pt 'two words' prism when deviation is being measured

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- Latent nystagmus
- Ciancia syndrome



Comitant Esotropia

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

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Nystagmus blockage syndrome

Latent nystagmus

Ciancia 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.

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Nystagmus

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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.)

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Why do NBS pts eat up prism?

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Comitant Esotropia

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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

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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.)

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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

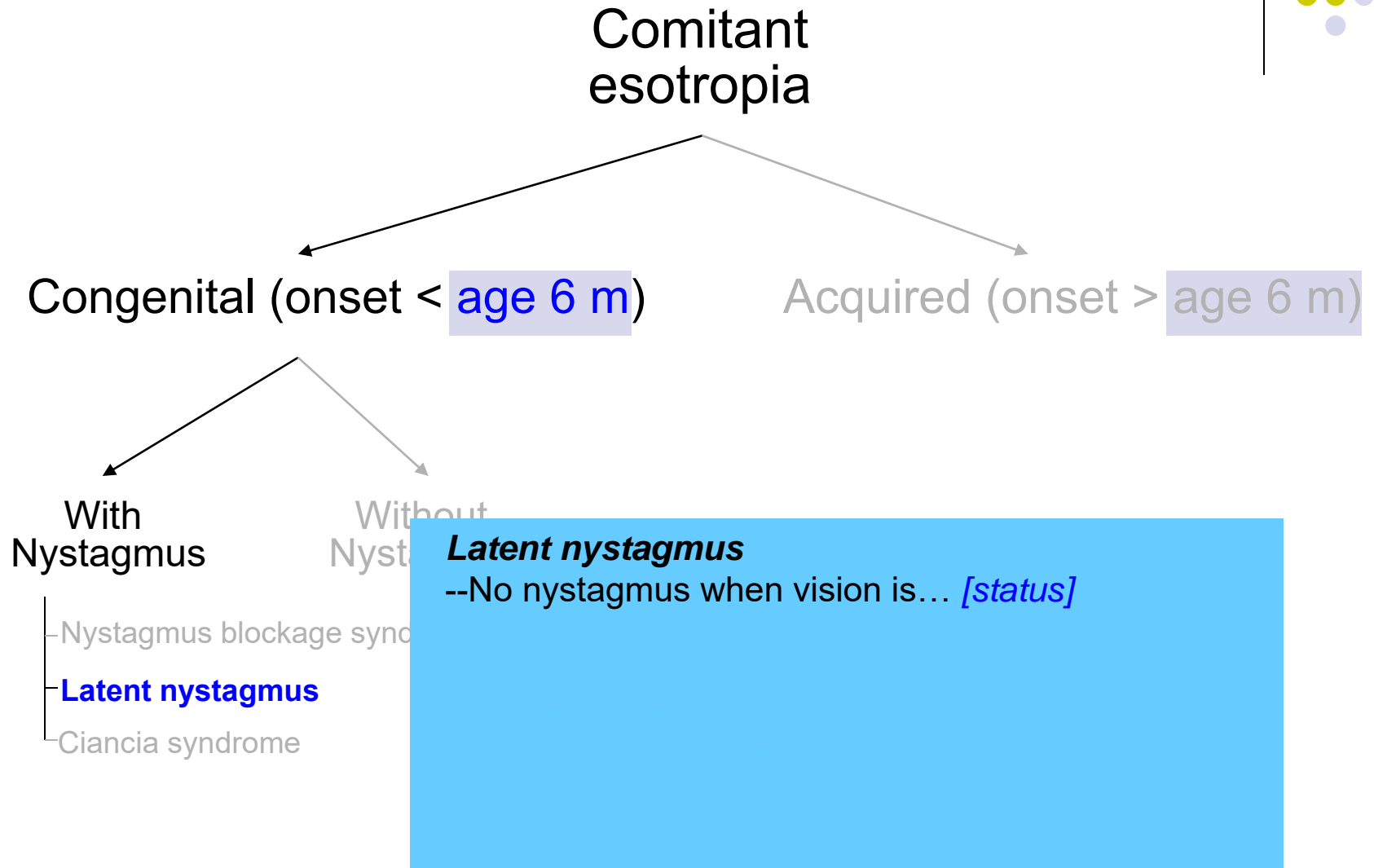
Nystagmus blockage syndrome

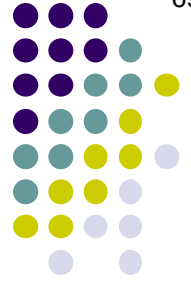
Latent nystagmus

Ciancia syndrome

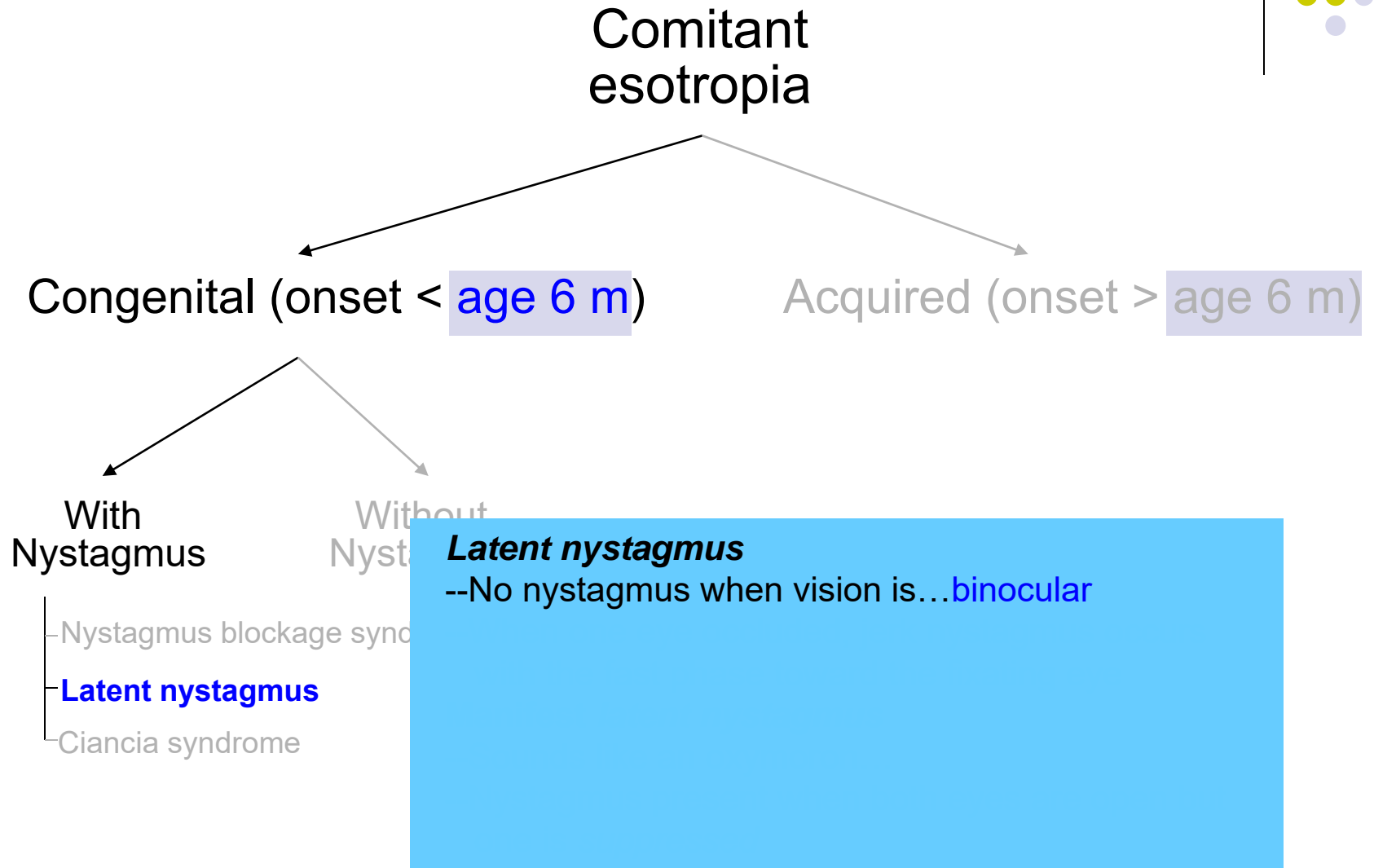


Comitant Esotropia



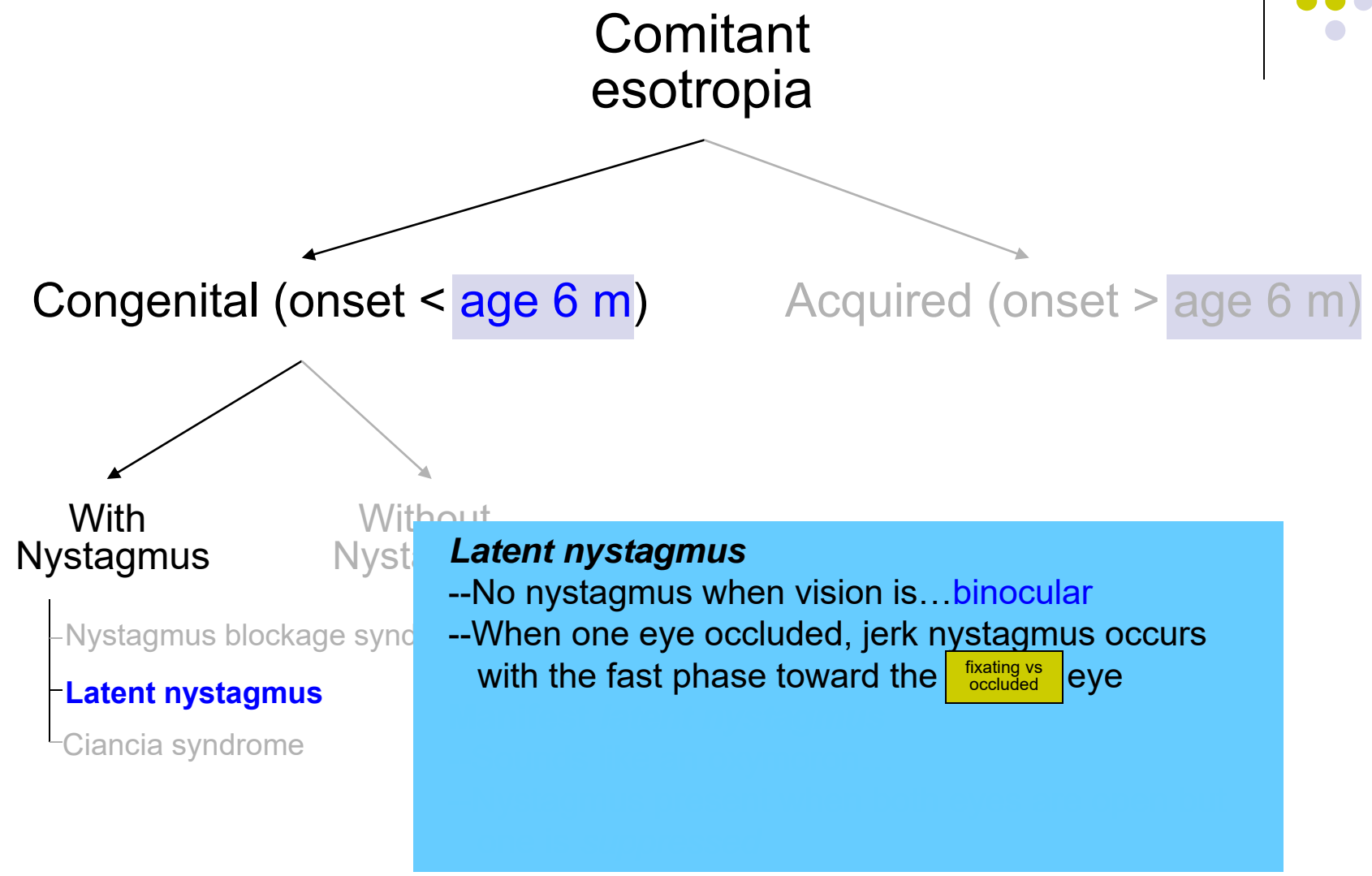


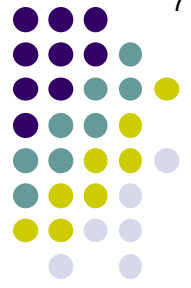
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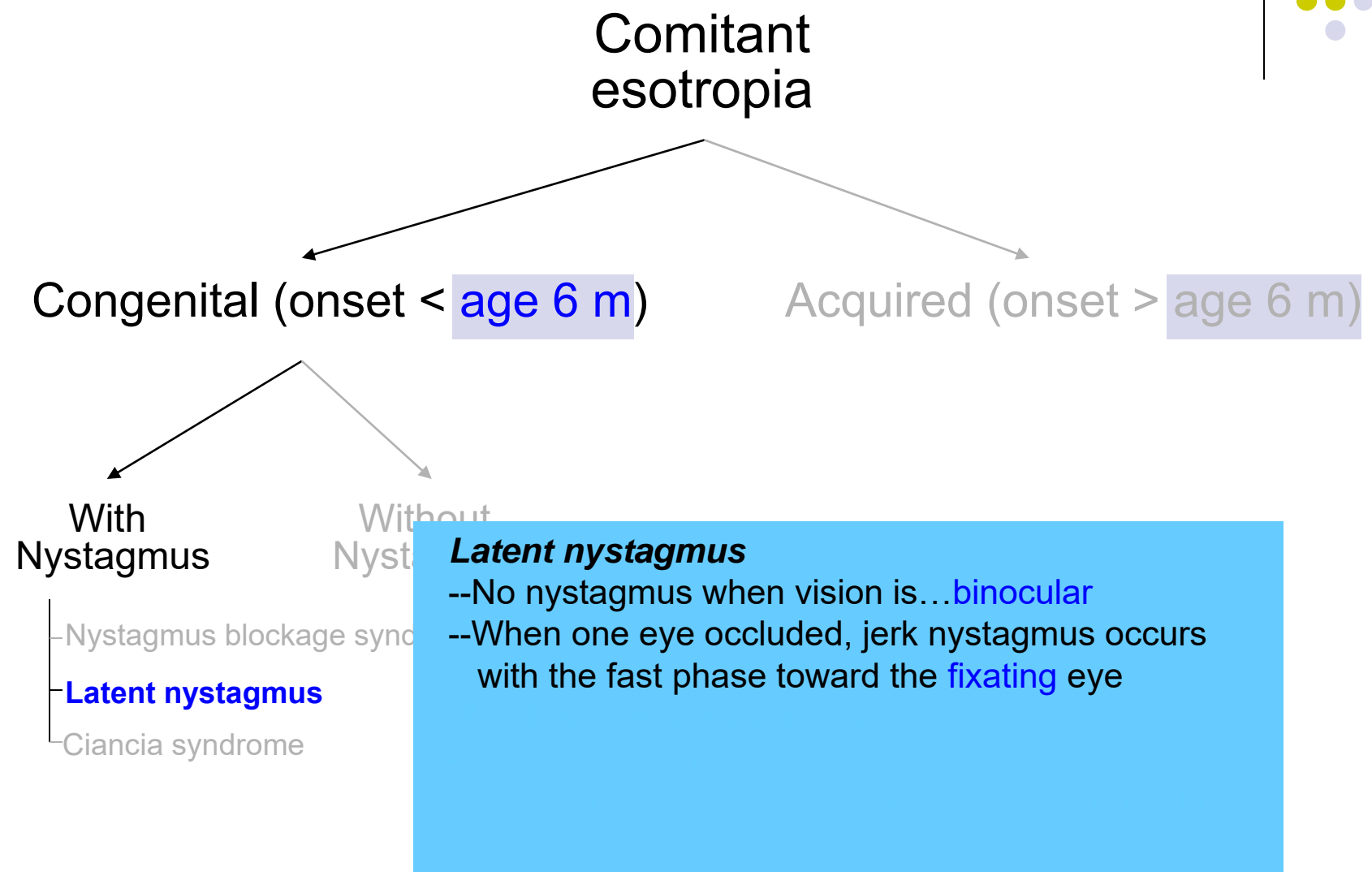


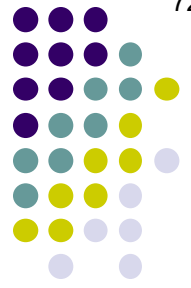
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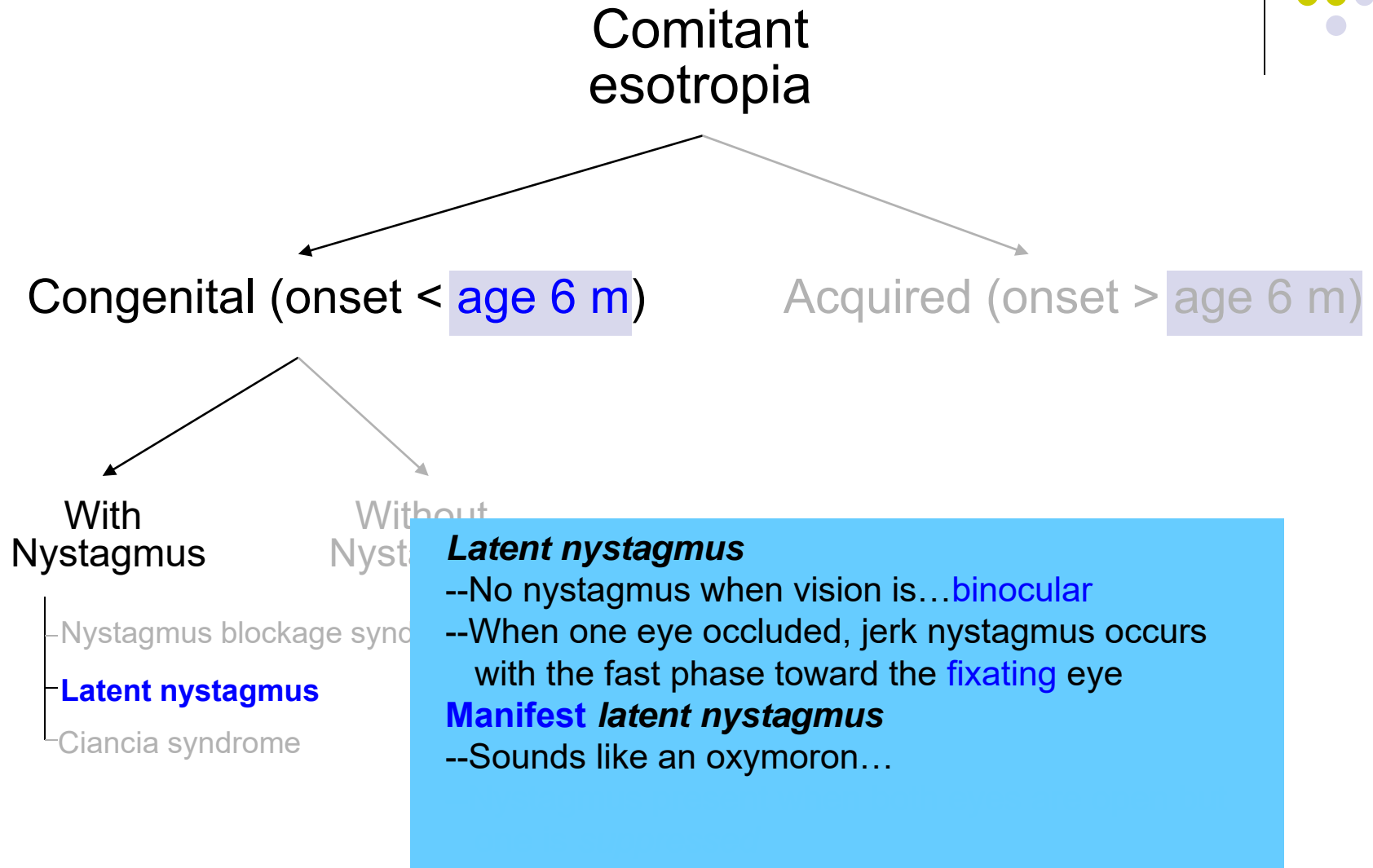


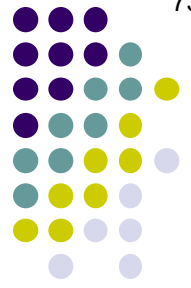
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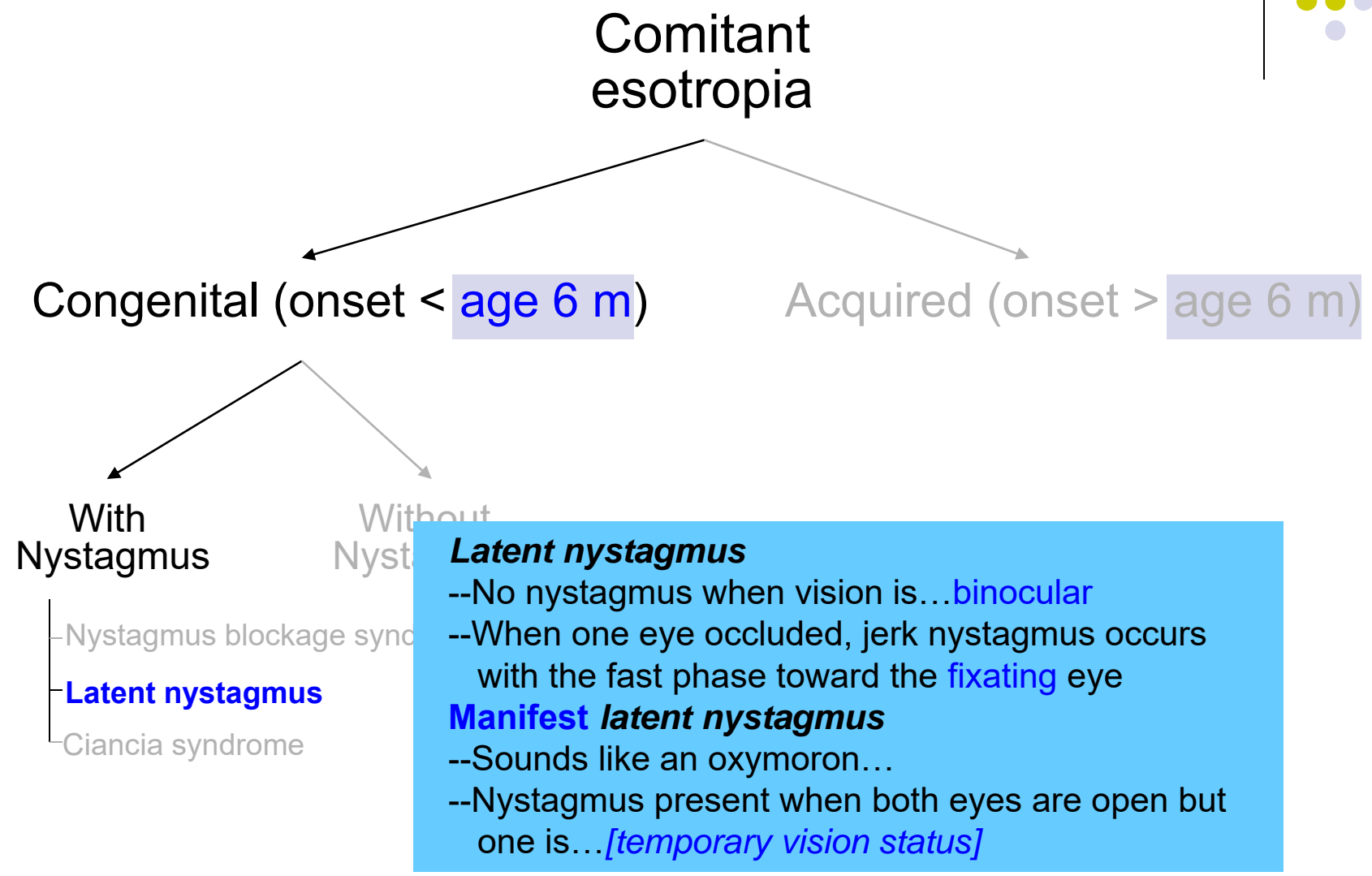


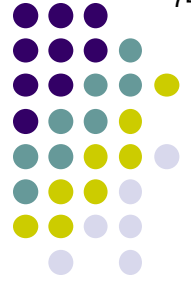
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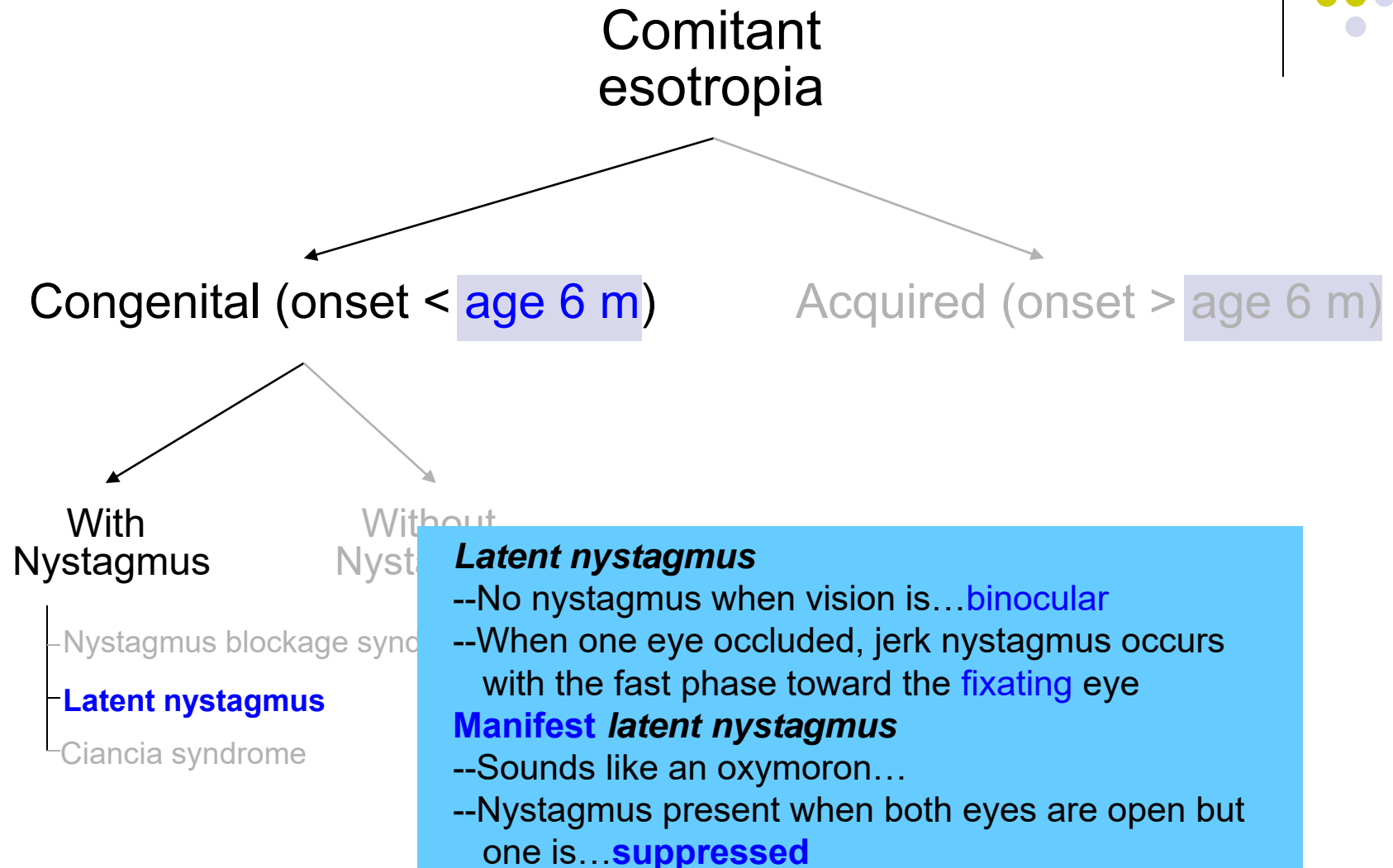


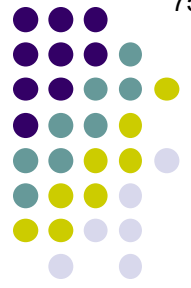
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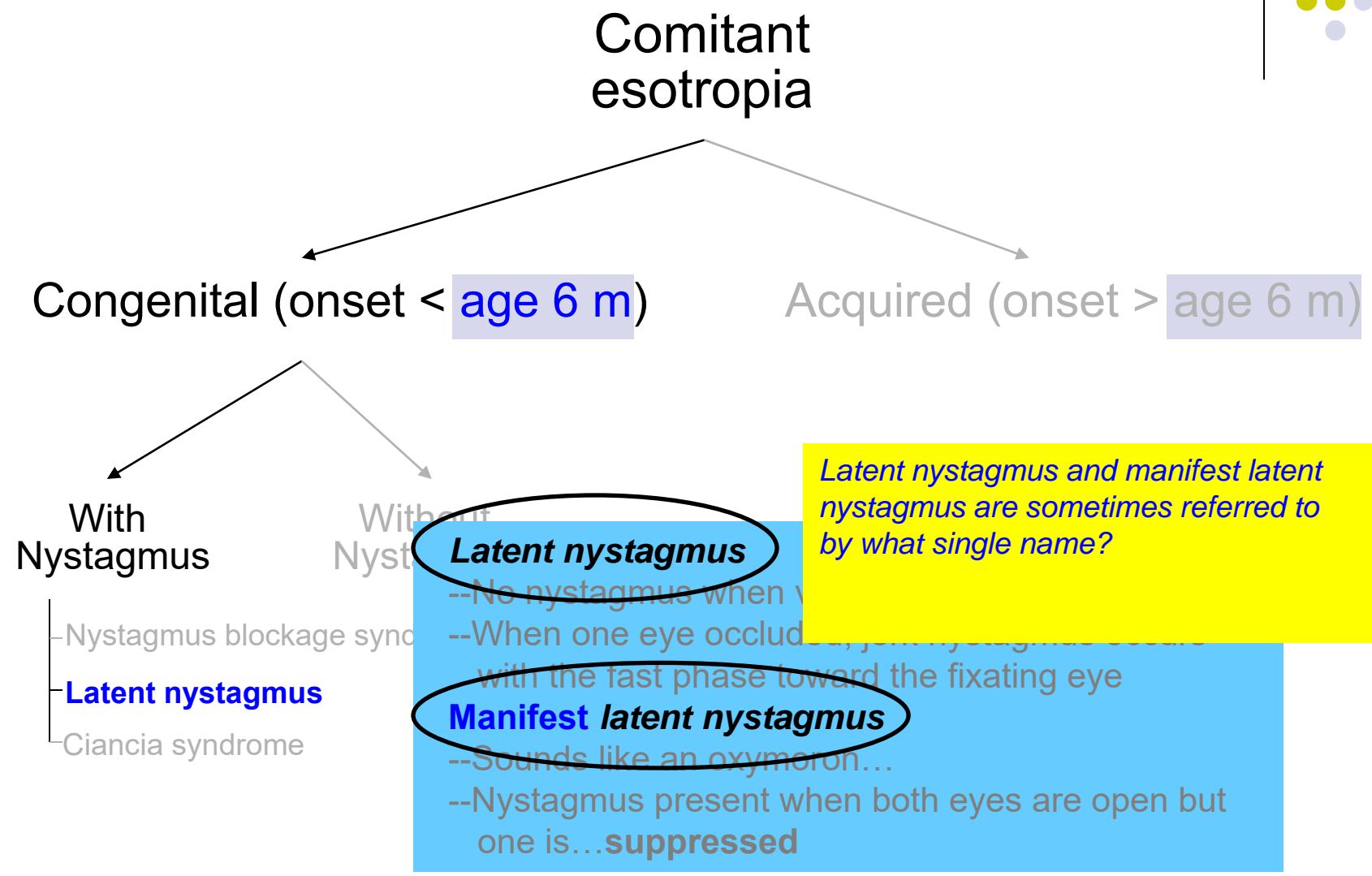


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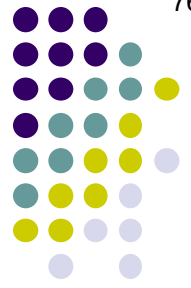




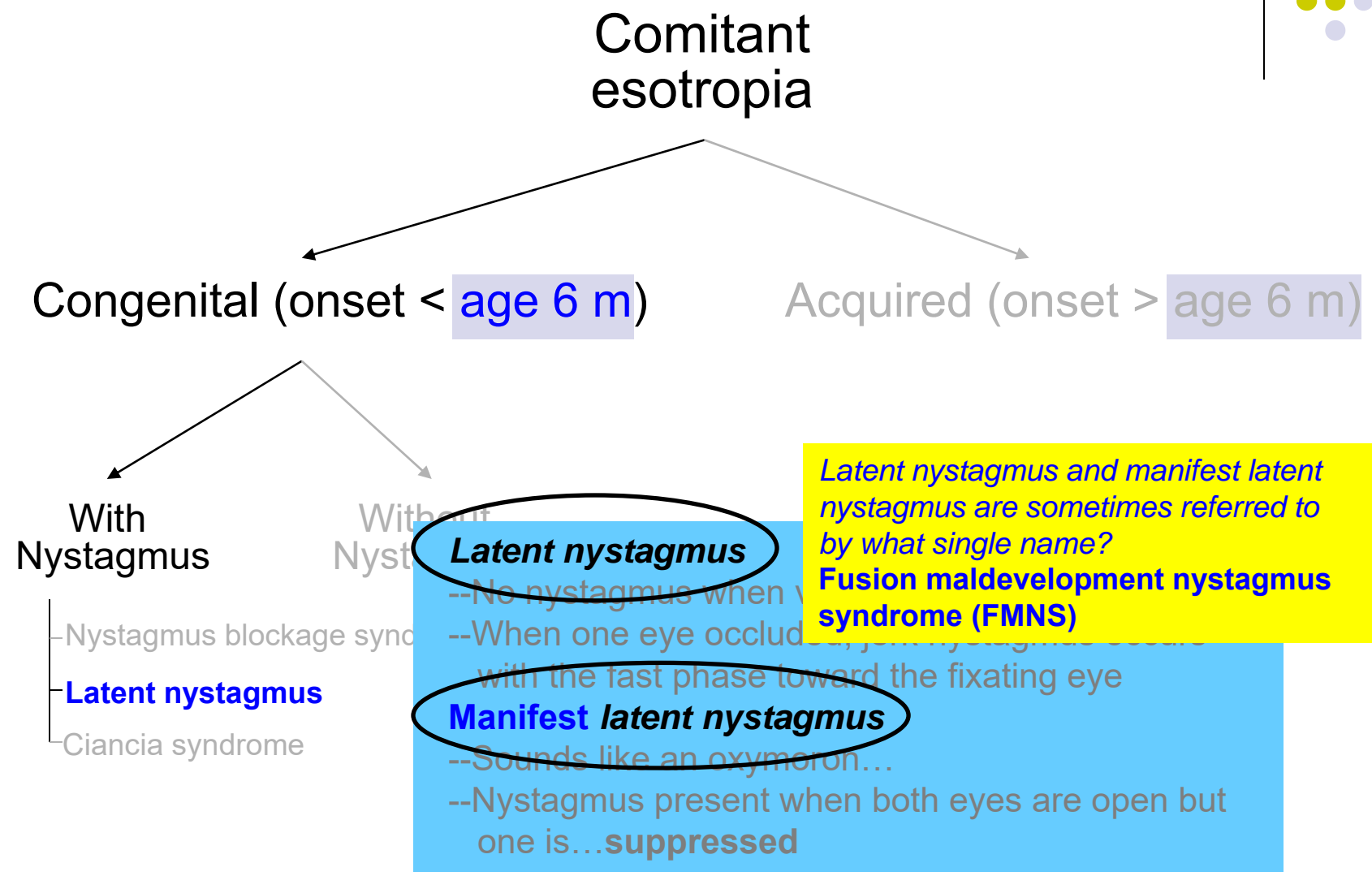
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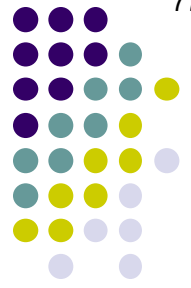


Latent nystagmus and manifest latent nystagmus are sometimes referred to by what single name?

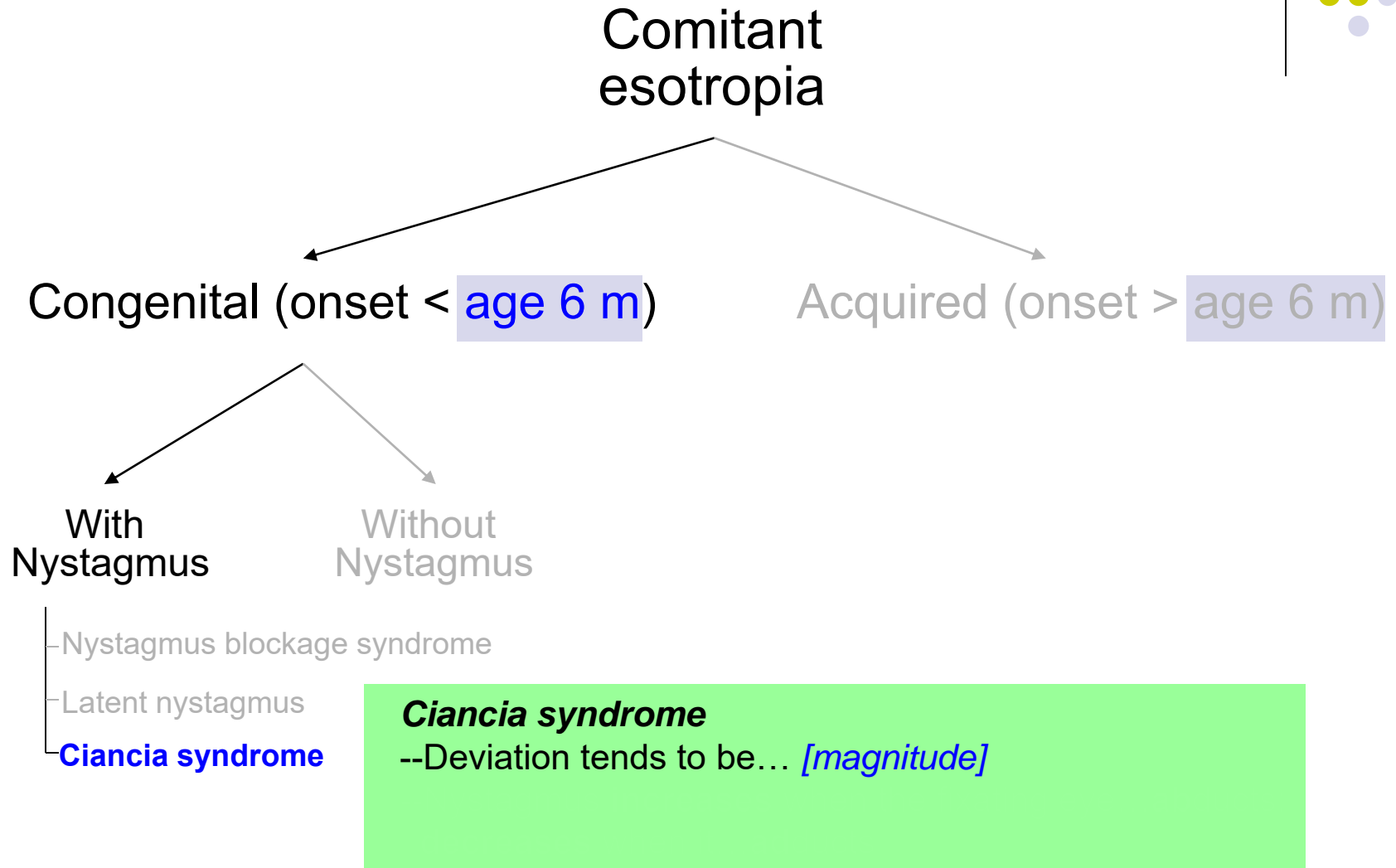


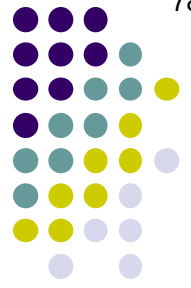
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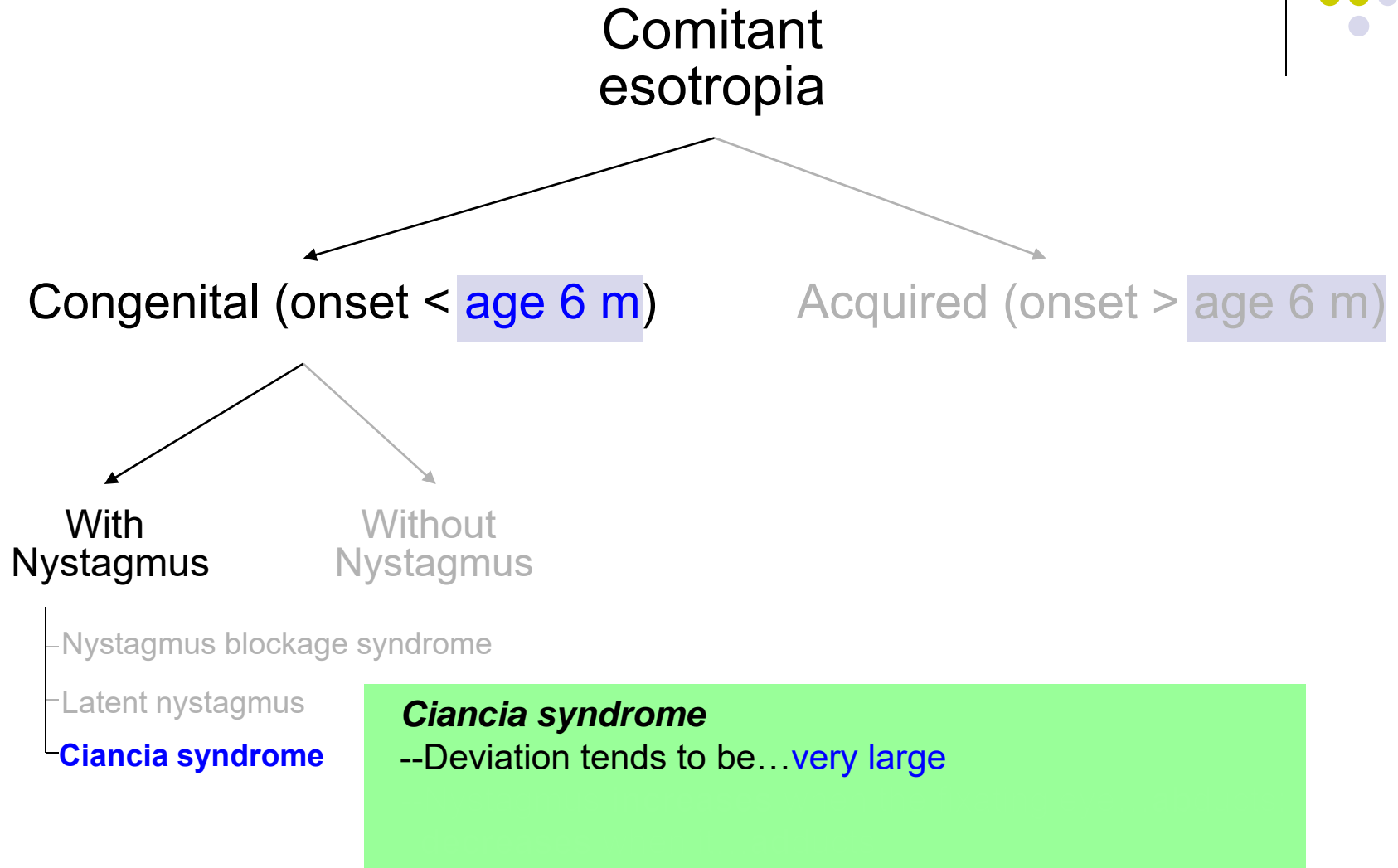


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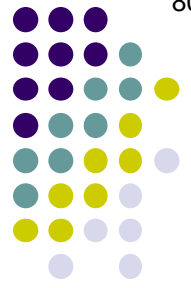




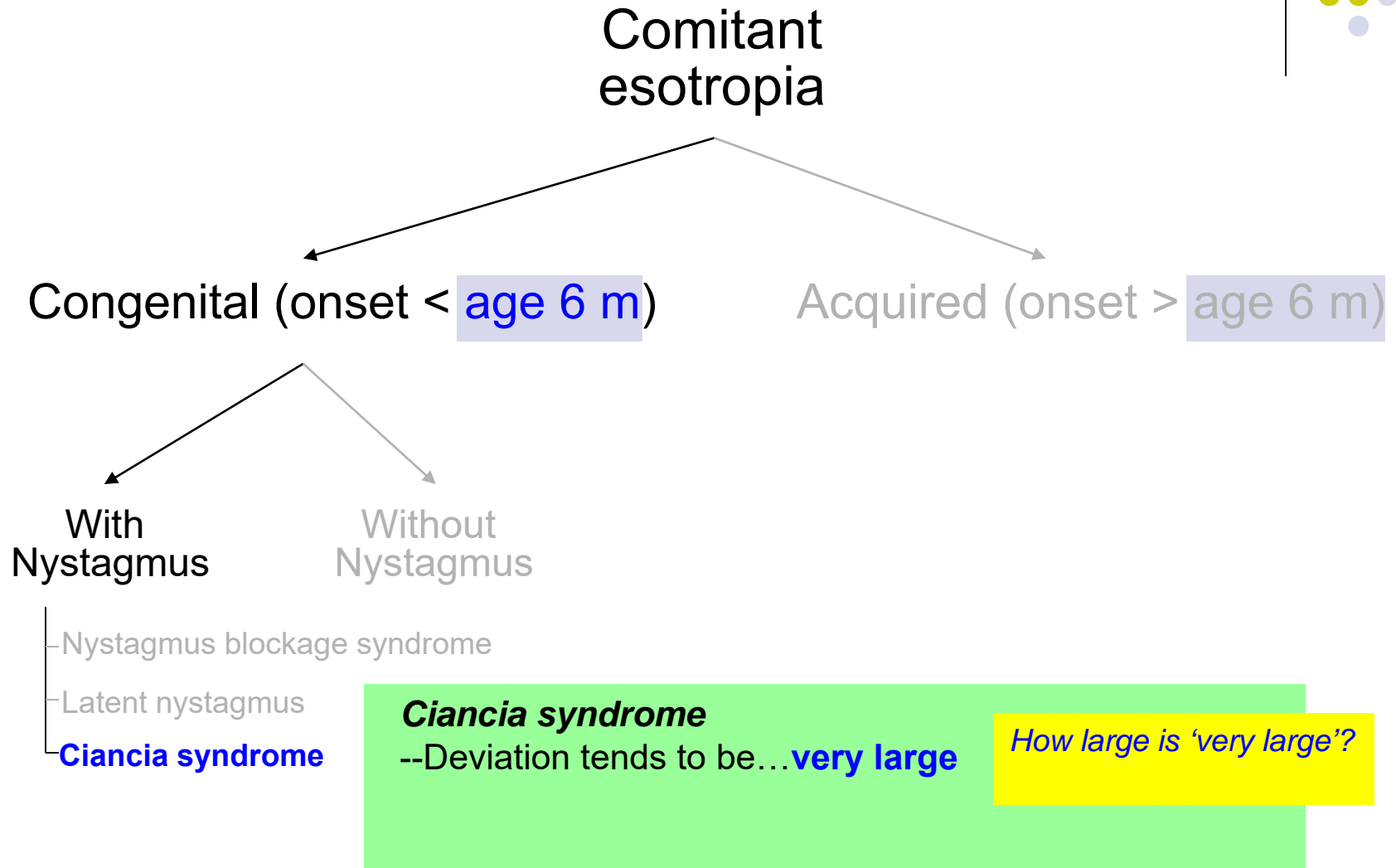
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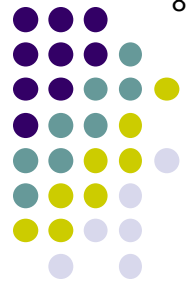


Ciancia syndrome

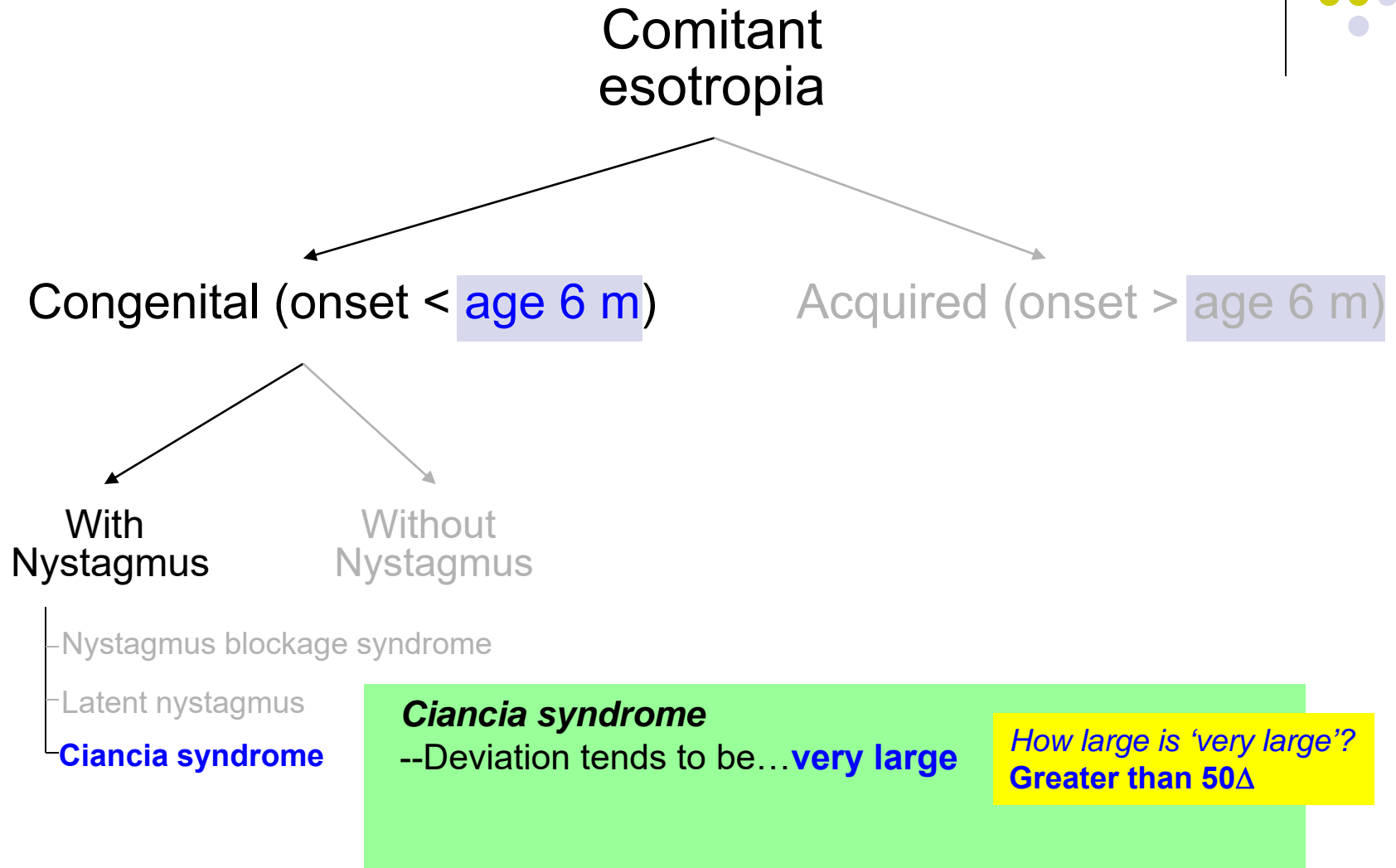


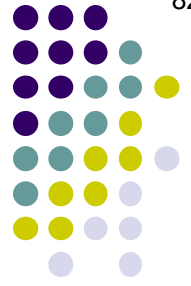
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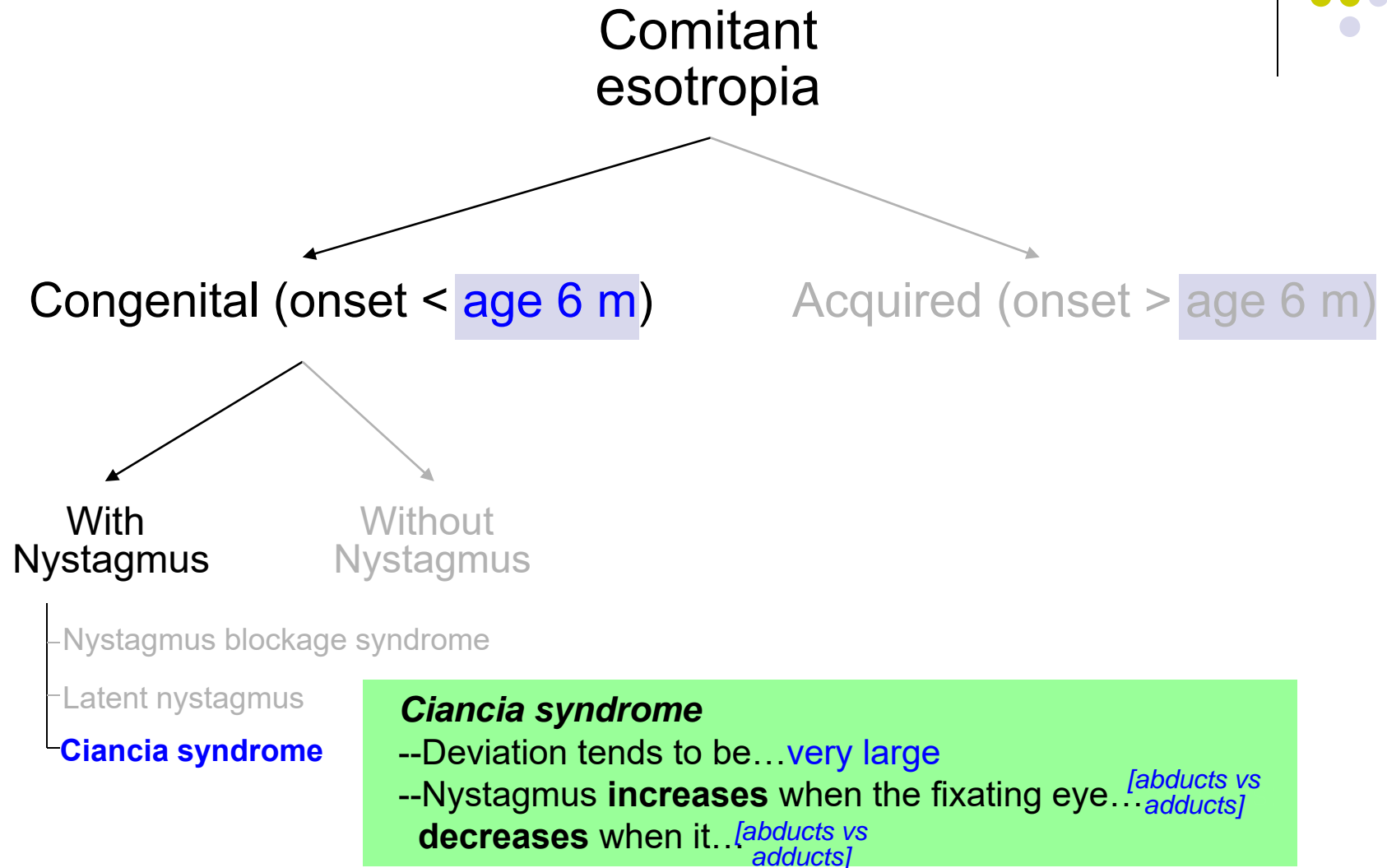


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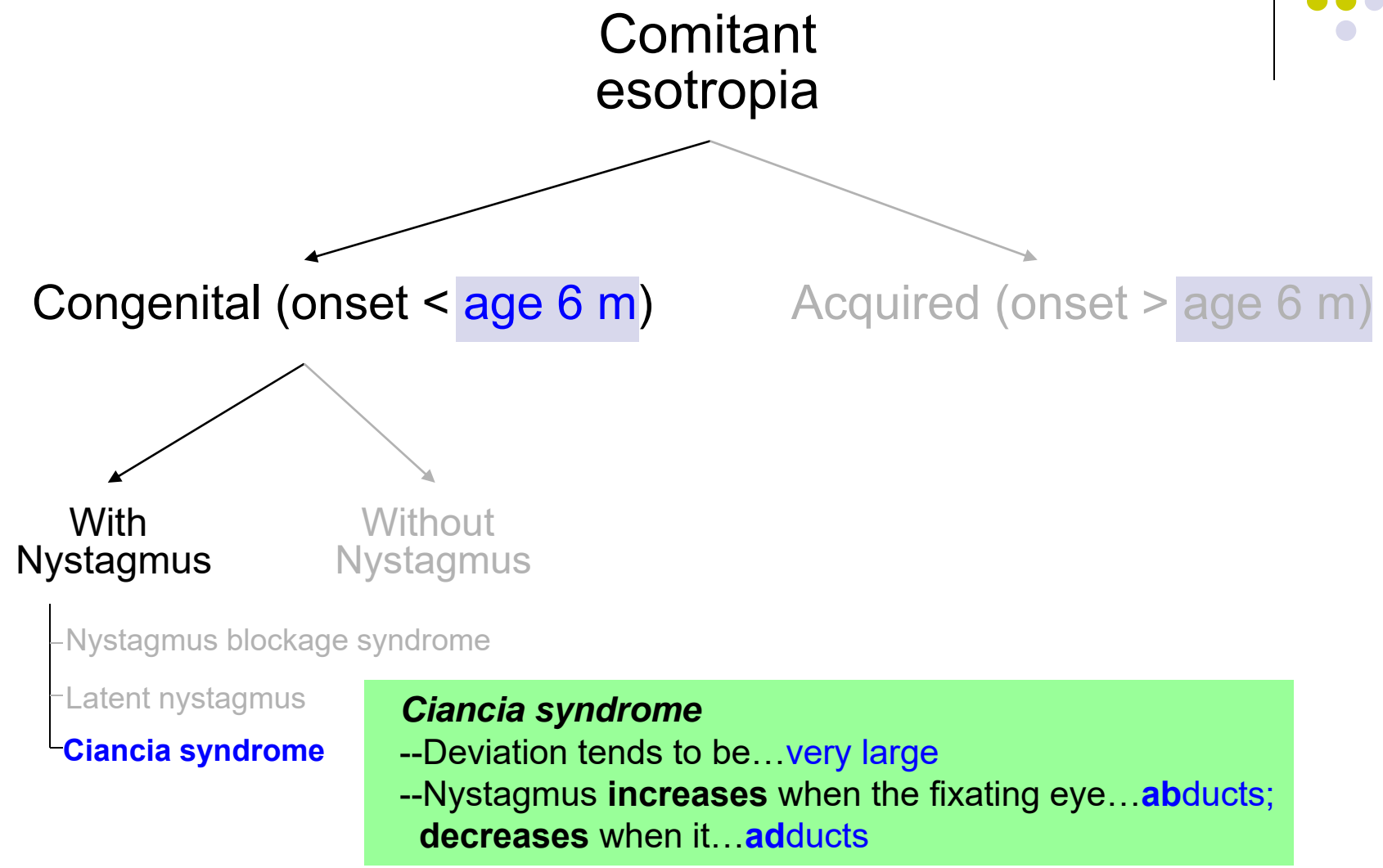


Comitant Esotropia





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?

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

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Nystagmus

Nystagmus blockage syndrome

--Damped when the eyes are...converged

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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)

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Nystagmus

Nystagmus blockage syndrome

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Latent nystagmus

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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.

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Nystagmus

Nystagmus blockage syndrome

--Damped when the eyes are...converged

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Nystagmus

Nystagmus blockage syndrome

--Damped when the eyes are...converged

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Ciancia syndrome

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Comitant Esotropia

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--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

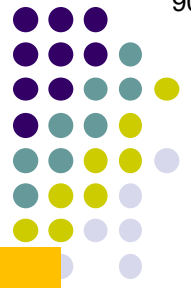
Latent nystagmus

Ciancia syndrome

Ciancia syndrome

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- The Ciancia syndrome happens to be associated with

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 with ET.

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

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;**
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Comitant Esotropia

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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?

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Nystagmus

--Damped when the eyes are...converged

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

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Pupillary constriction *may* accompany the convergence

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May? Why the hedging?

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Nystagmus

--Damped when the eyes are...converged

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

Nystagmus blockage syndrome

Latent nystagmus

Ciancia syndrome

Ciancia syndrome

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Comitant Esotropia

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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

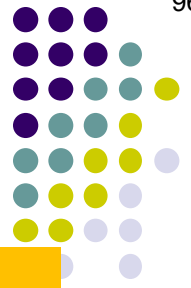
Latent nystagmus

Ciancia syndrome

Ciancia syndrome

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Comitant Esotropia

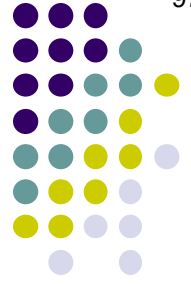
Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, **how can you differentiate between these?**
 Think of these disorders this way:
 --The NBS is a type of congenital nystagmus for which the null point is located in convergence (ie. the ET is in a sense caused by the nystagmus). In contrast, Ciancia syndrome is a form of nystagmus in which the ET just exists in attempted abduction.

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.

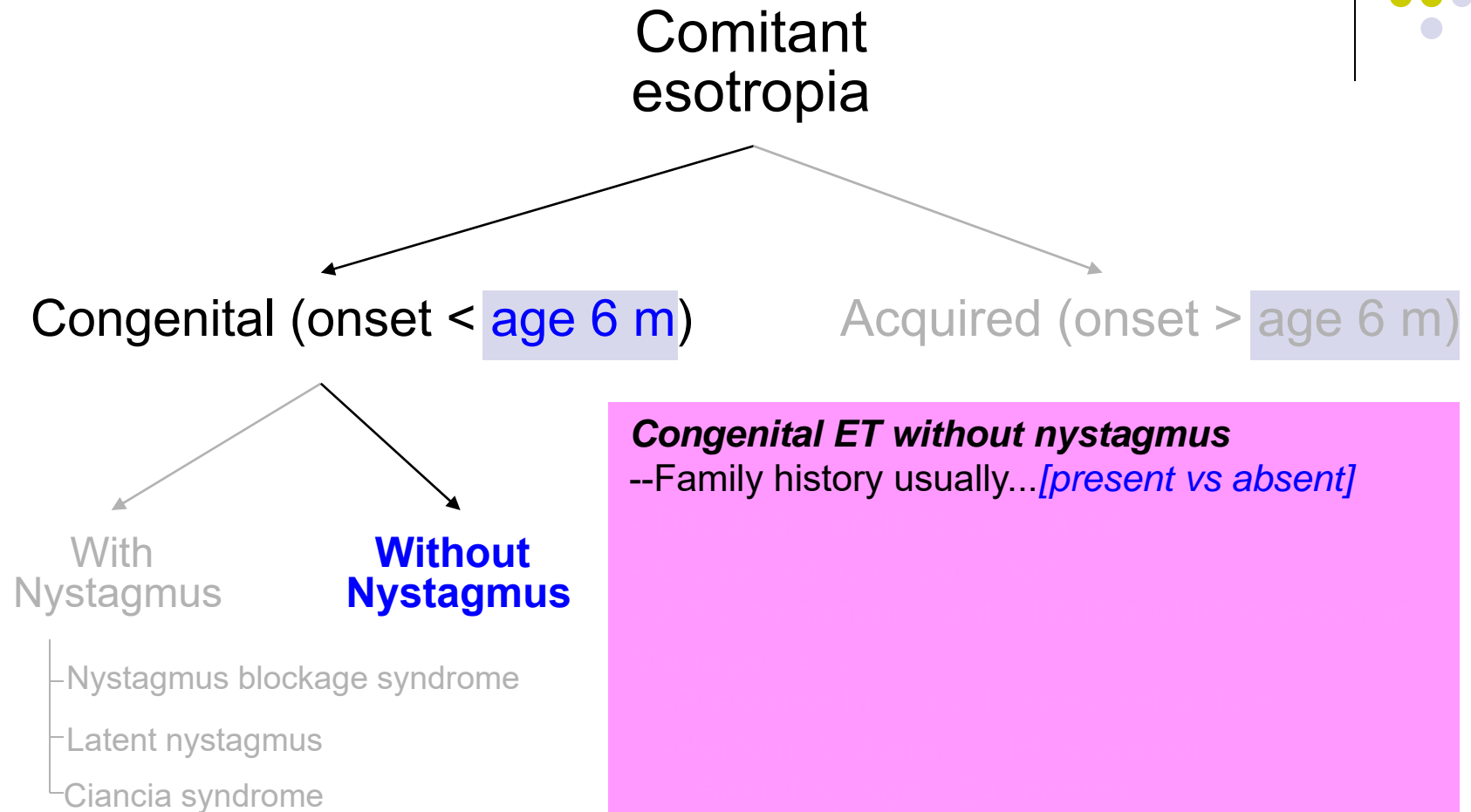
- Nystagmus blockage syndrome
- Latent nystagmus
- **Ciancia syndrome**

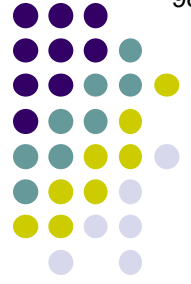
Ciancia syndrome
 --Deviation tends to be...very large
 --Nystagmus increases when the fixating eye...abducts; **decreases** when it...adducts

*Prior to 'eating up prism'

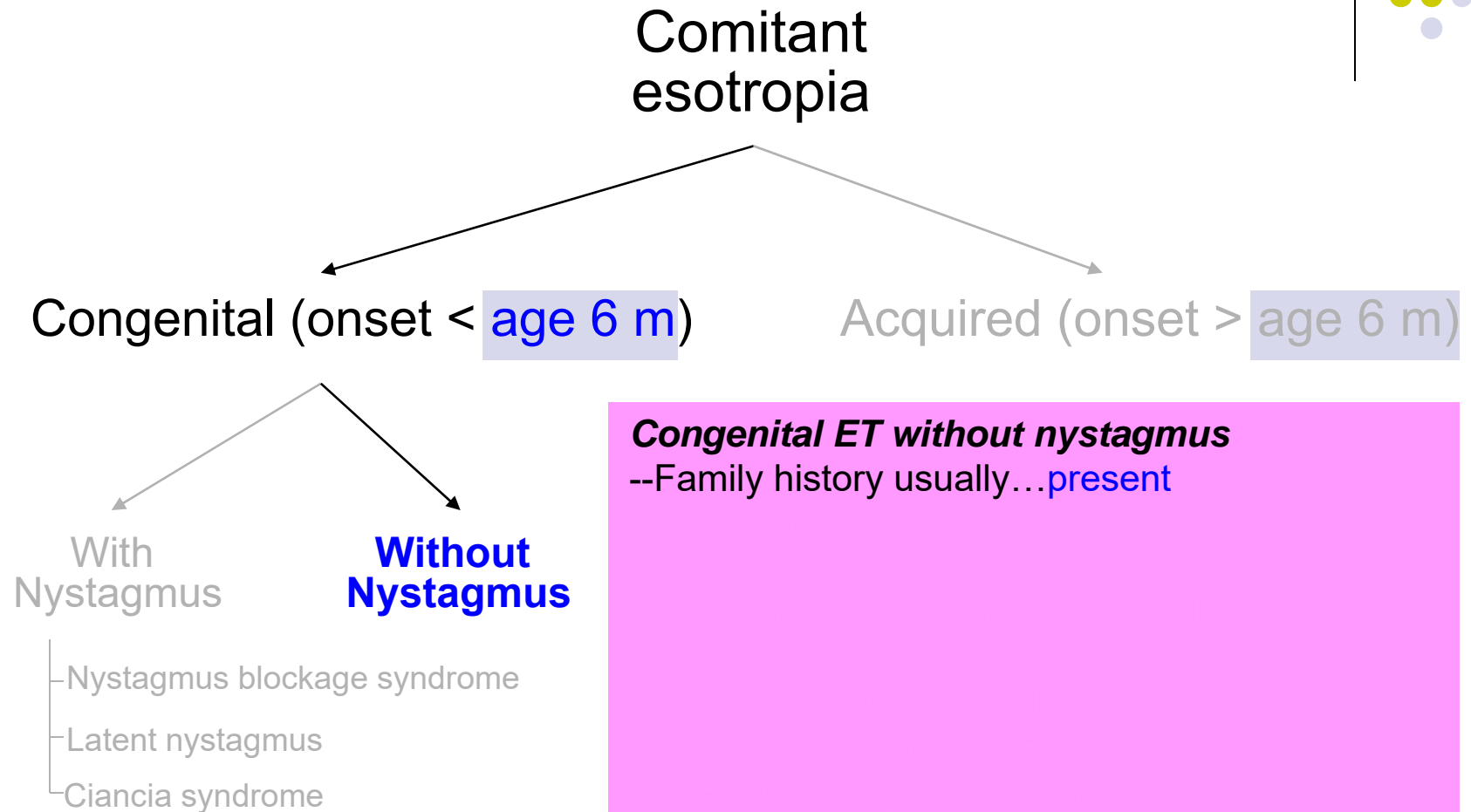


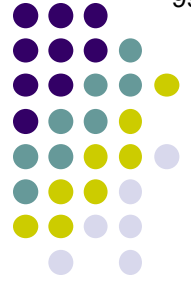
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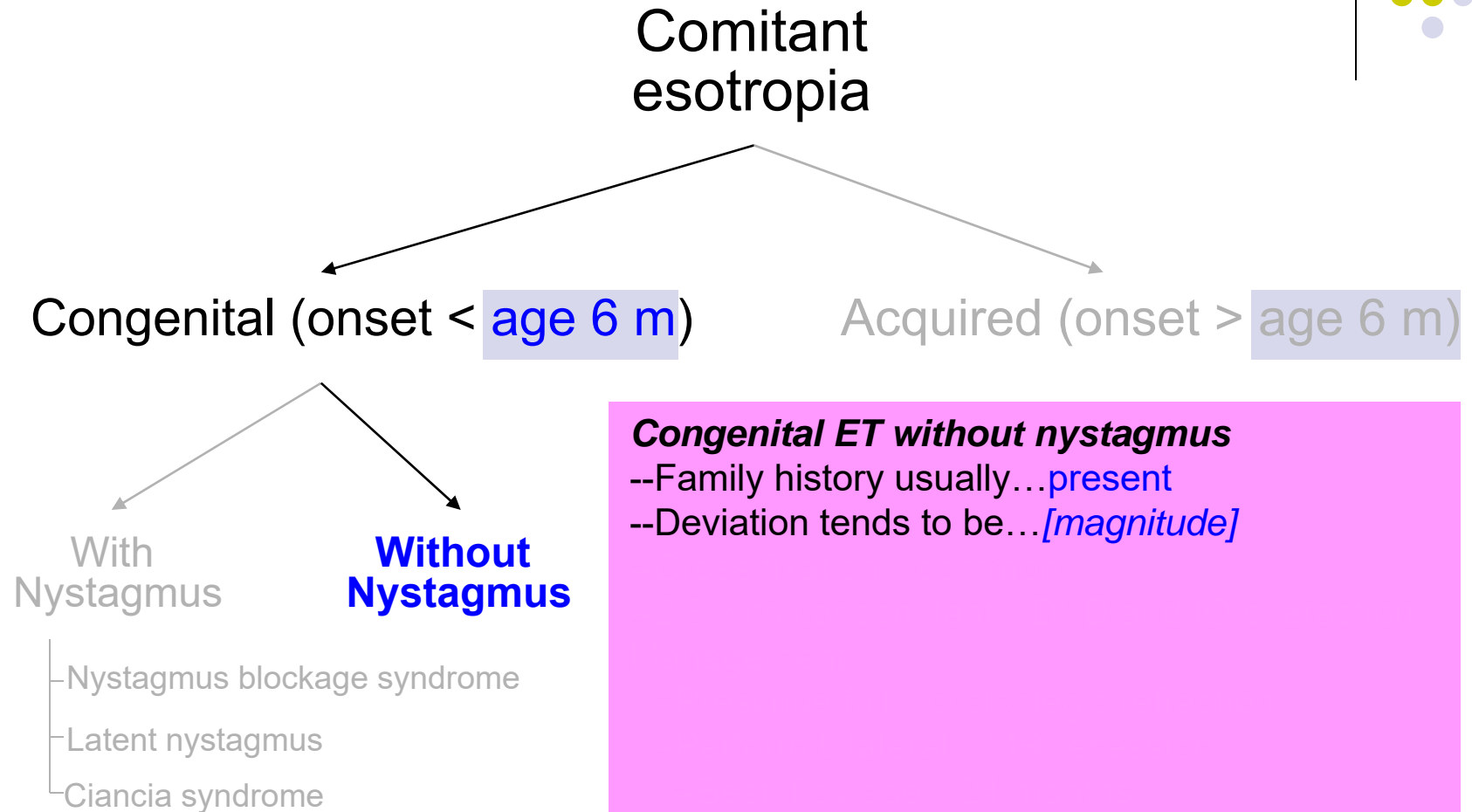


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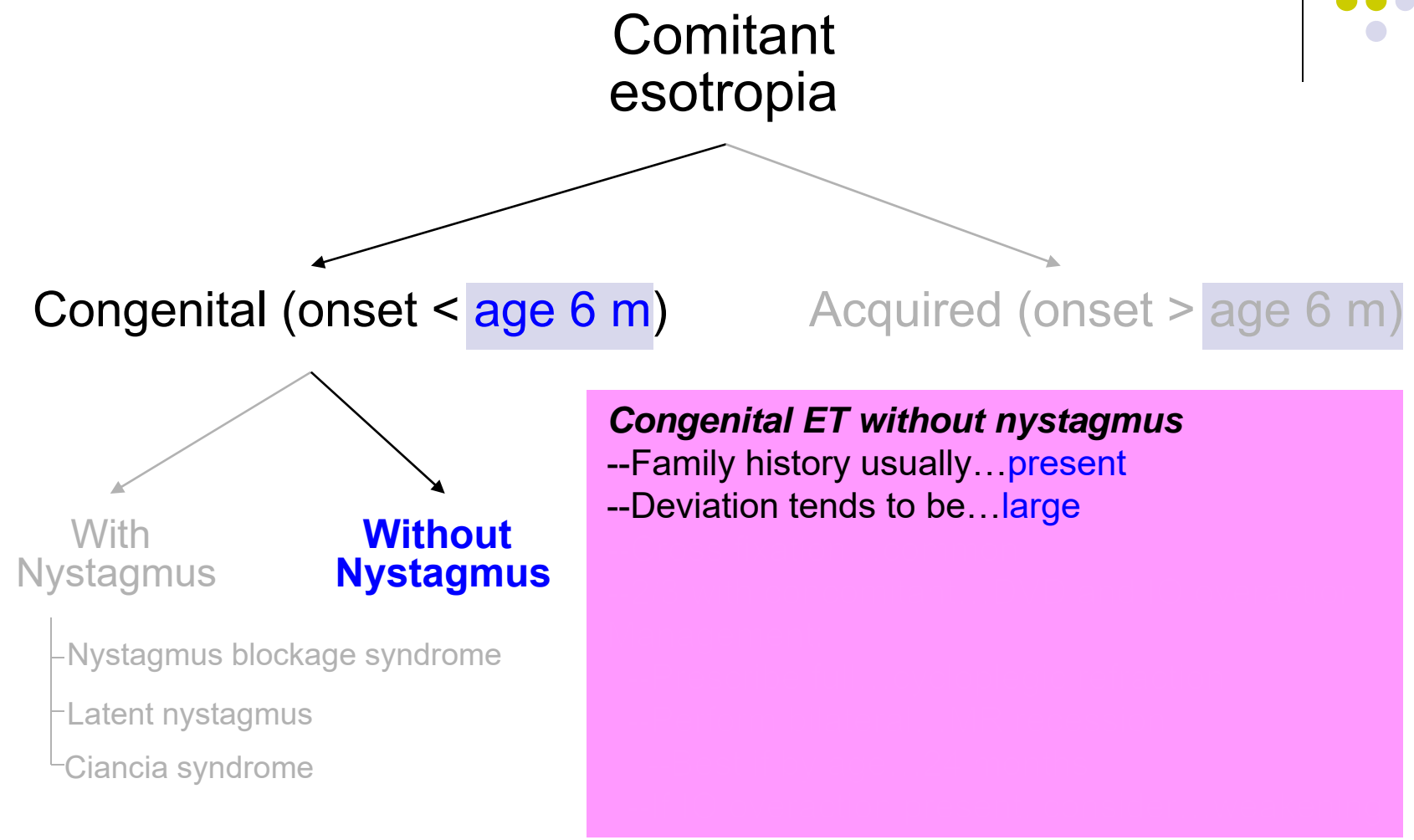


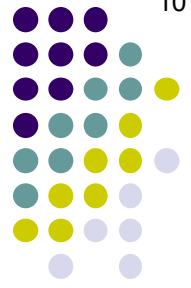
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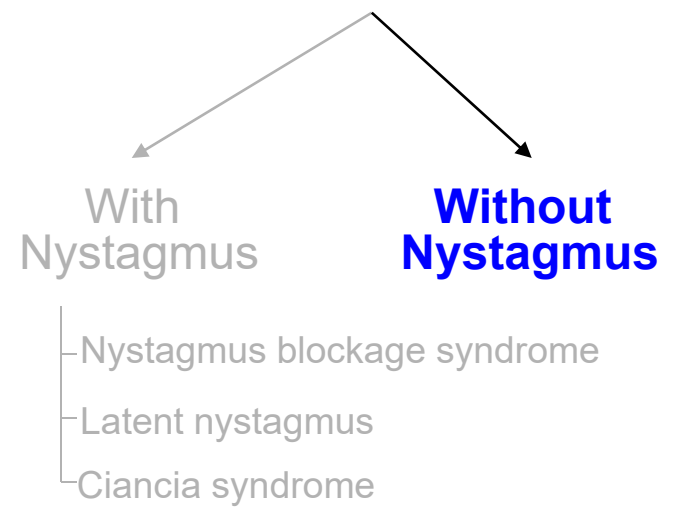
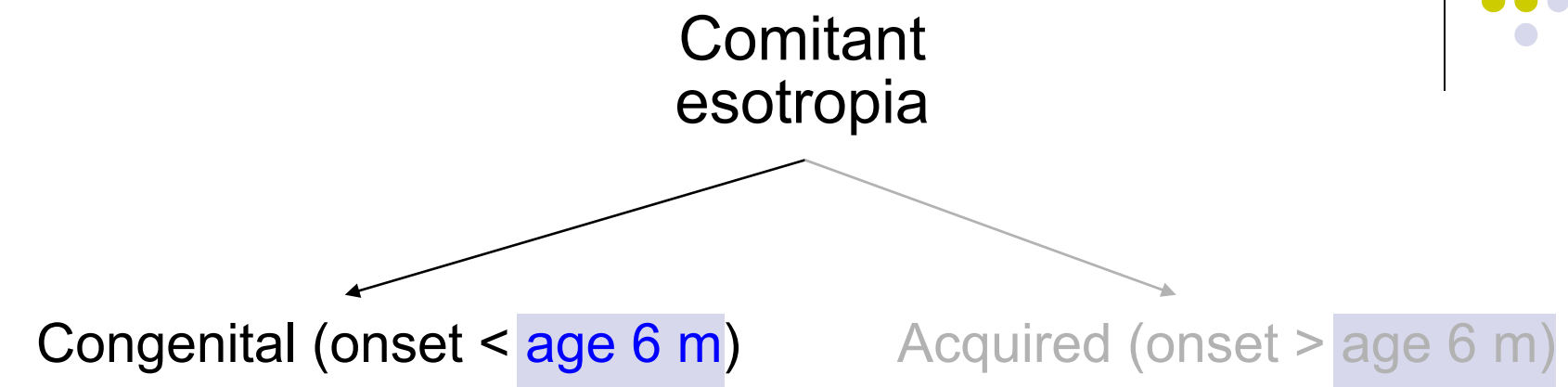


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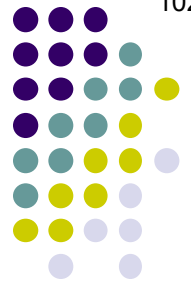


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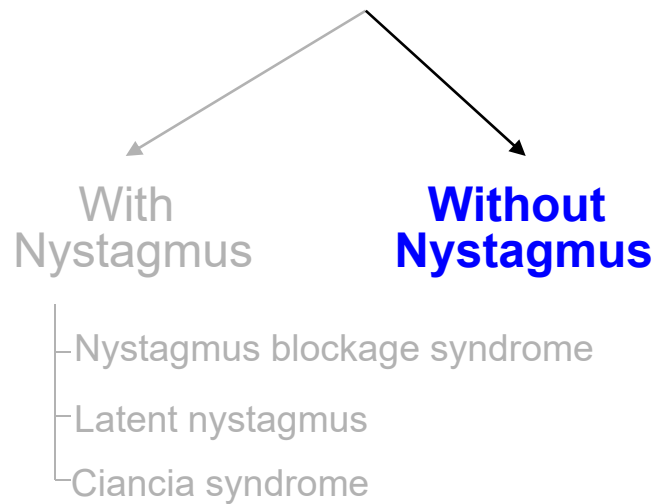
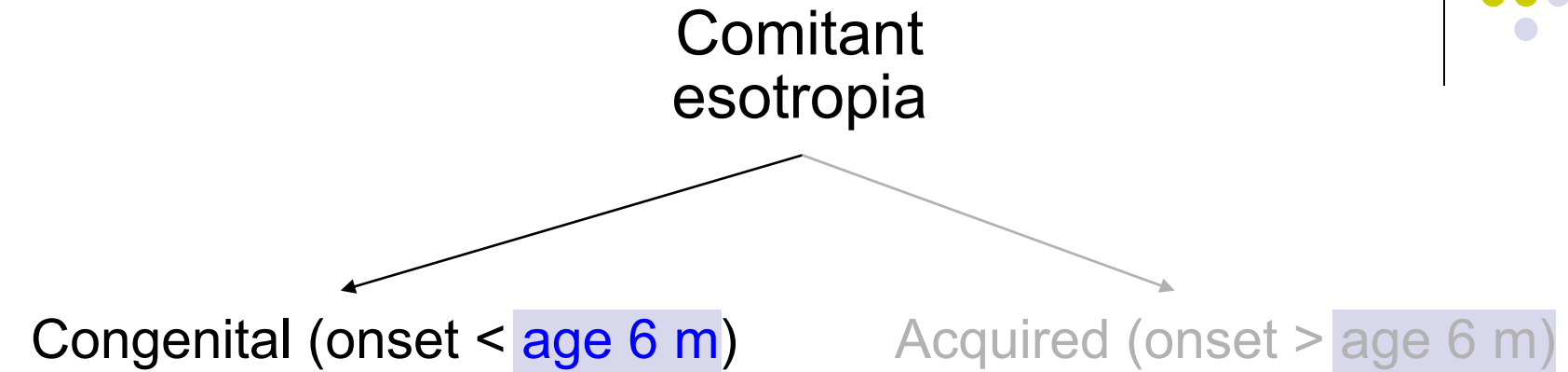


Congenital ET without nystagmus
 --Family history usually...present
 --Deviation tends to be...large

How large is 'large'?



Comitant Esotropia



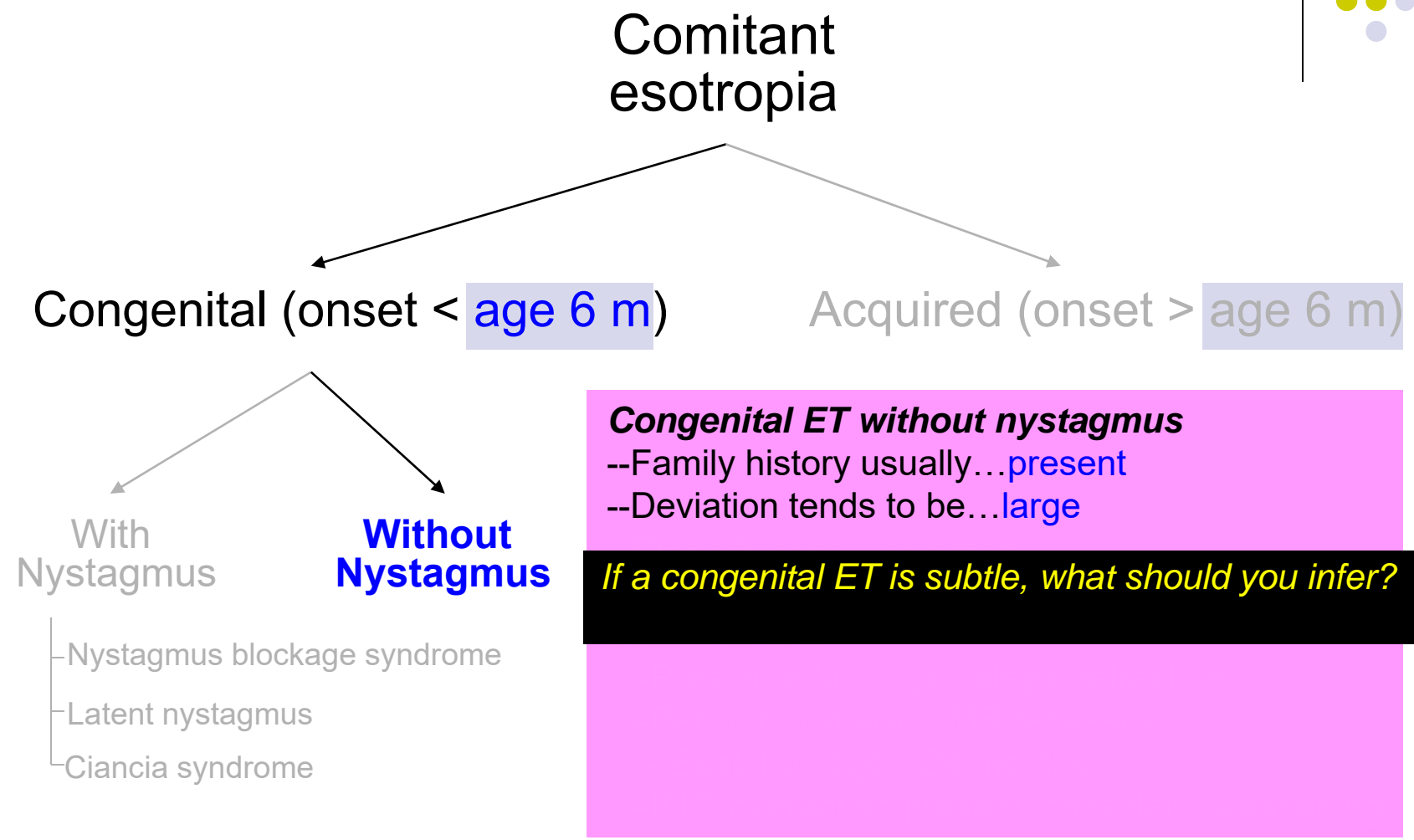
Congenital ET without nystagmus

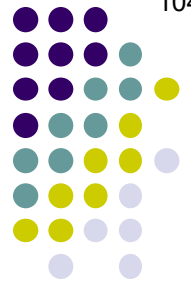
- Family history usually...present
- Deviation tends to be...large

How large is 'large'?
Greater than 30Δ

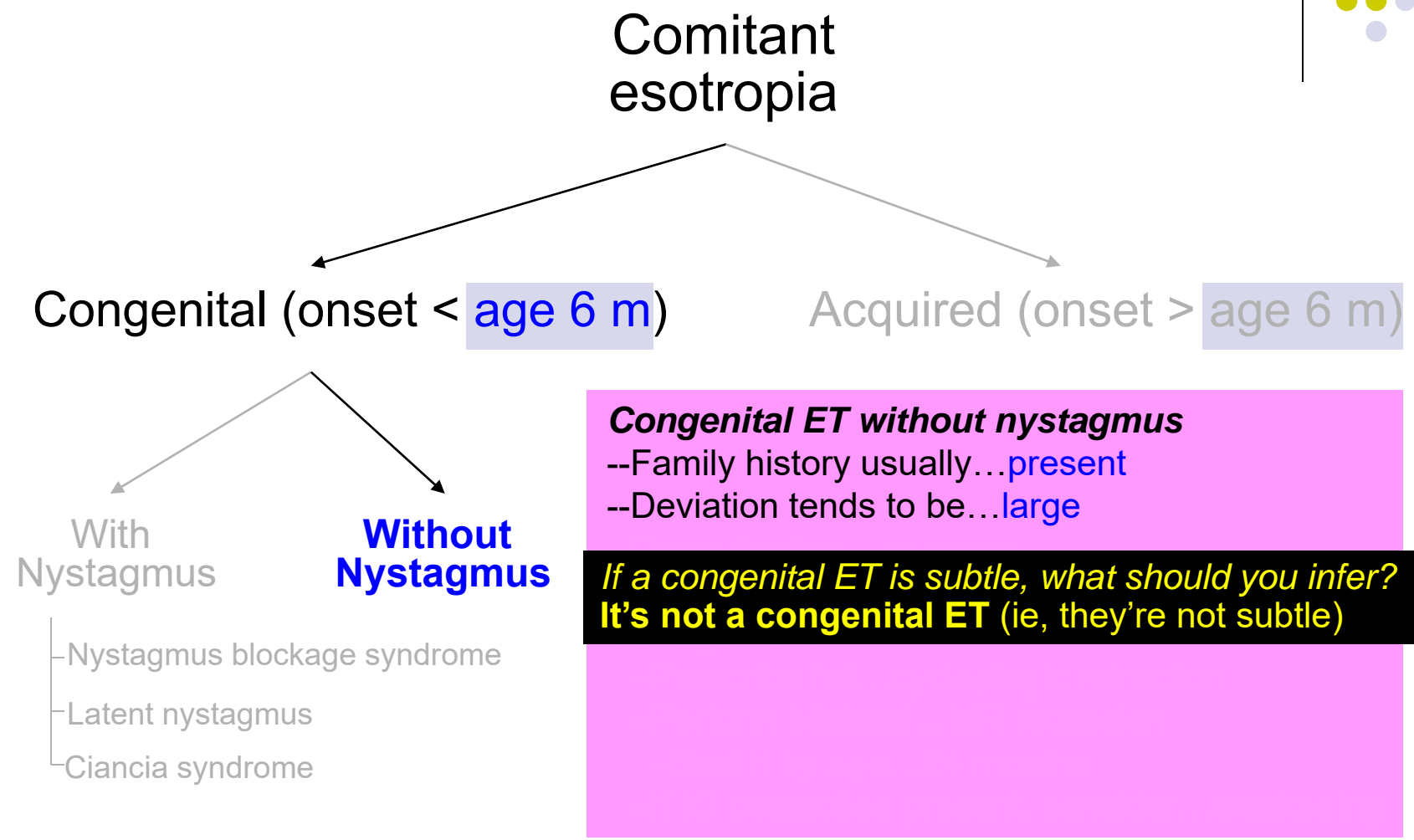


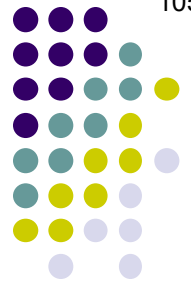
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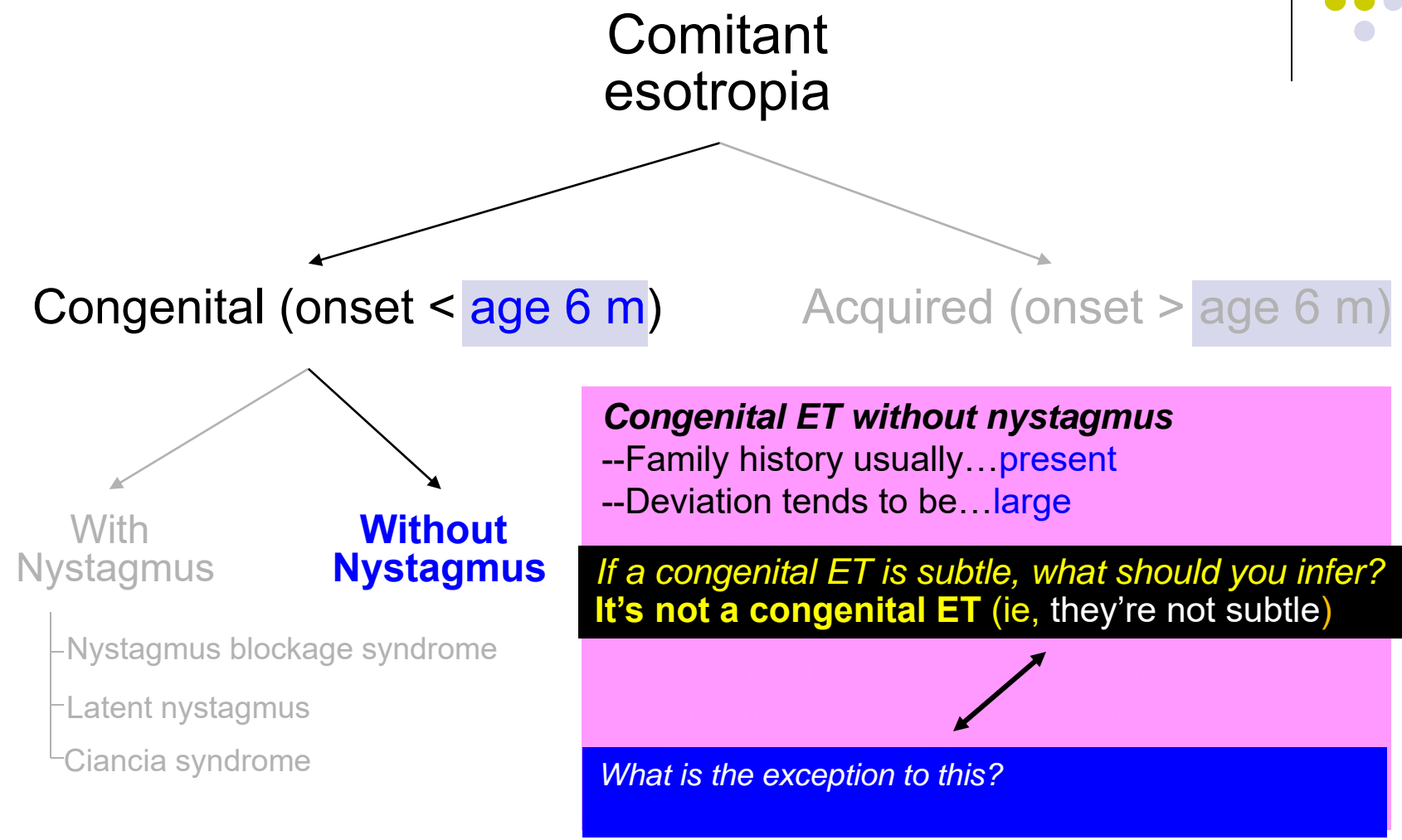


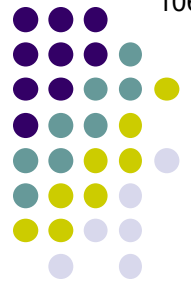
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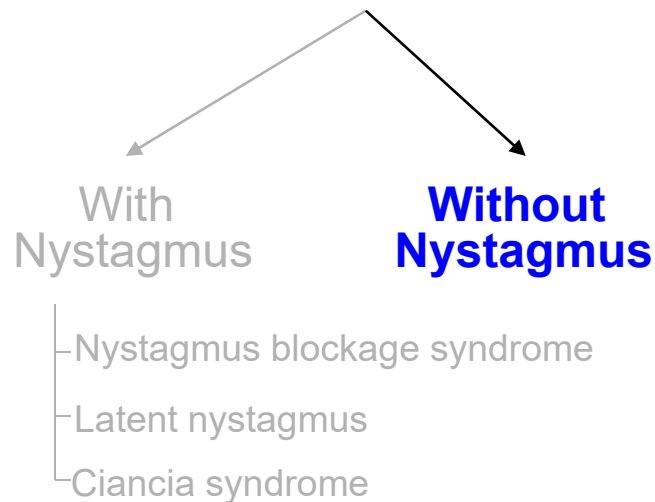
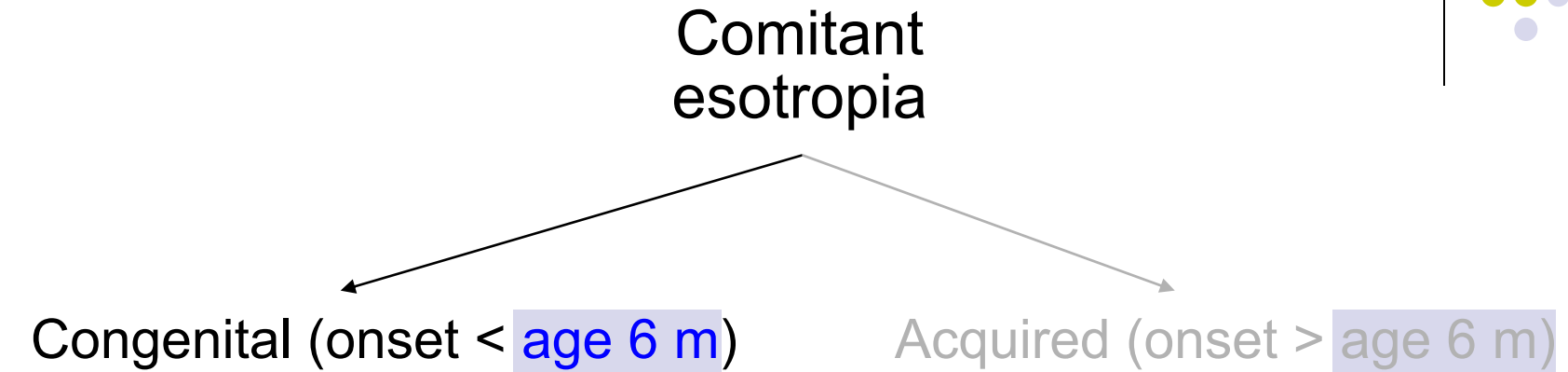


Comitant Esotropia





Comitant Esotropia



Congenital ET without nystagmus

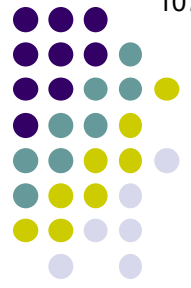
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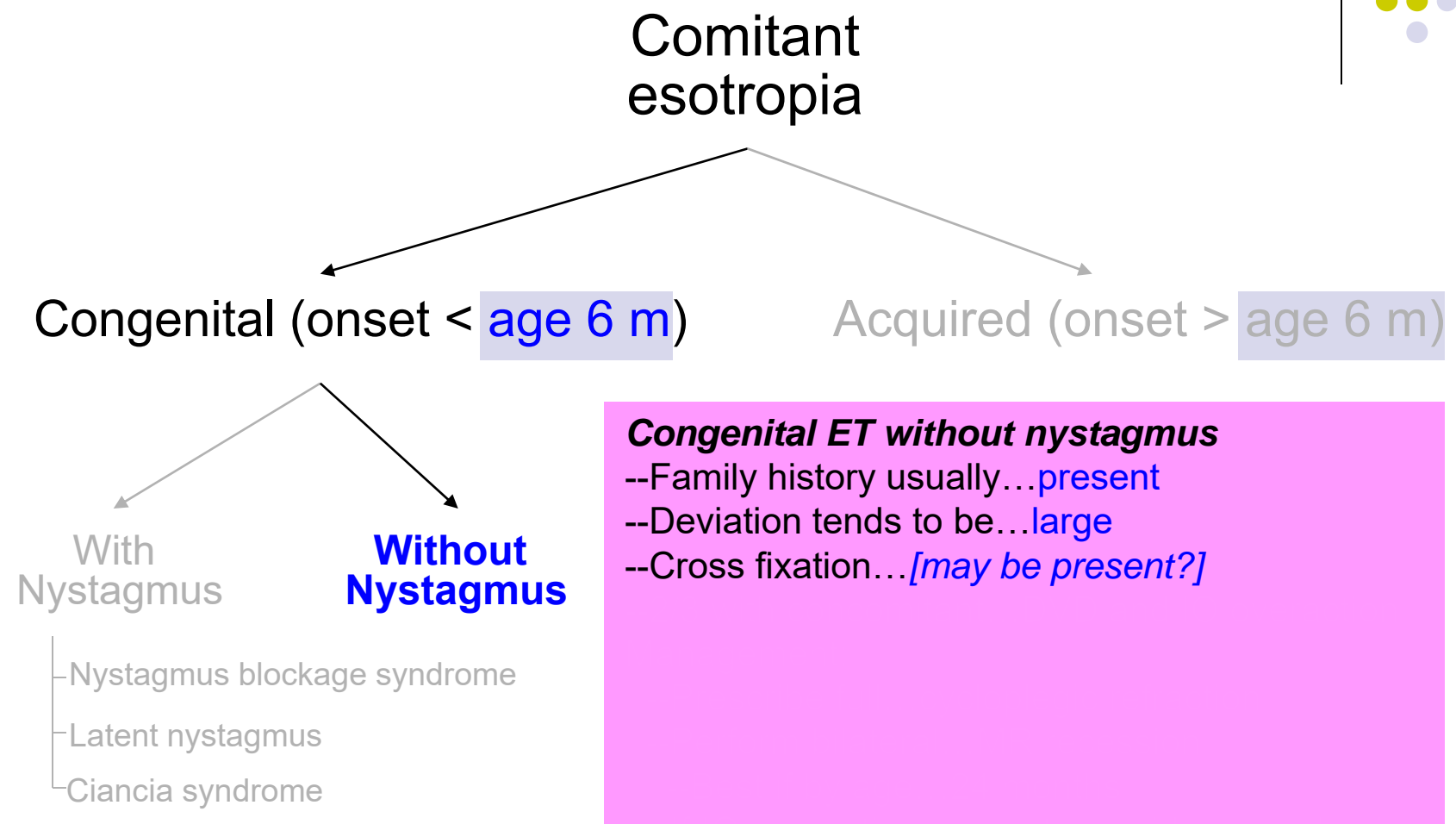
***If a congenital ET is subtle, what should you infer?
It's not a congenital ET (ie, they're not subtle)***

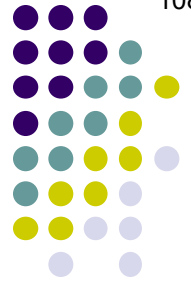
What is the exception to this?

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

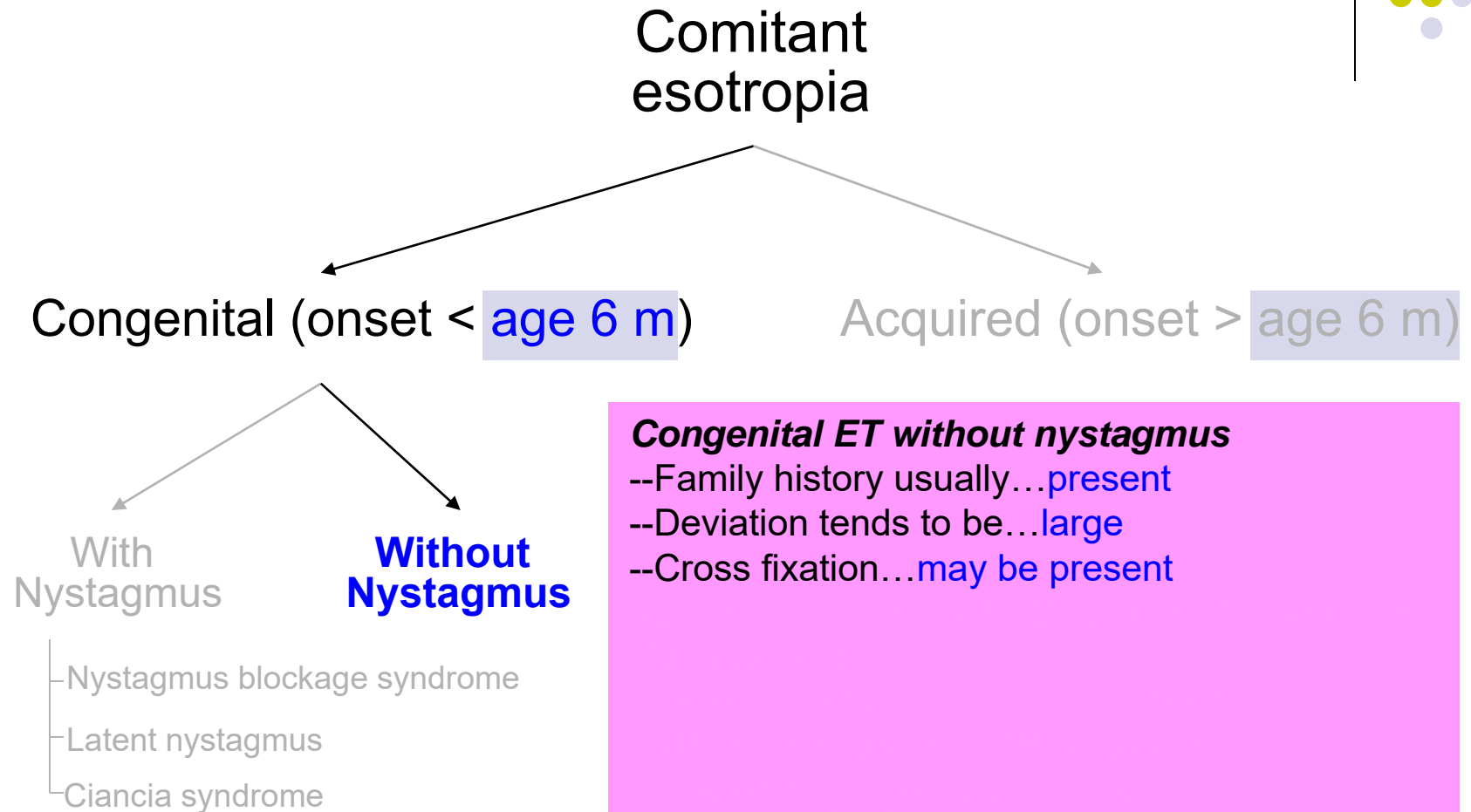


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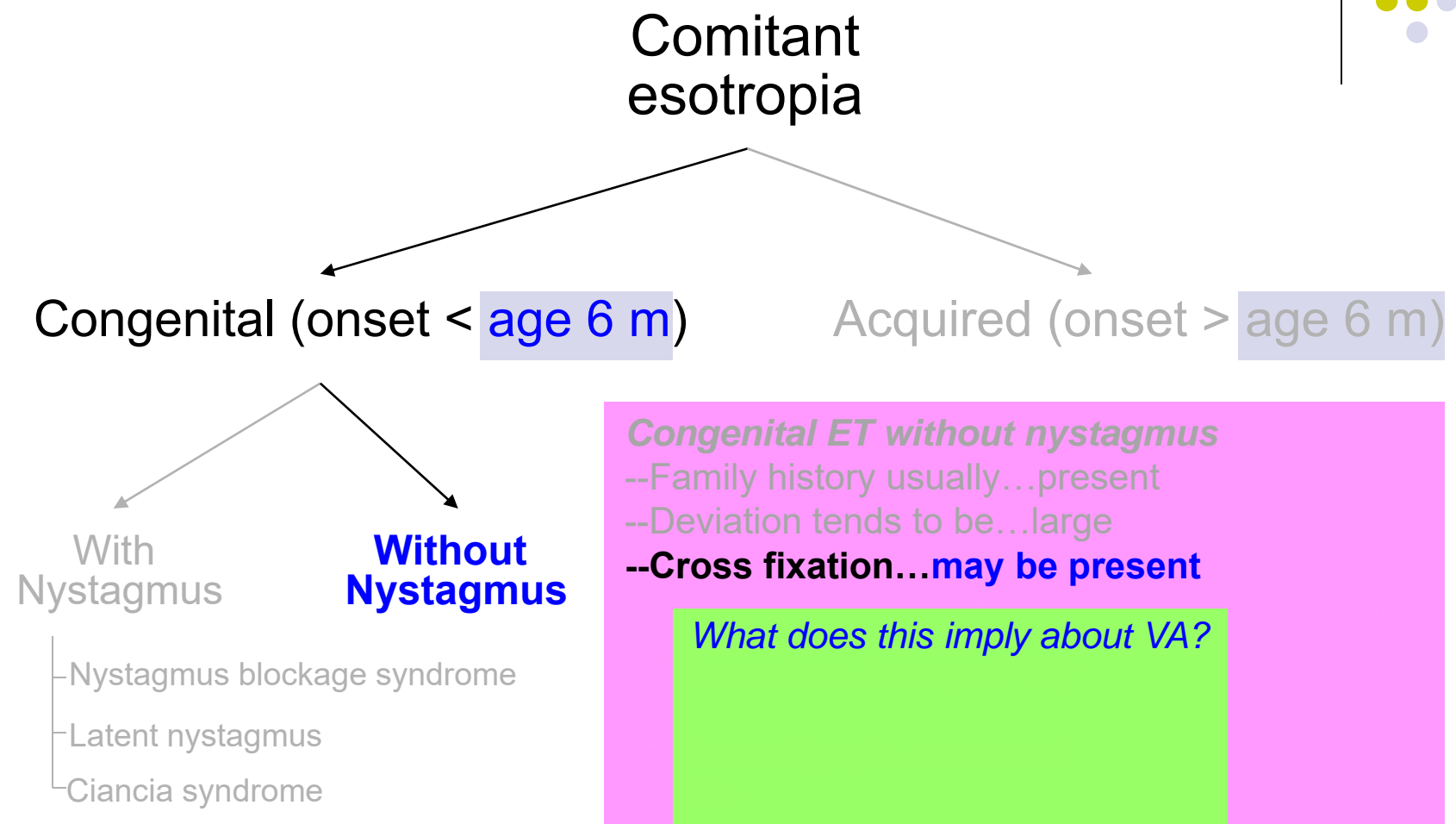


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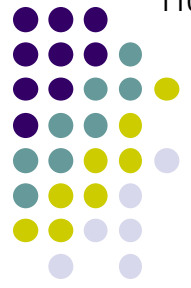




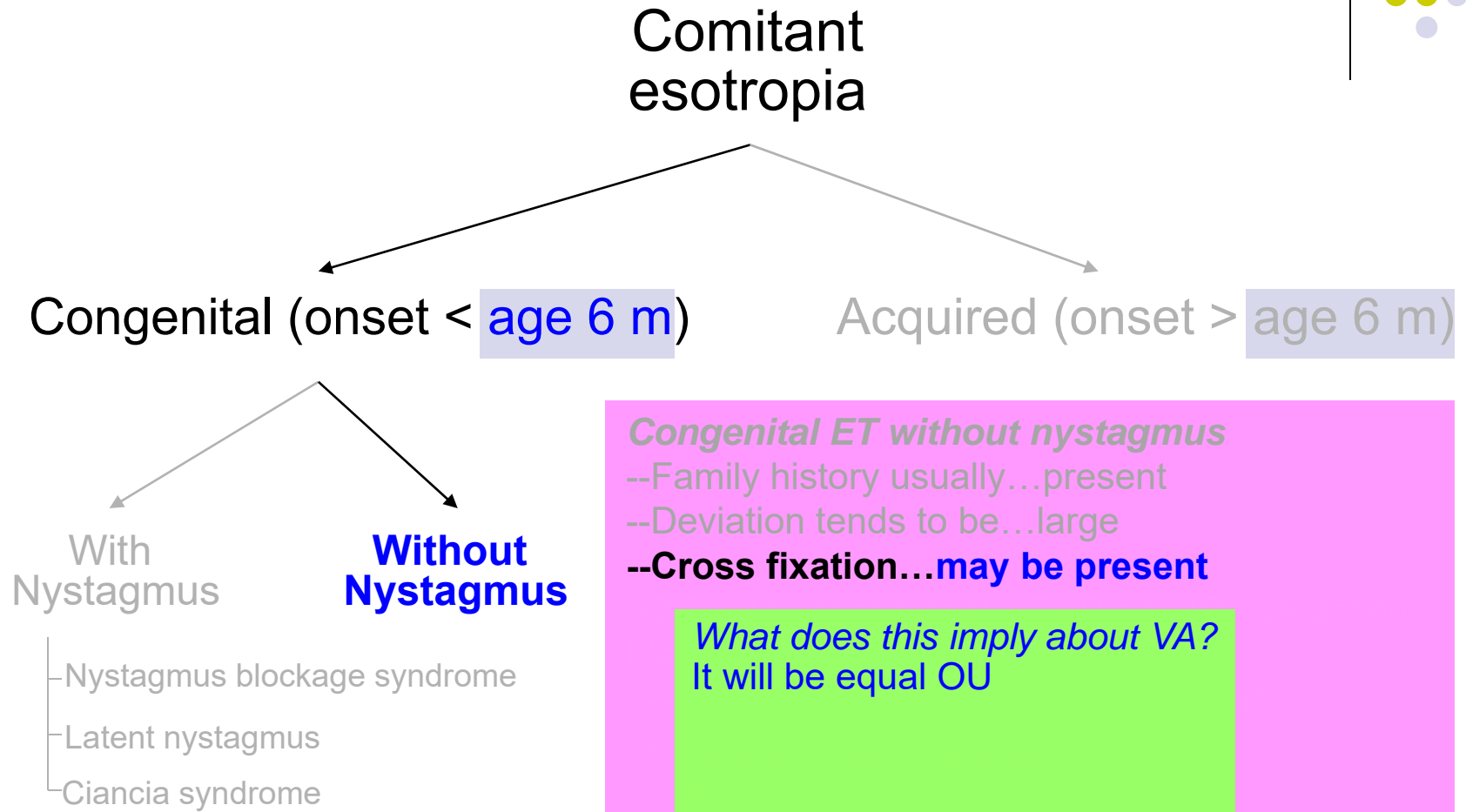
Comitant Esotropia



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

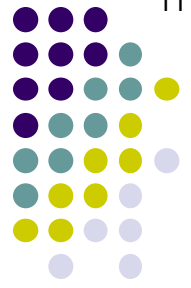


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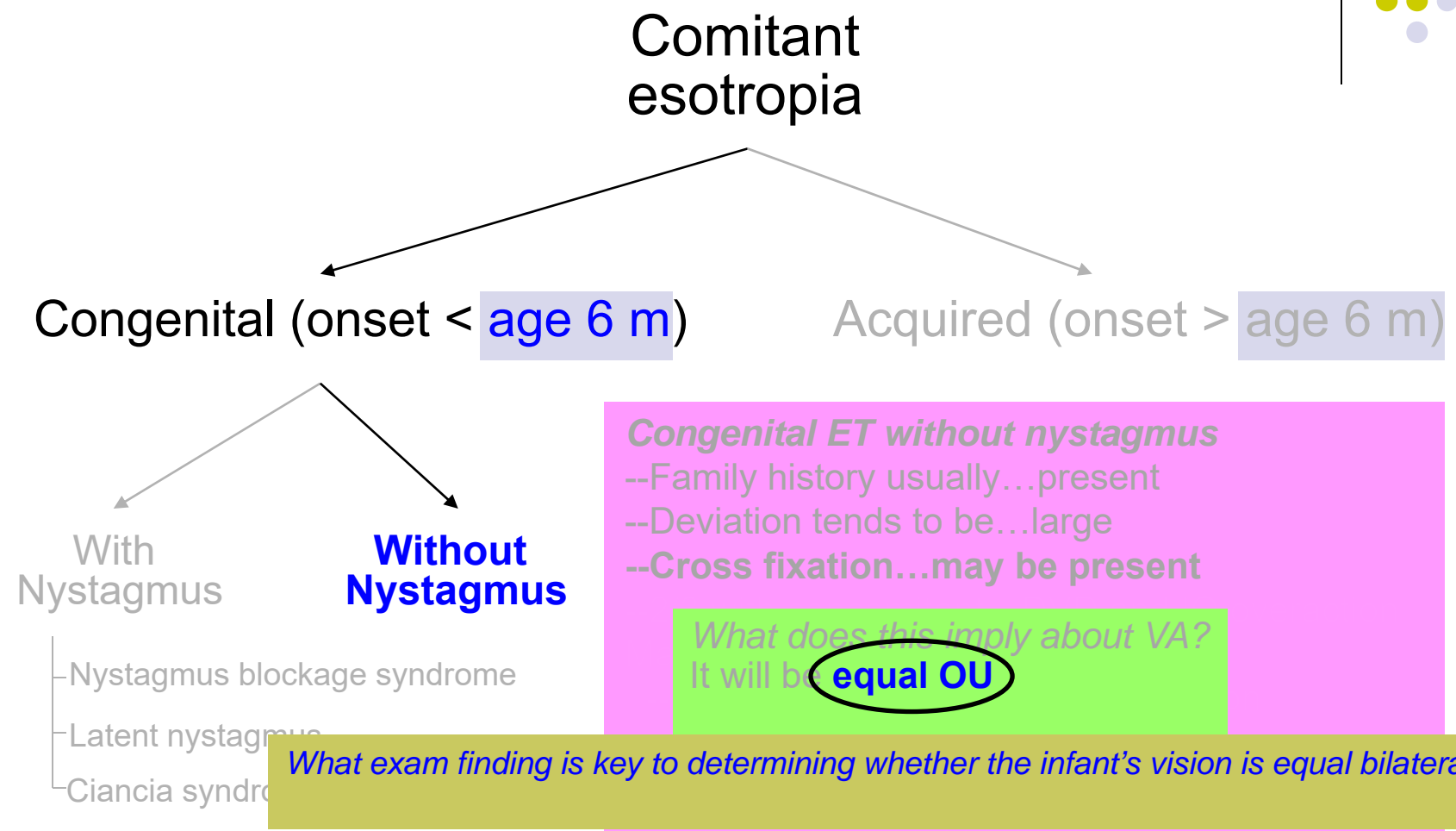


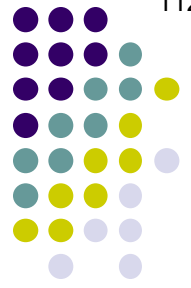
Congenital ET without nystagmus

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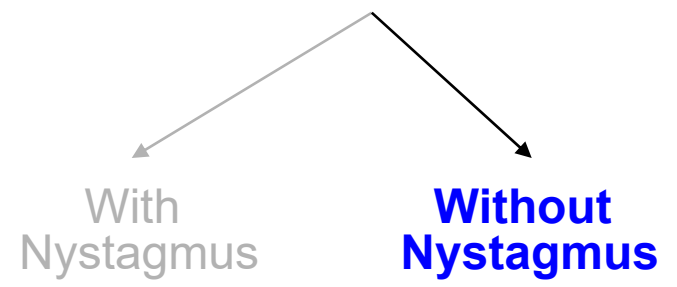
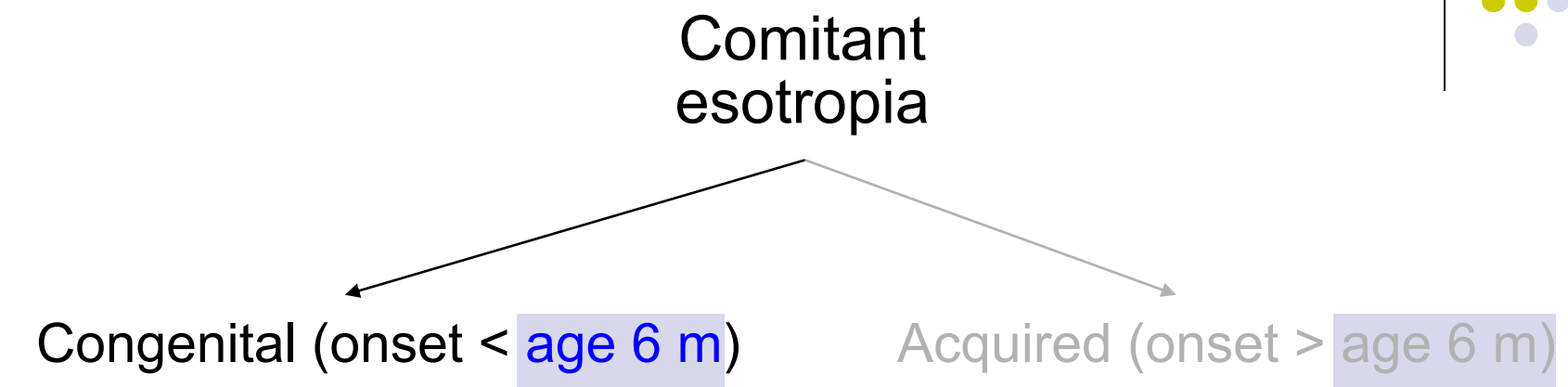


Comitant Esotropia





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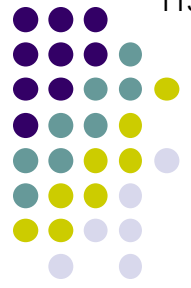


Congenital ET without nystagmus

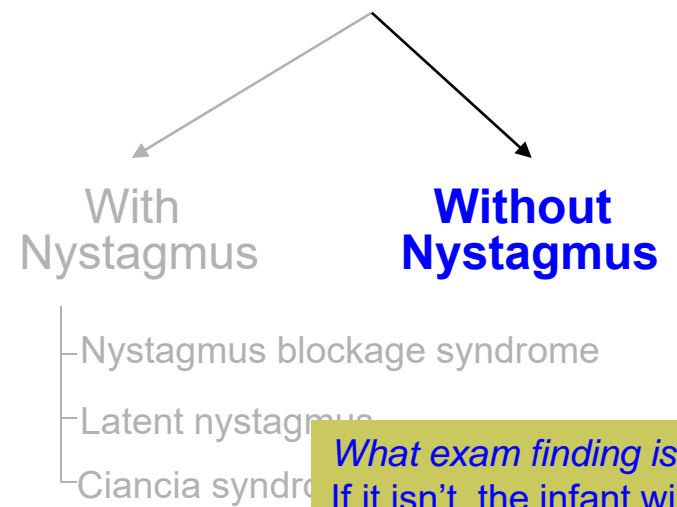
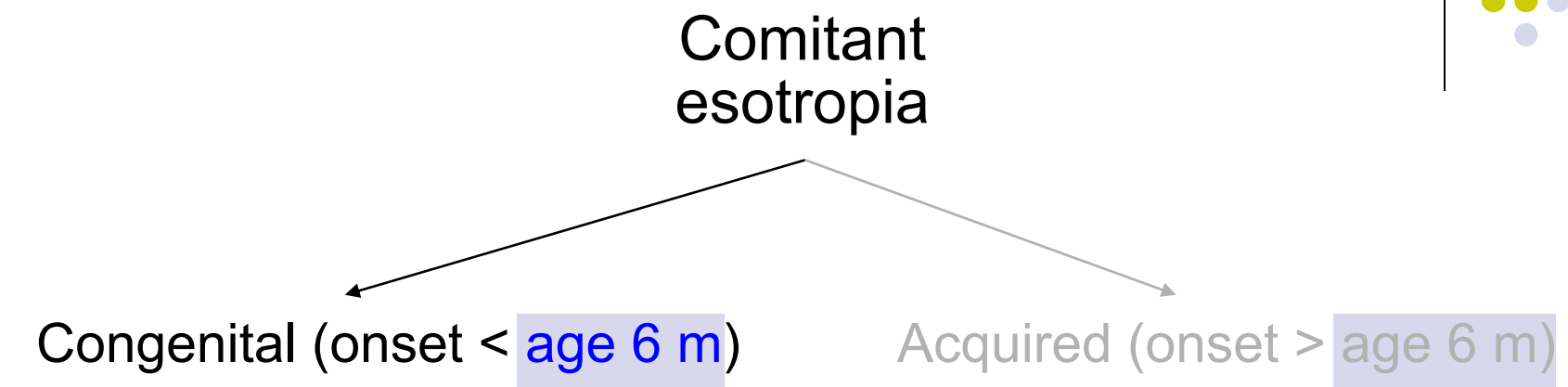
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What does this imply about VA?
It will be **equal OU**

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



Comitant Esotropia

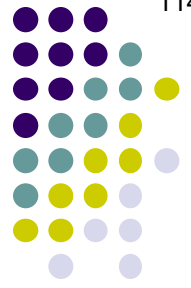


Congenital ET without nystagmus

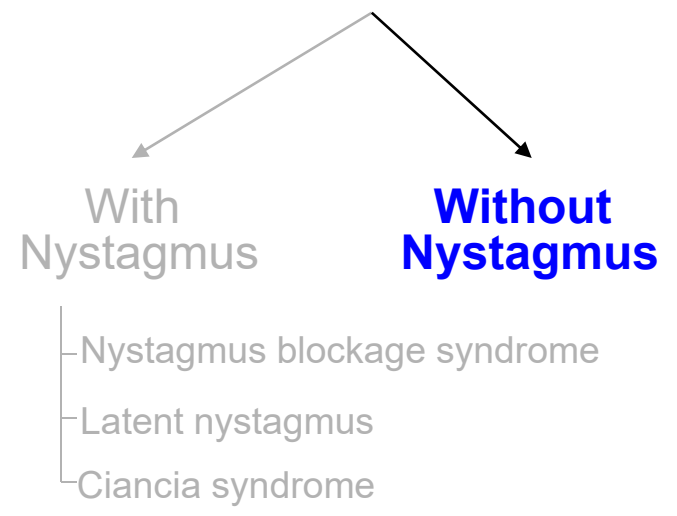
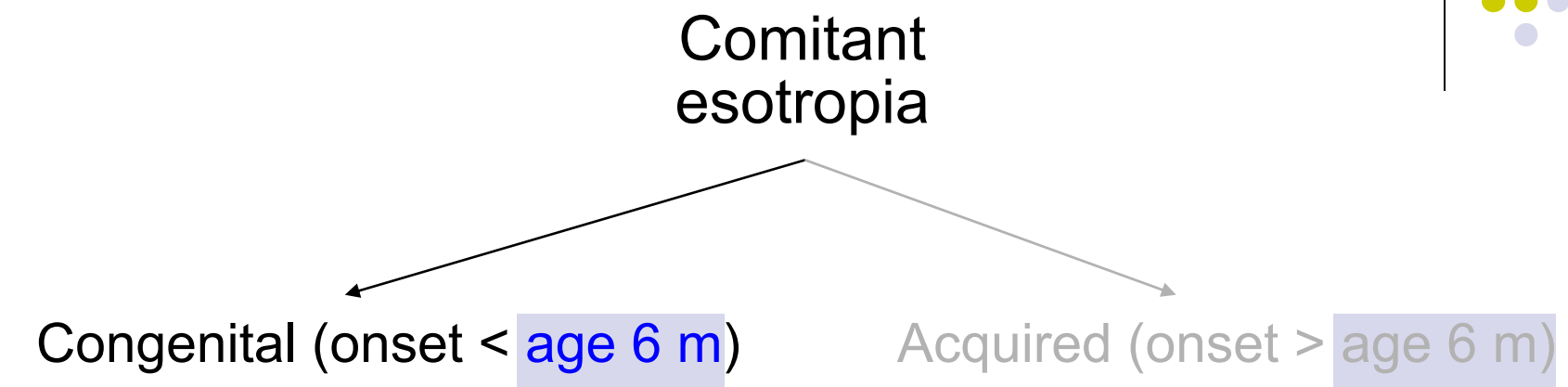
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Comitant Esotropia



Congenital ET without nystagmus

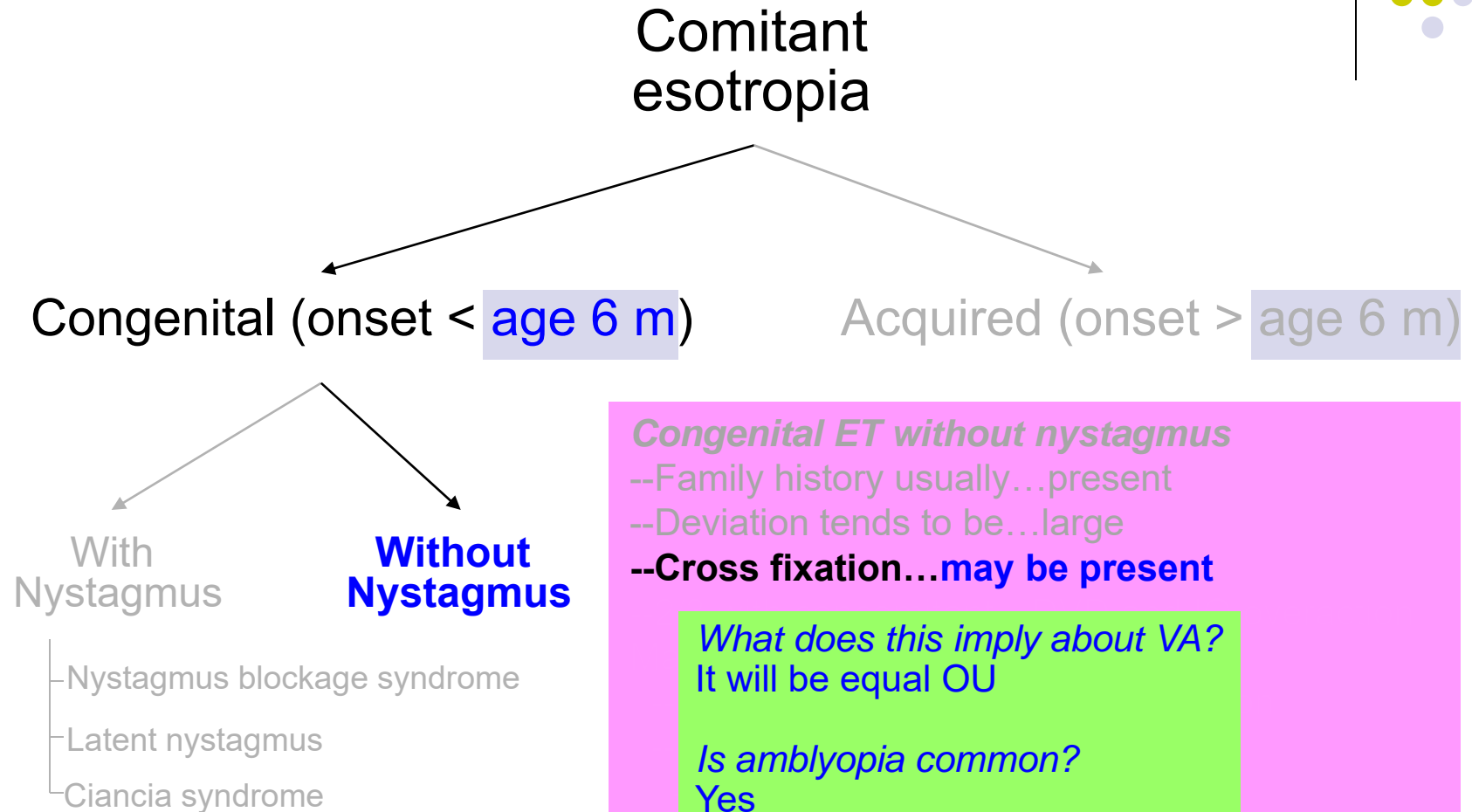
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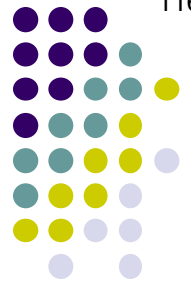
What does this imply about VA?
It will be equal OU

Is amblyopia common?

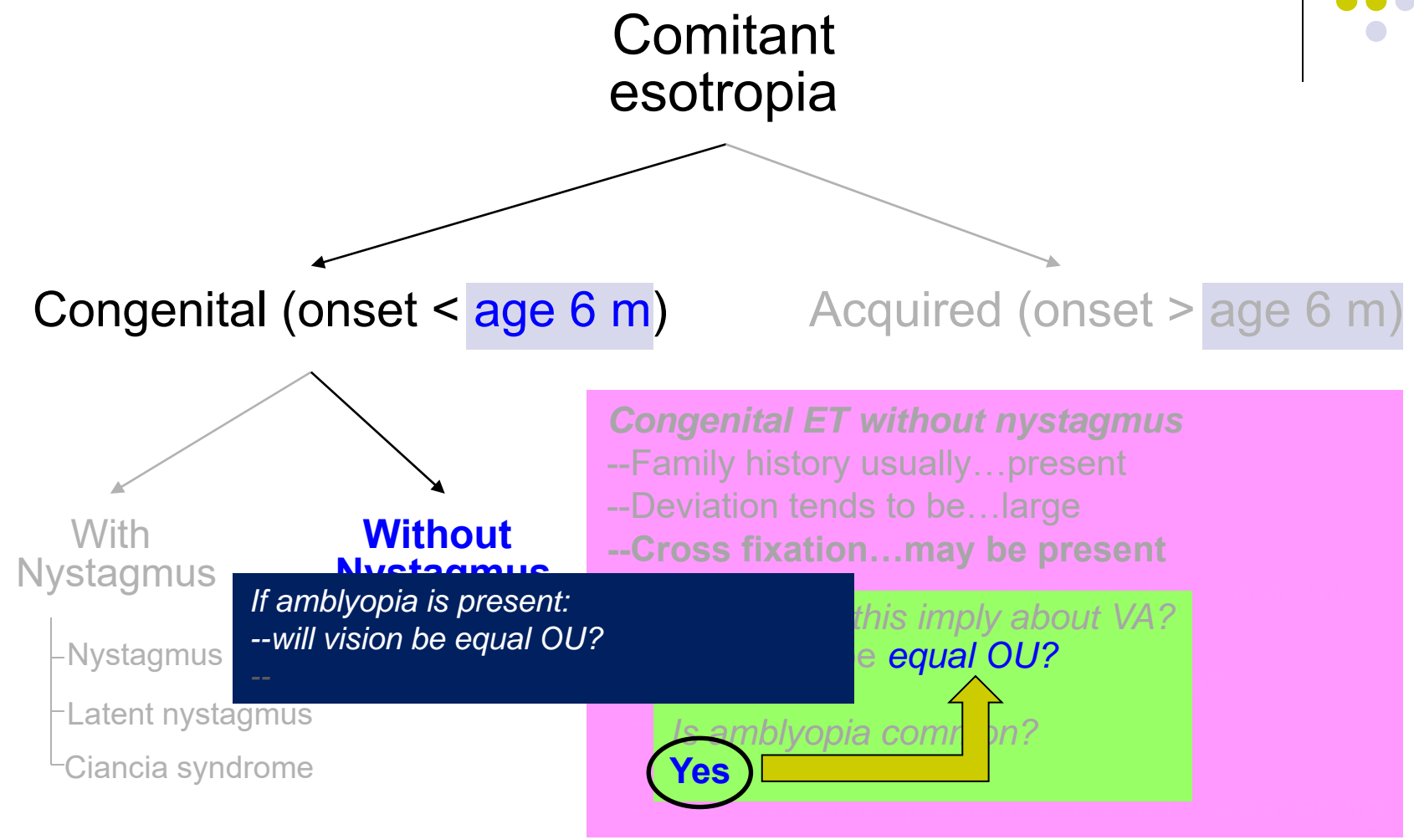


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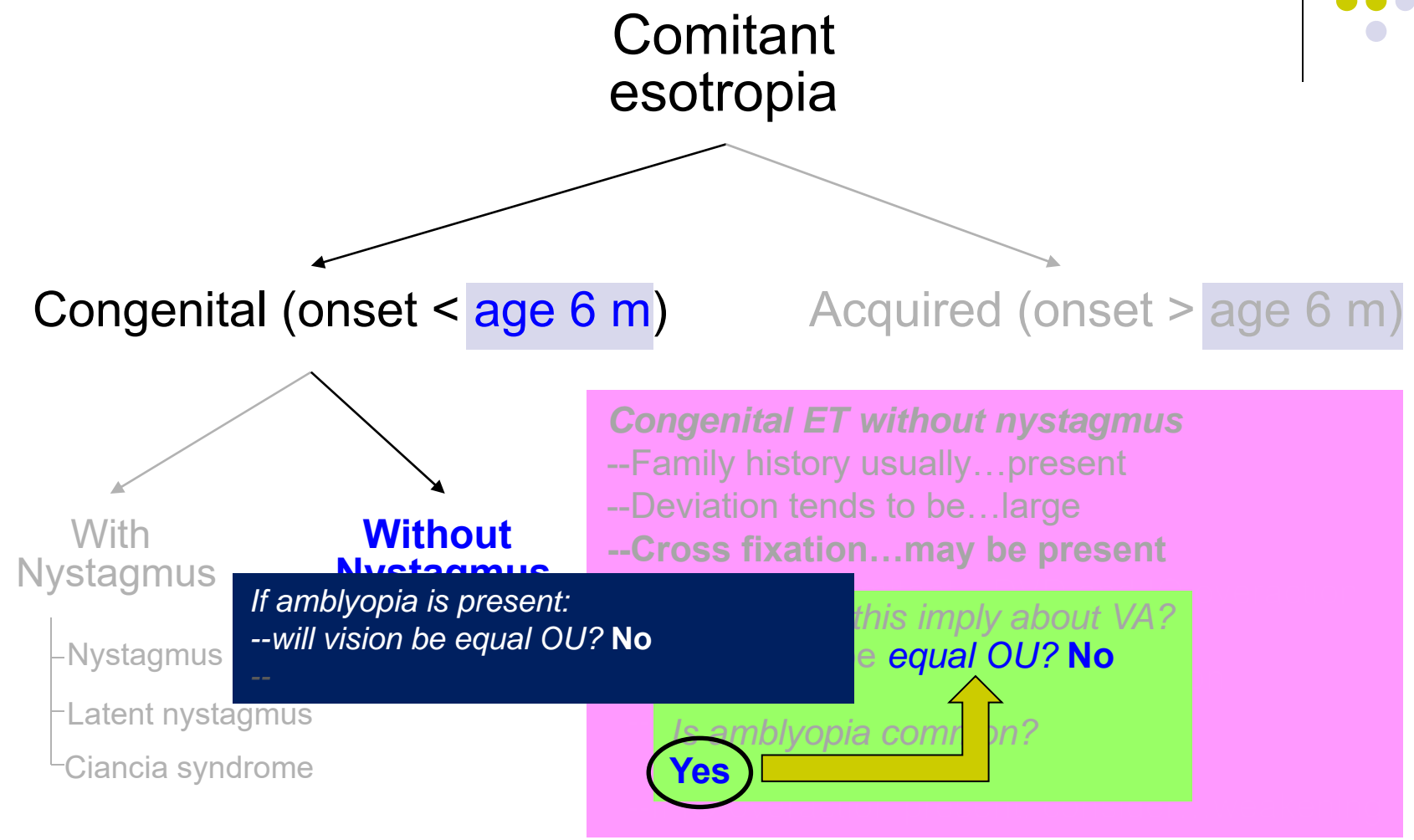


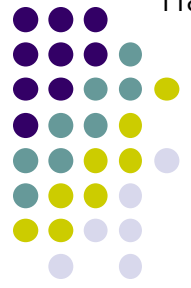
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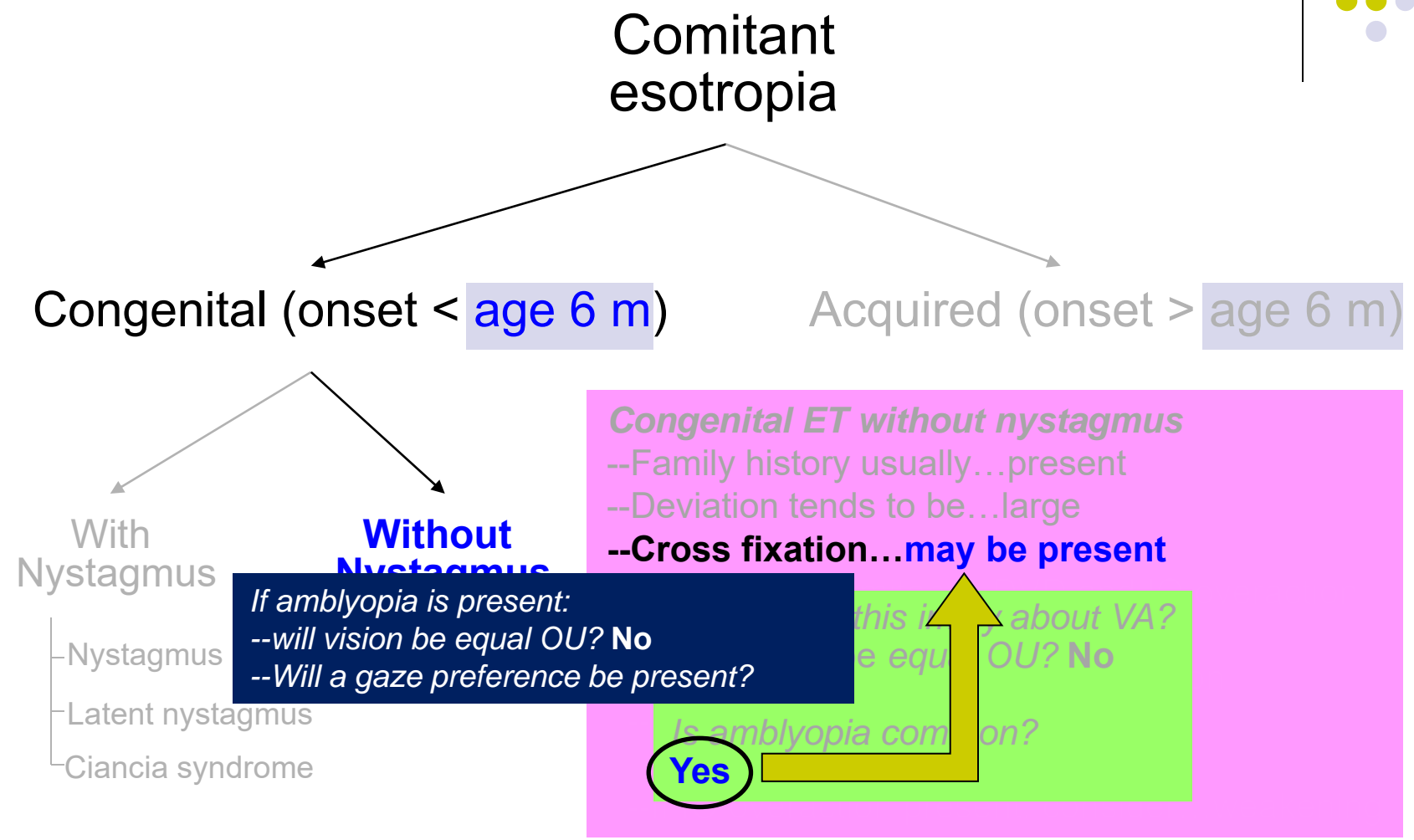


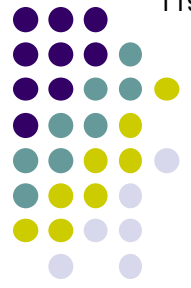
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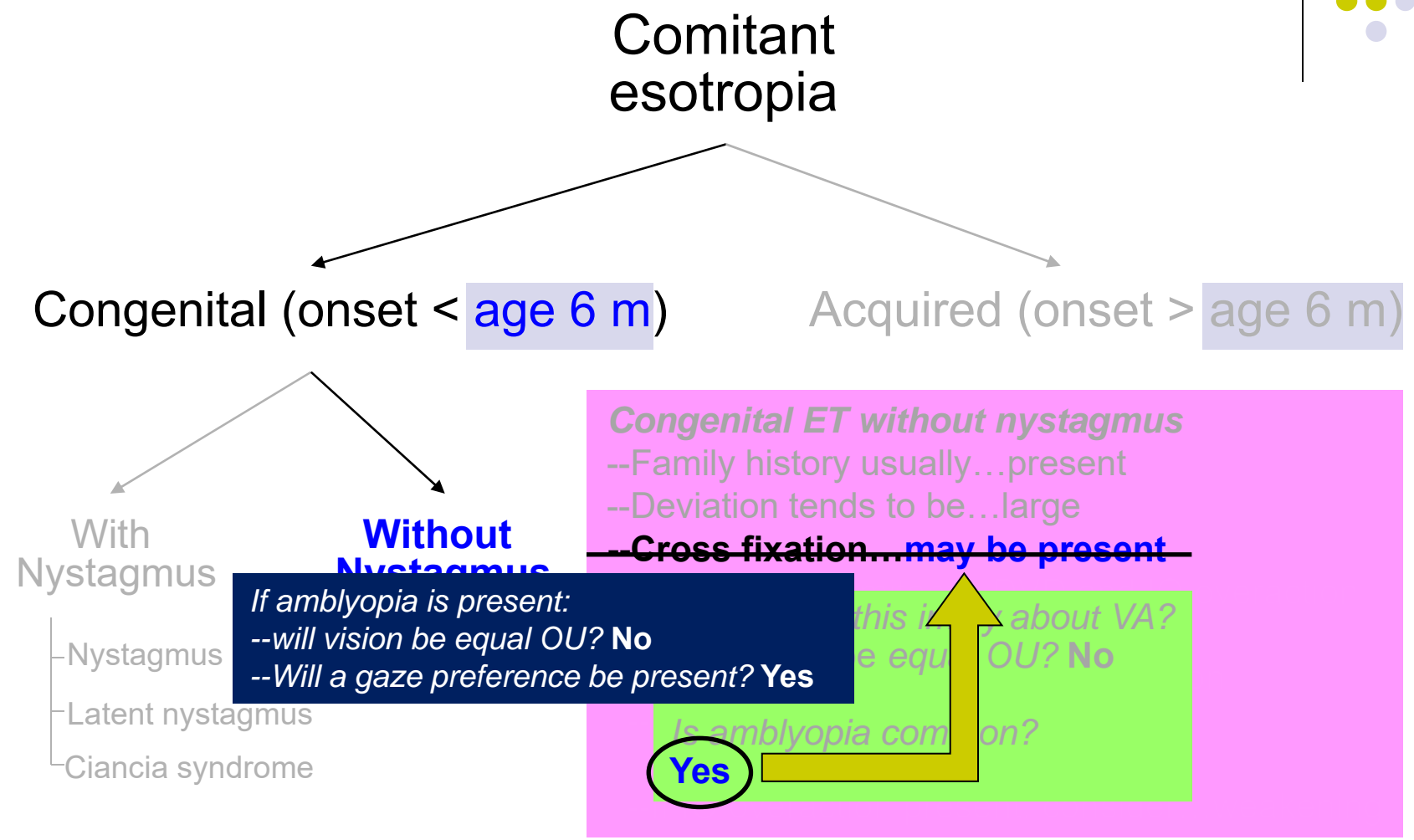


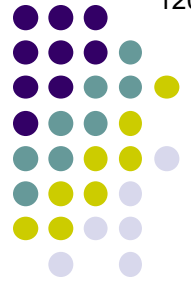
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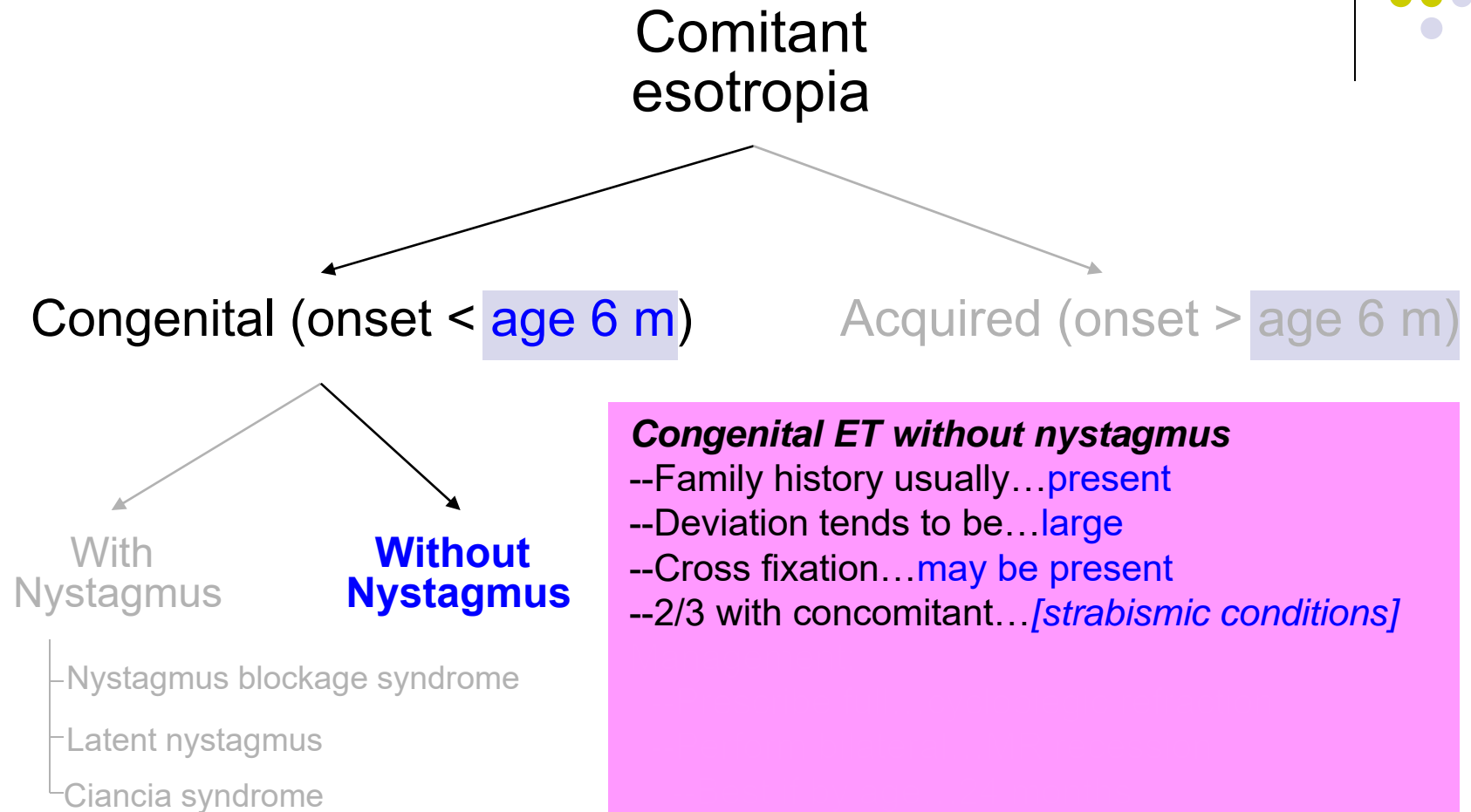


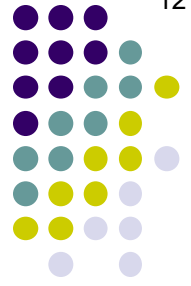
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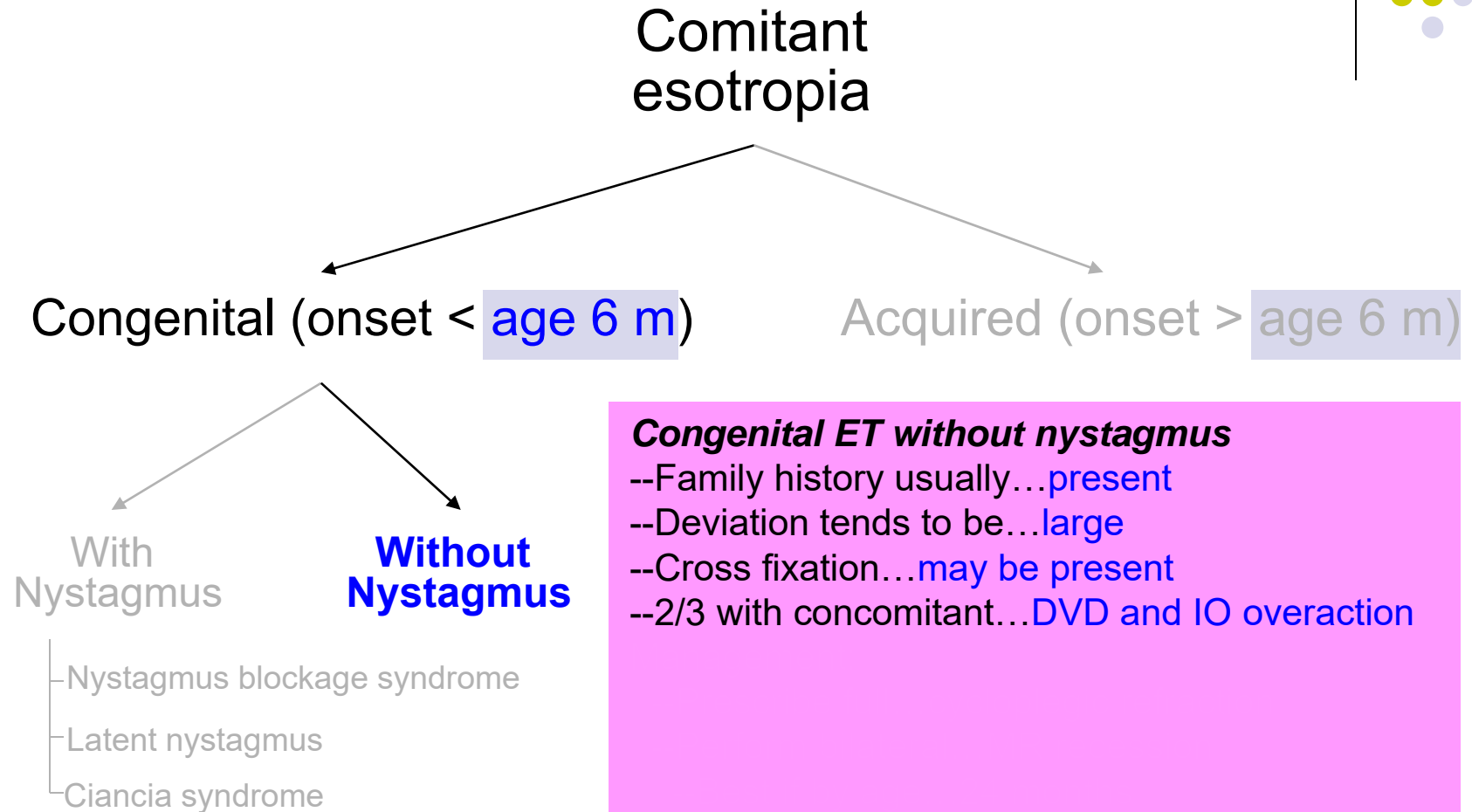


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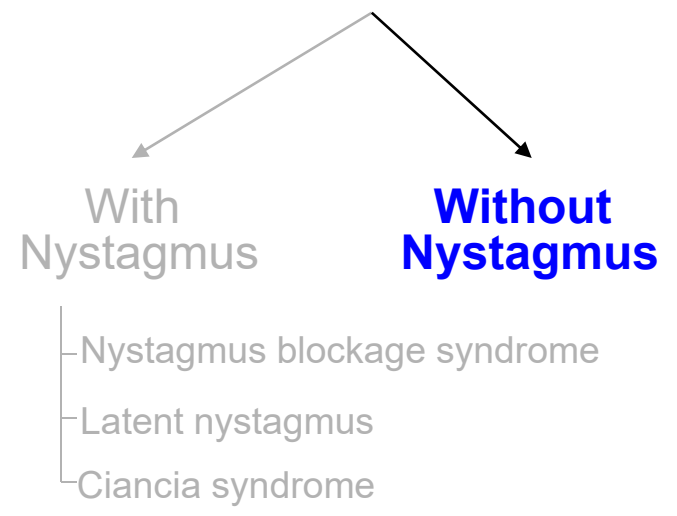
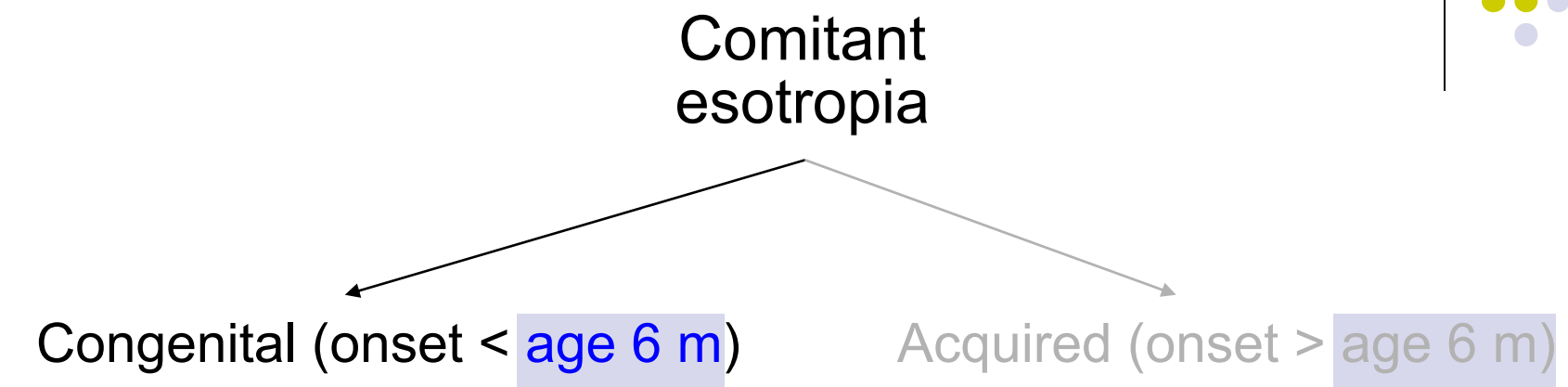


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Congenital ET without nystagmus

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

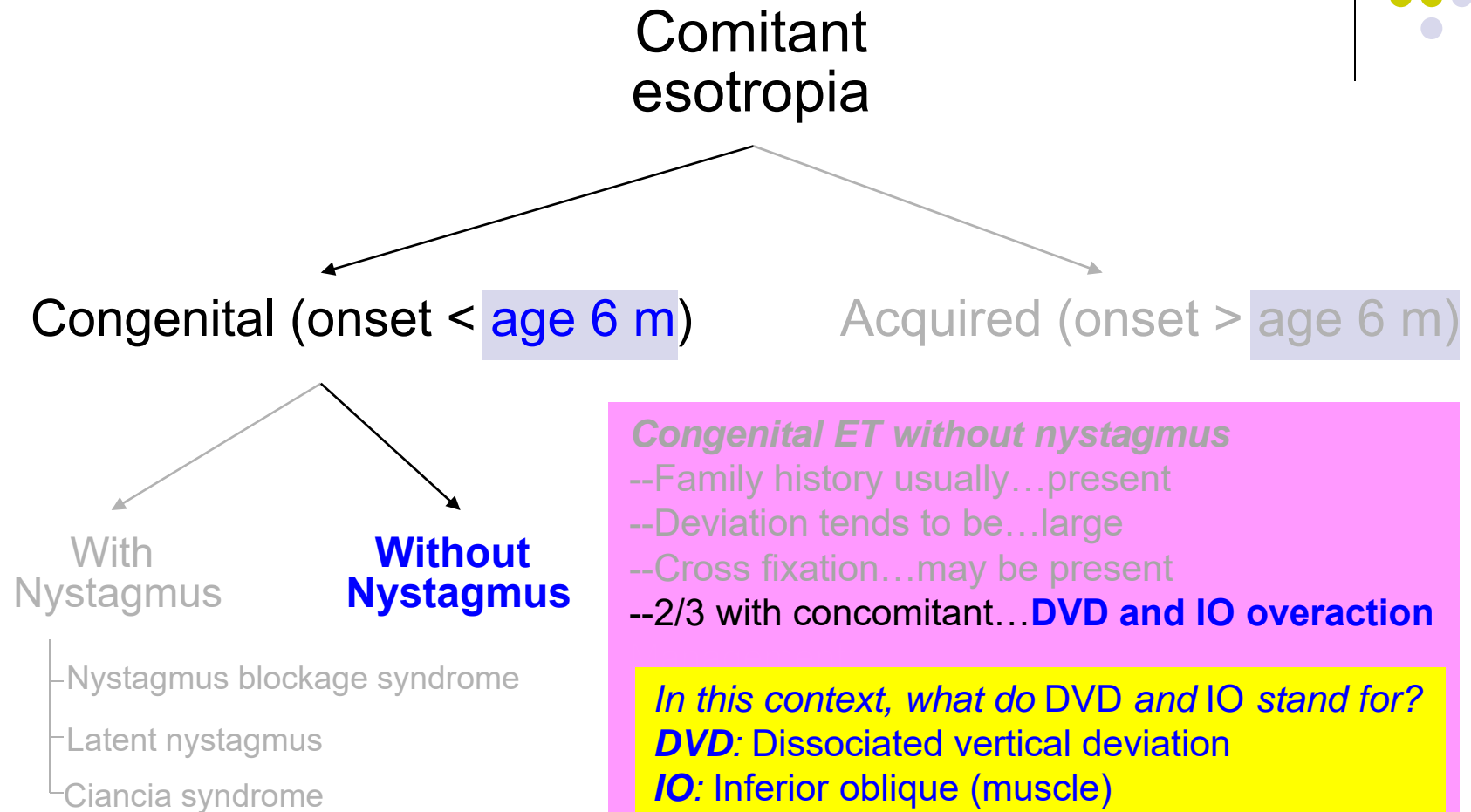
In this context, what do DVD and IO stand for?

DVD:

IO:

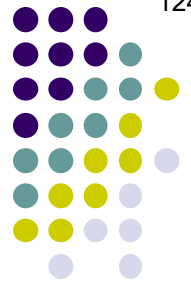


Comitant Esotropia



Congenital ET without nystagmus

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



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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?

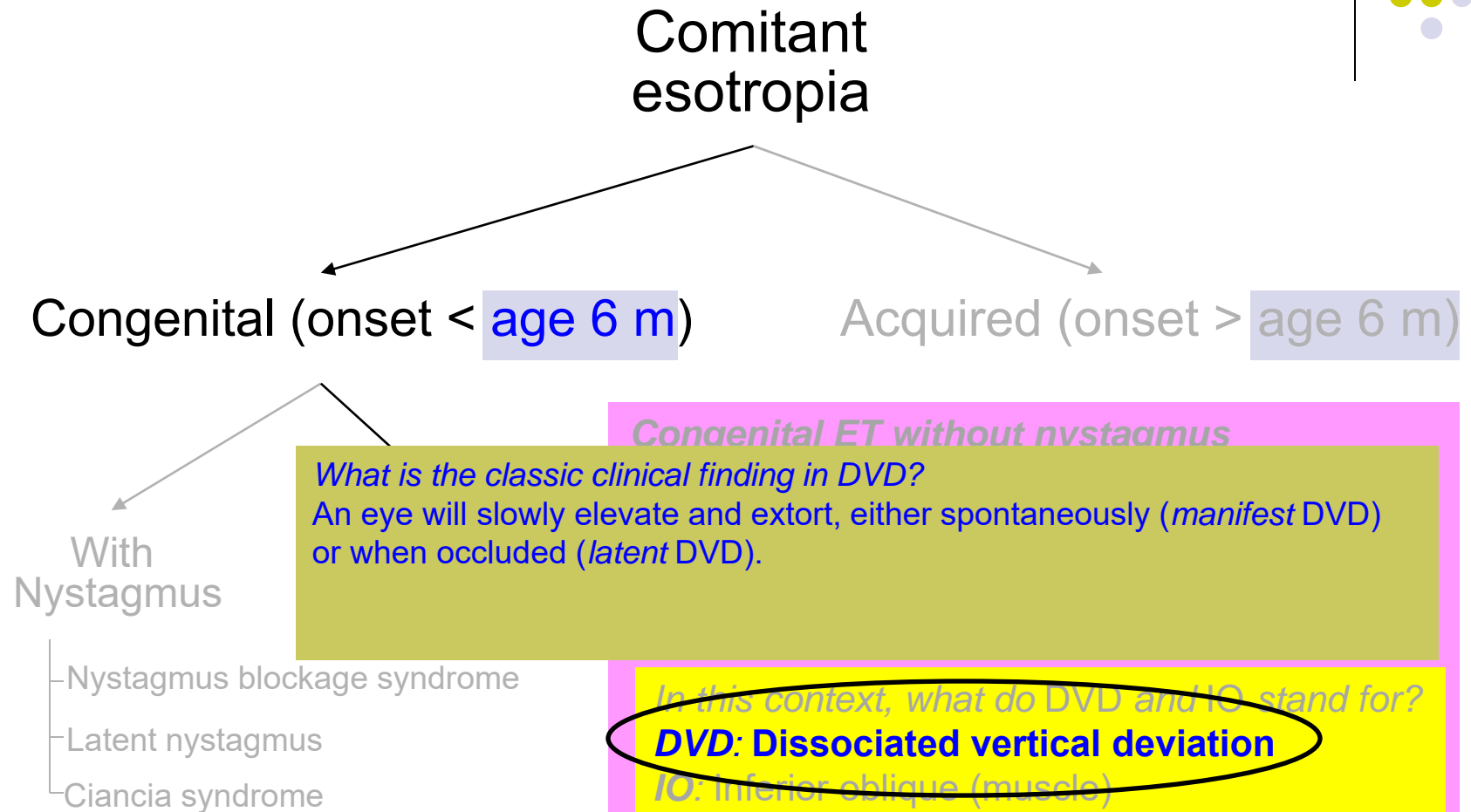
In this context, what do DVD and IO stand for?

DVD: Dissociated vertical deviation

IO: inferior oblique (muscle)

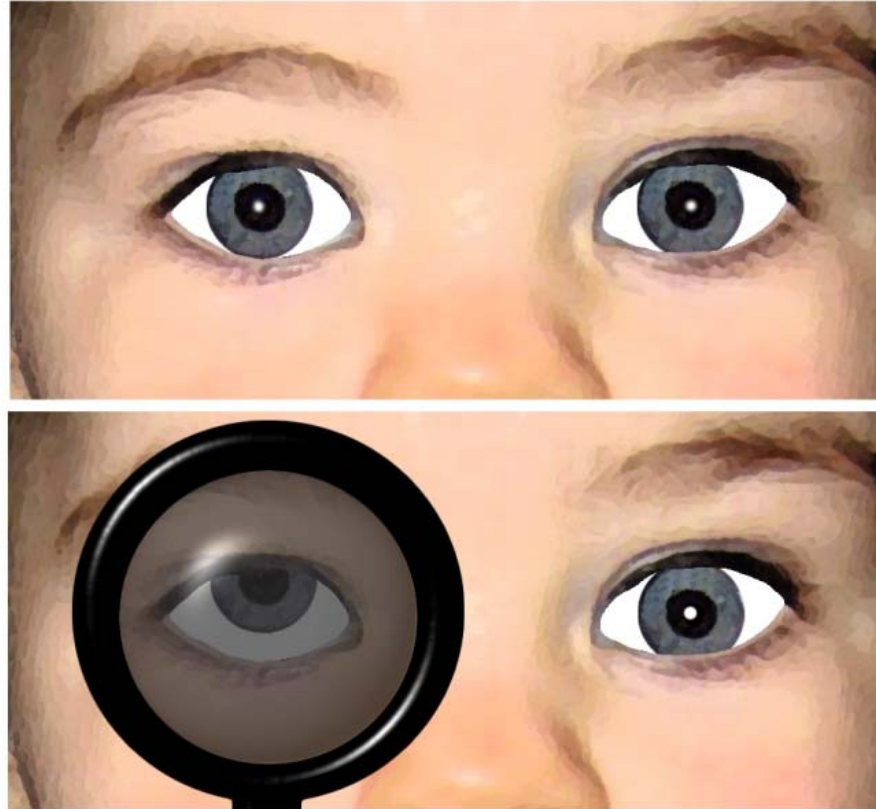


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DVD



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Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

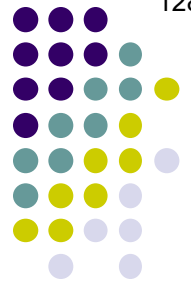
With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

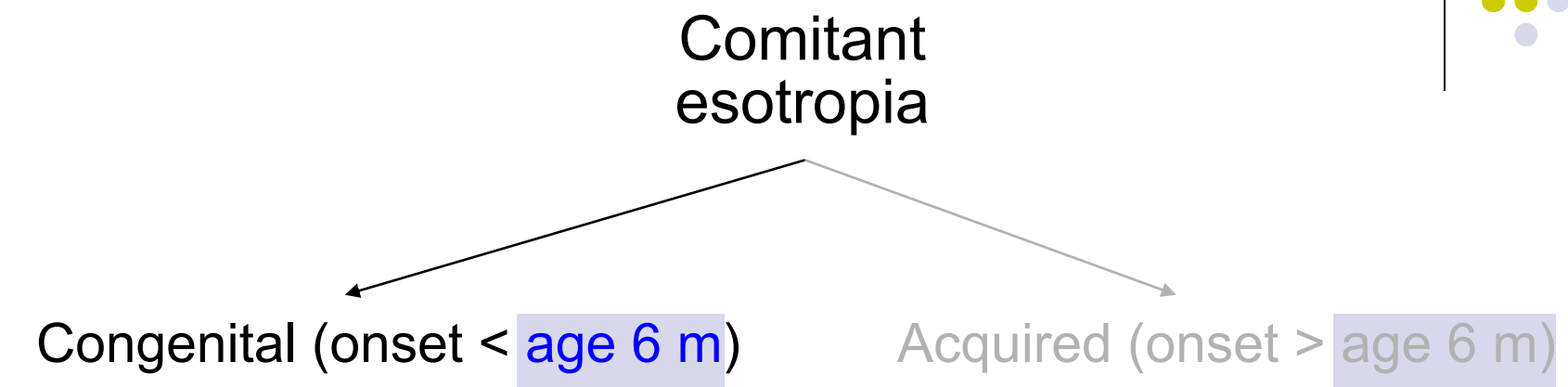
Congenital ET without nystagmus

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



Congenital ET without nystagmus

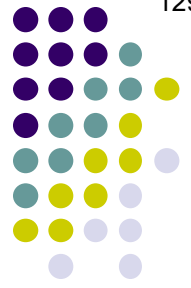
- Family history usually...present
- Deviation tends to be...large
- Cross fixation...may be present
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With Nystagmus

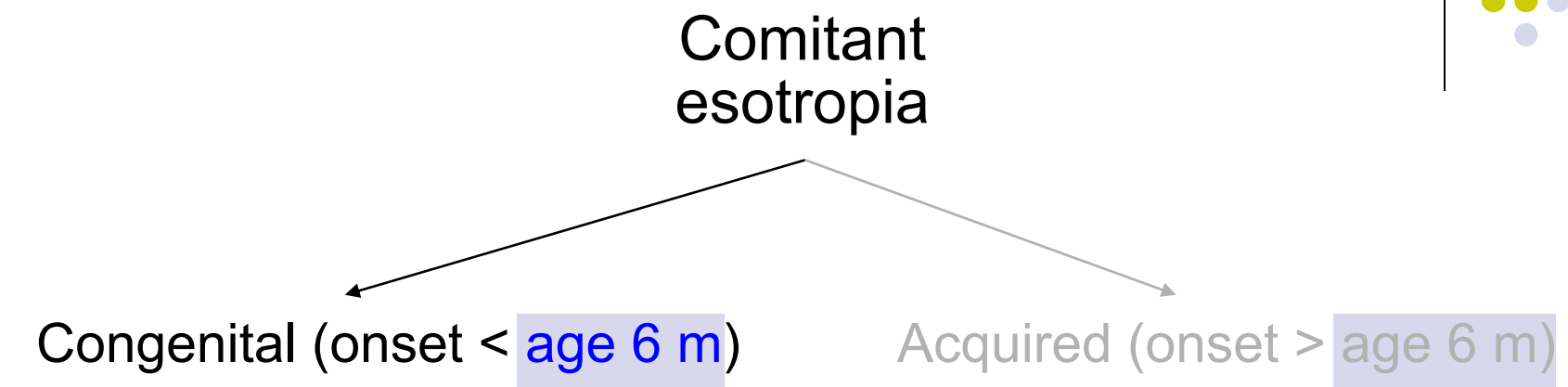
Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

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



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Congenital ET without nystagmus

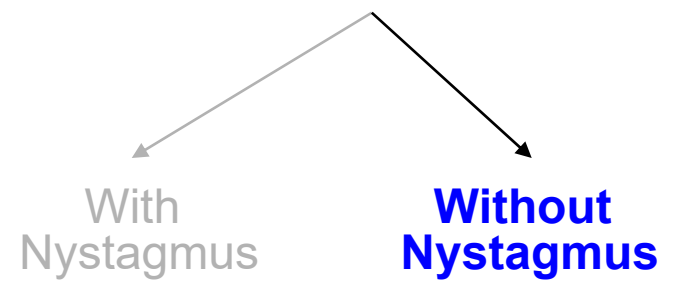
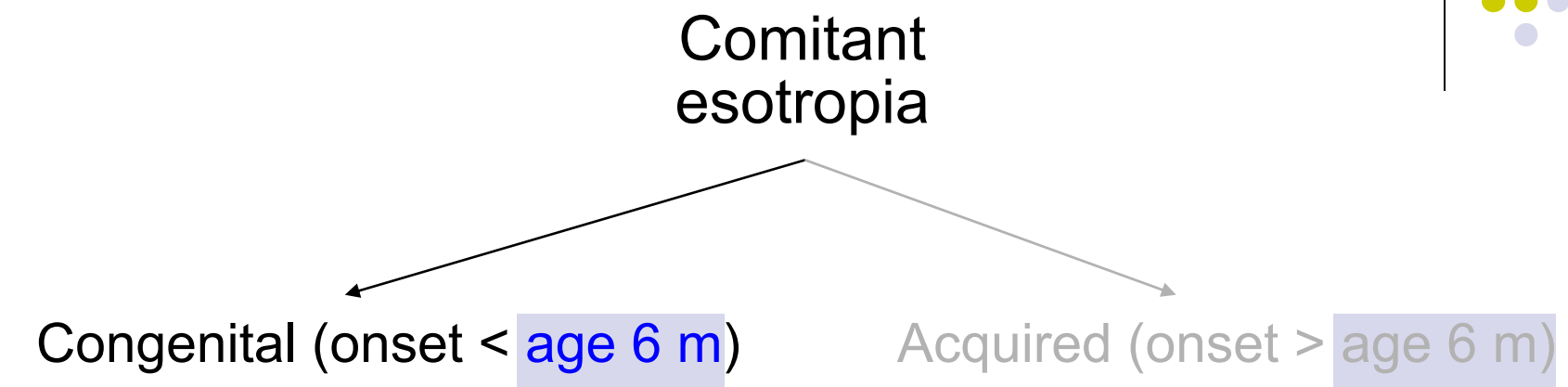
- Family history usually...present
- Deviation tends to be...large
- Cross fixation...may be present
- 2/3 with concomitant...**DVD and IO overaction**

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

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



Comitant Esotropia



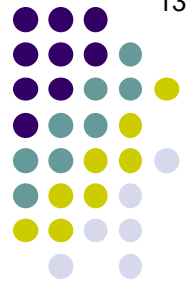
Congenital ET without nystagmus

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

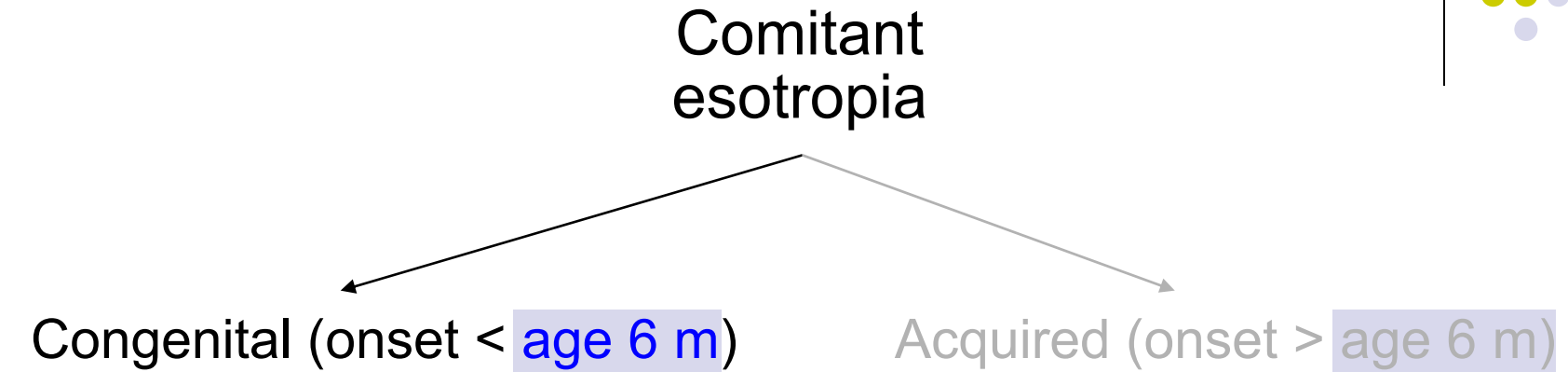
Both DVD and IO overaction involve elevation and extorsion. How can they be differentiated?

DVD violates Hering's law; IO overaction doesn't

What does this mean, exactly?



Comitant Esotropia



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

With Nystagmus

Without Nystagmus

- 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

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

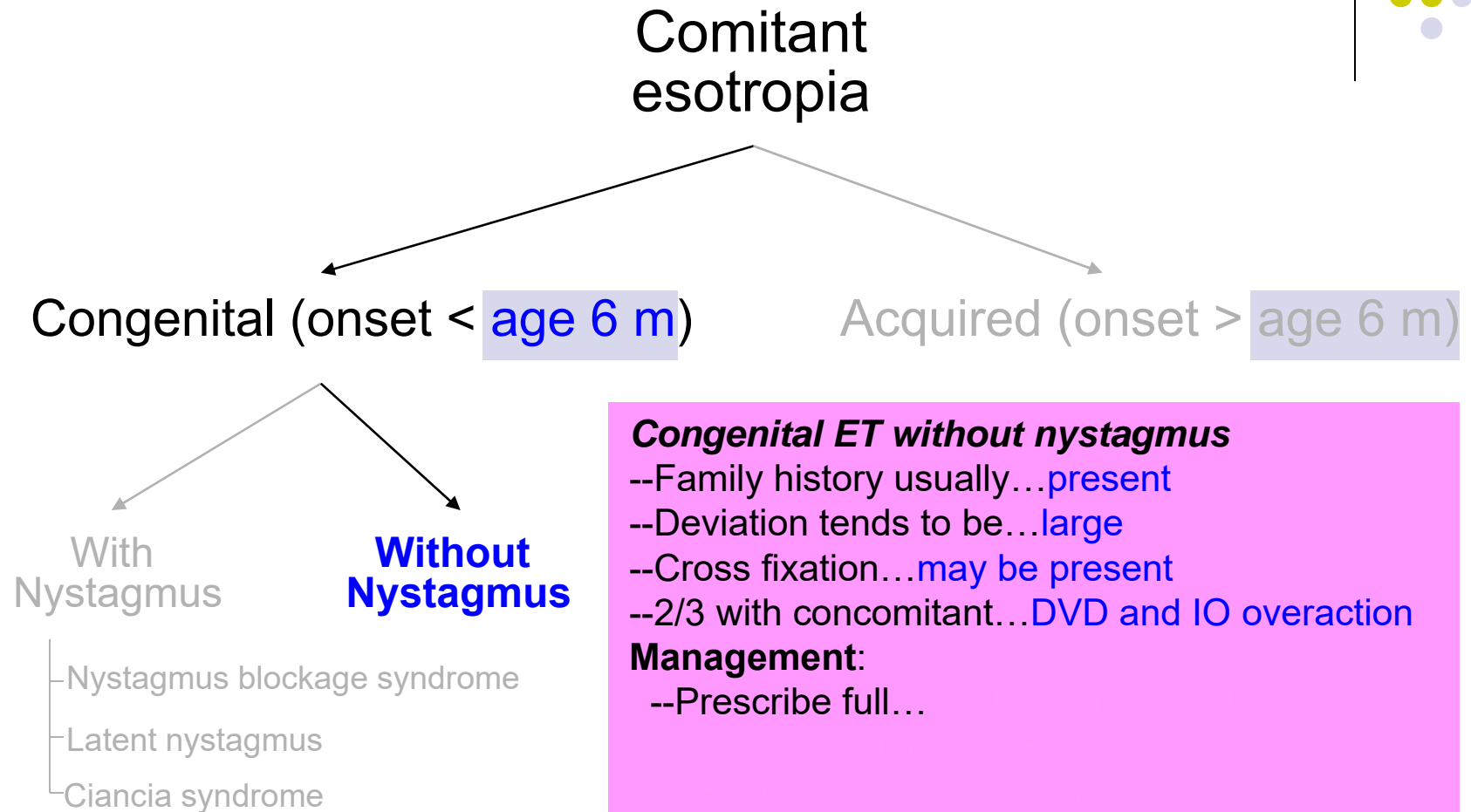
*Both DVD and IO overaction involve elevation and extorsion. How can they be differentiated?
DVD violates Hering's law; IO overaction doesn't*

--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.*

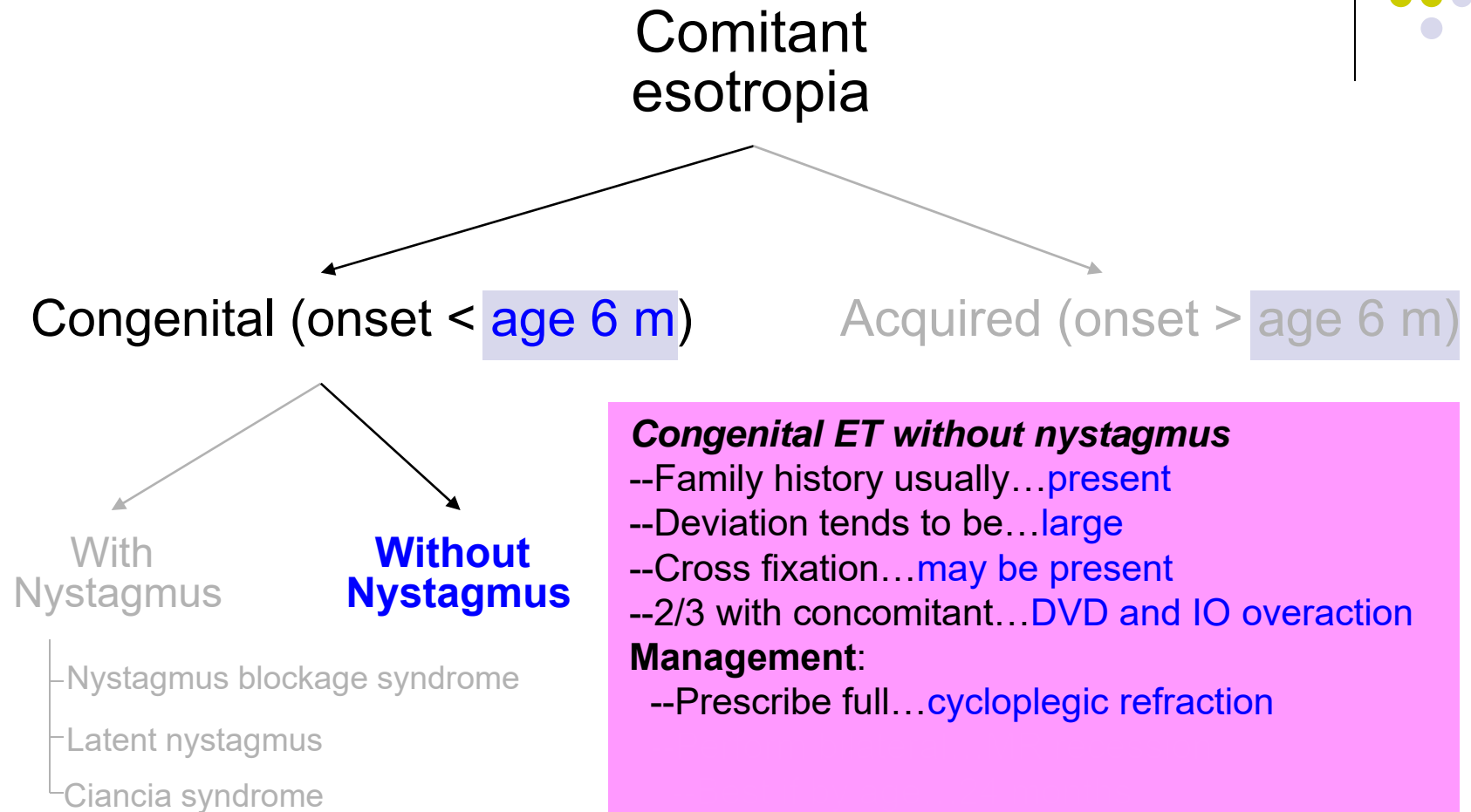


Comitant Esotropia



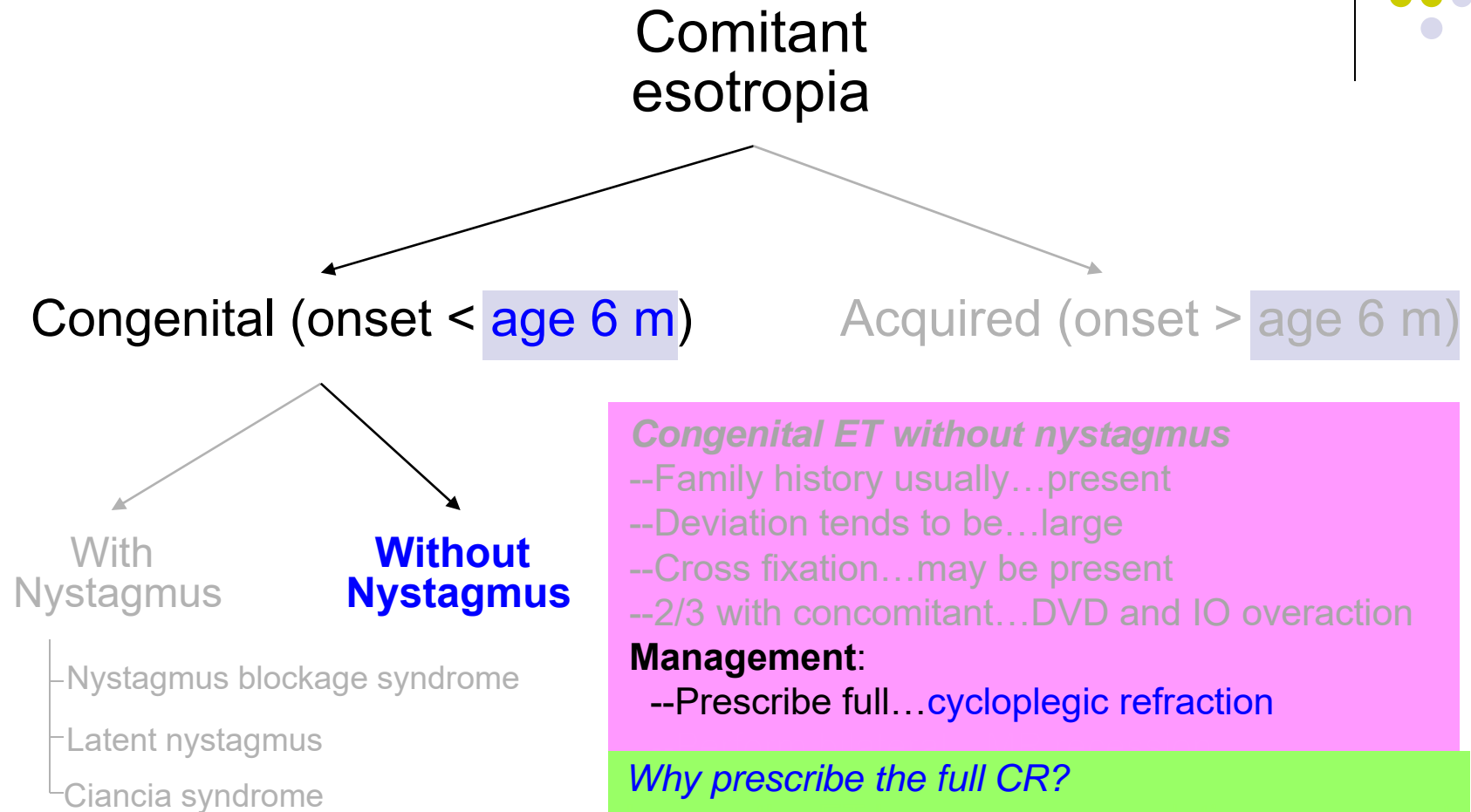


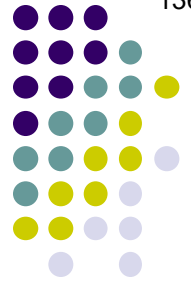
Comitant Esotropia



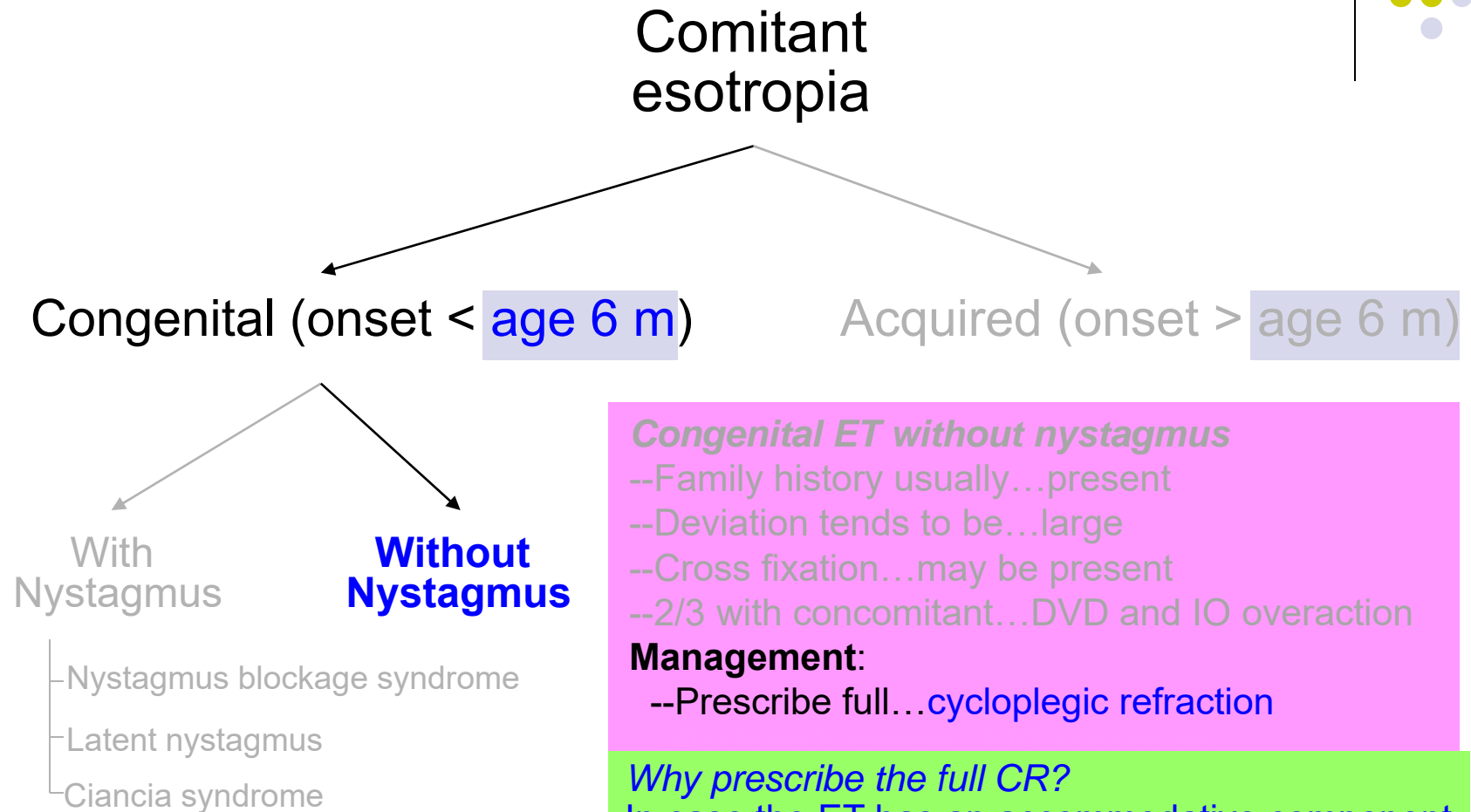


Comitant Esotropia





Comitant Esotropia



Congenital ET without nystagmus

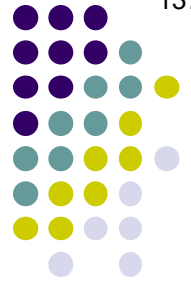
- Family history usually...present
- Deviation tends to be...large
- Cross fixation...may be present
- 2/3 with concomitant...DVD and IO overaction

Management:

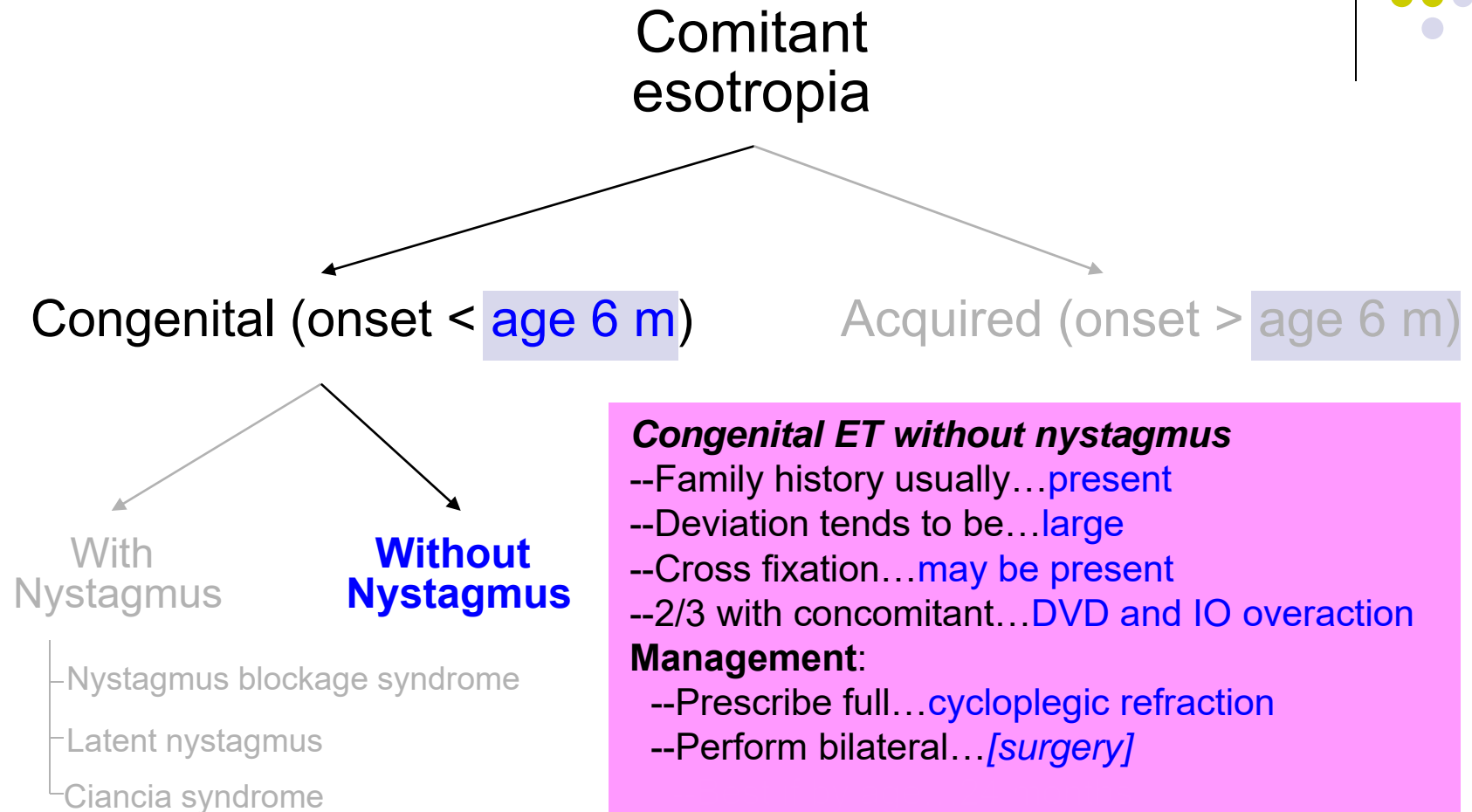
- Prescribe full...cycloplegic refraction

Why prescribe the full CR?

In case the ET has an accommodative component

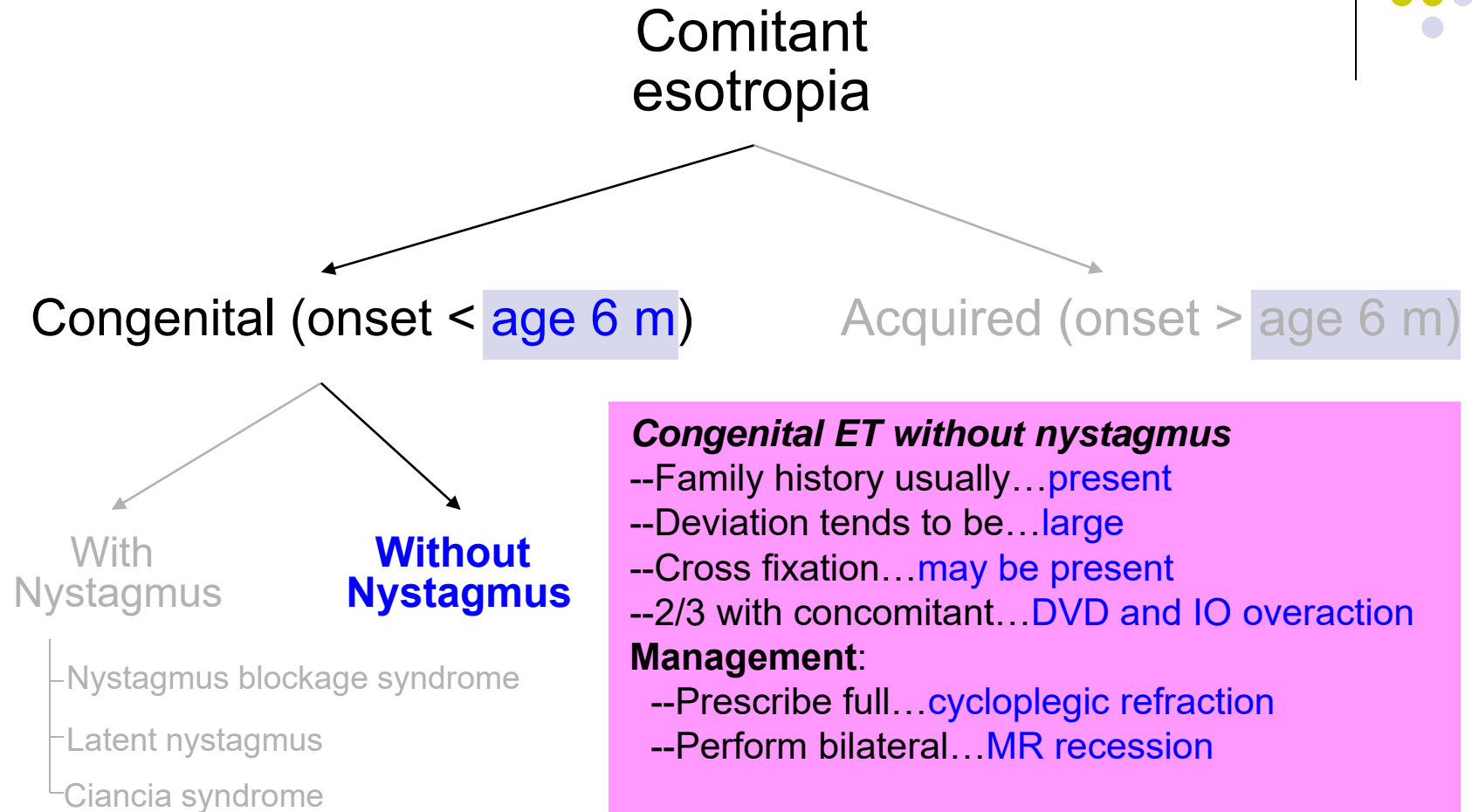


Comitant Esotropia



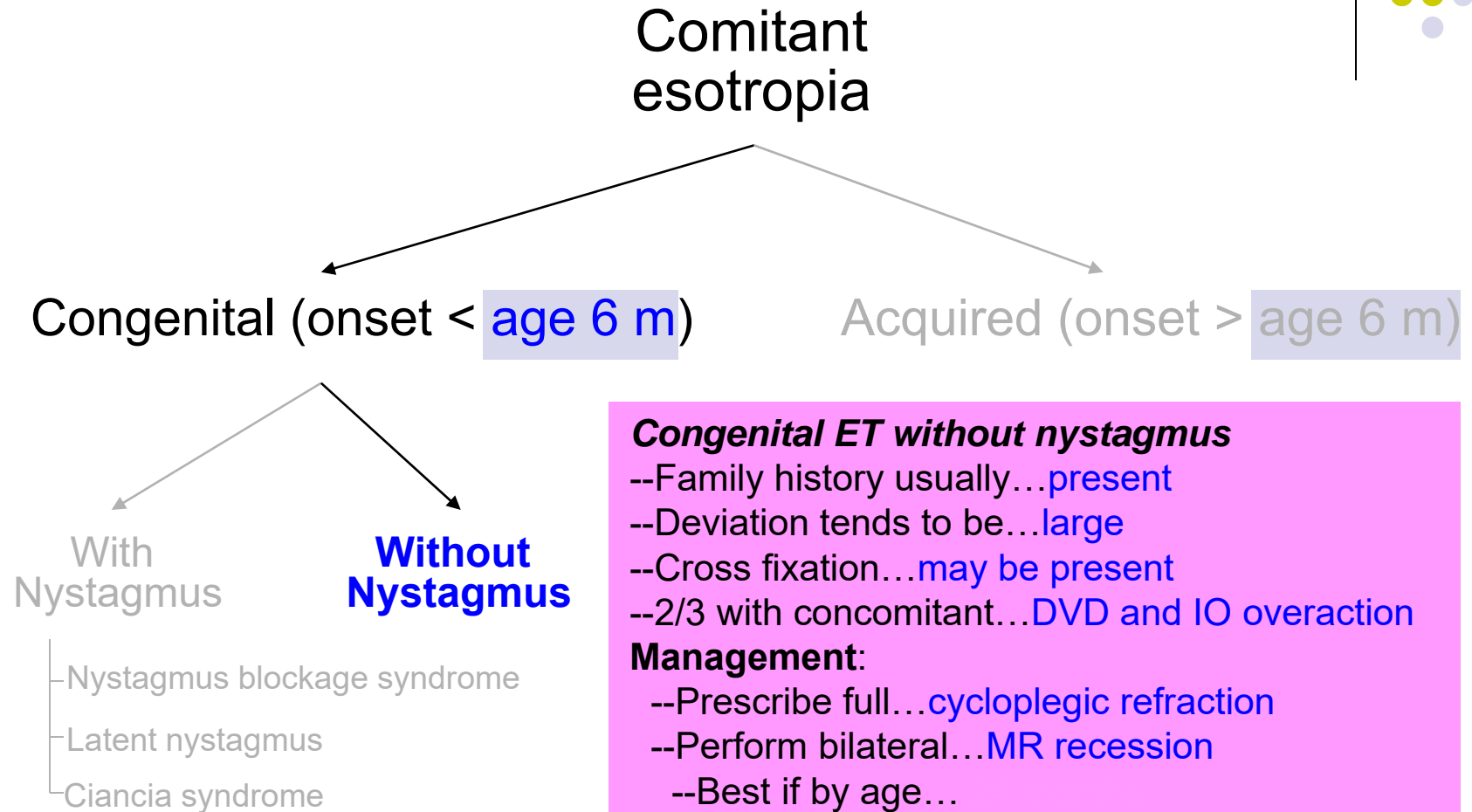


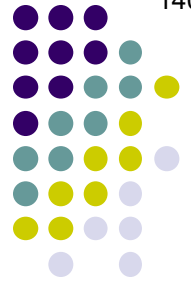
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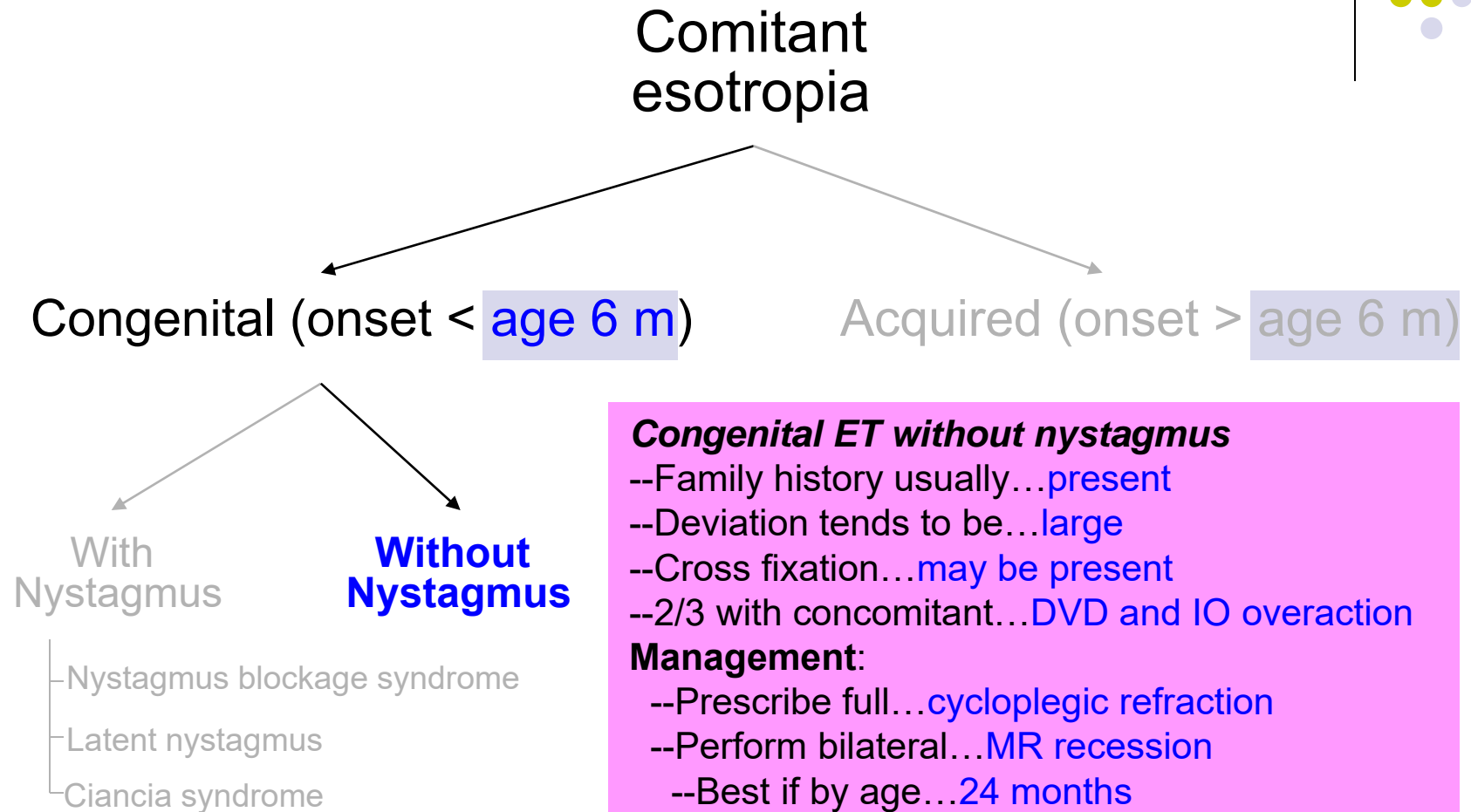


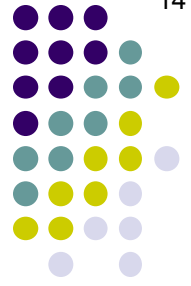
Comitant Esotropia



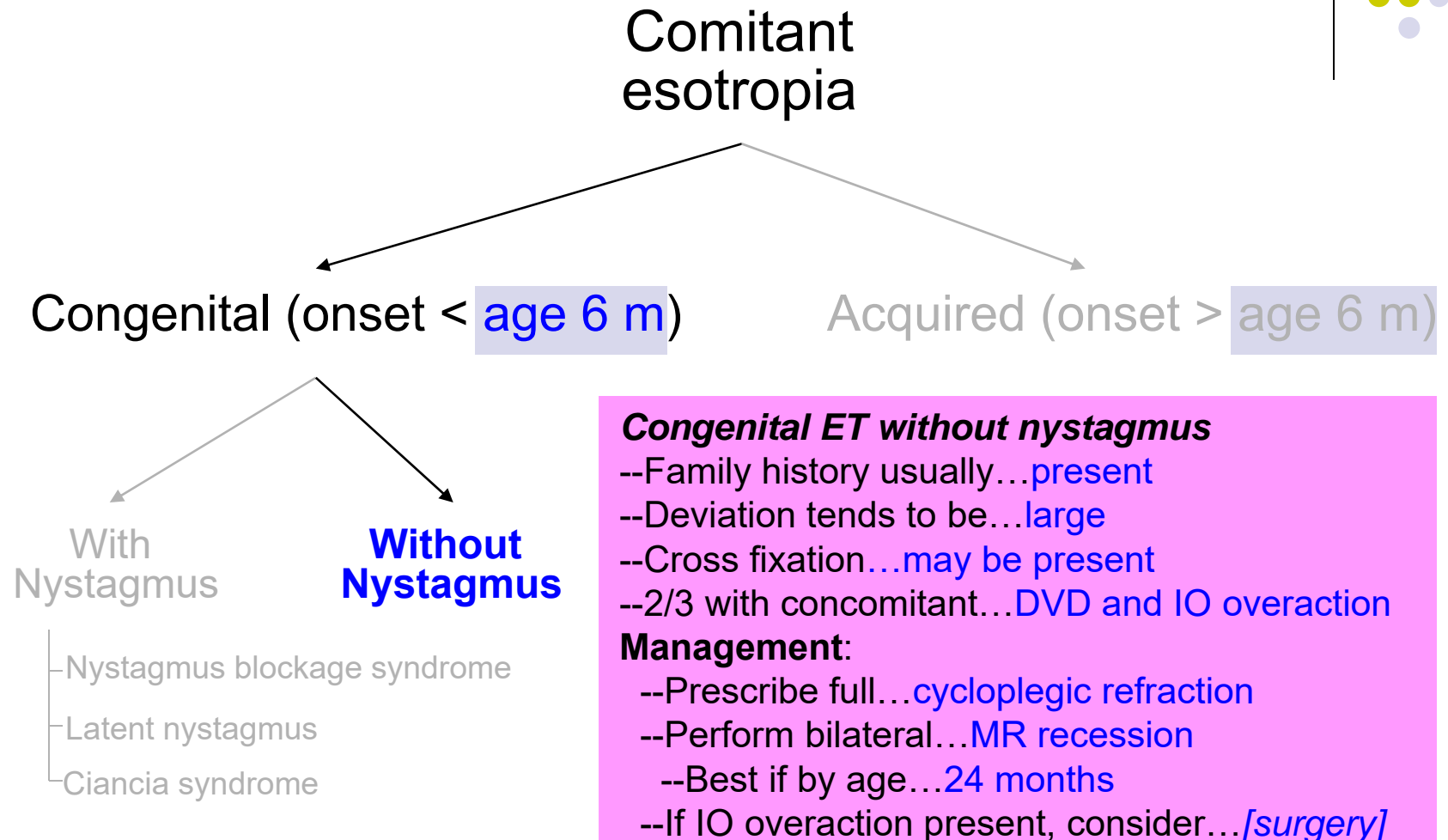


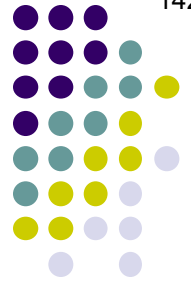
Comitant Esotropia



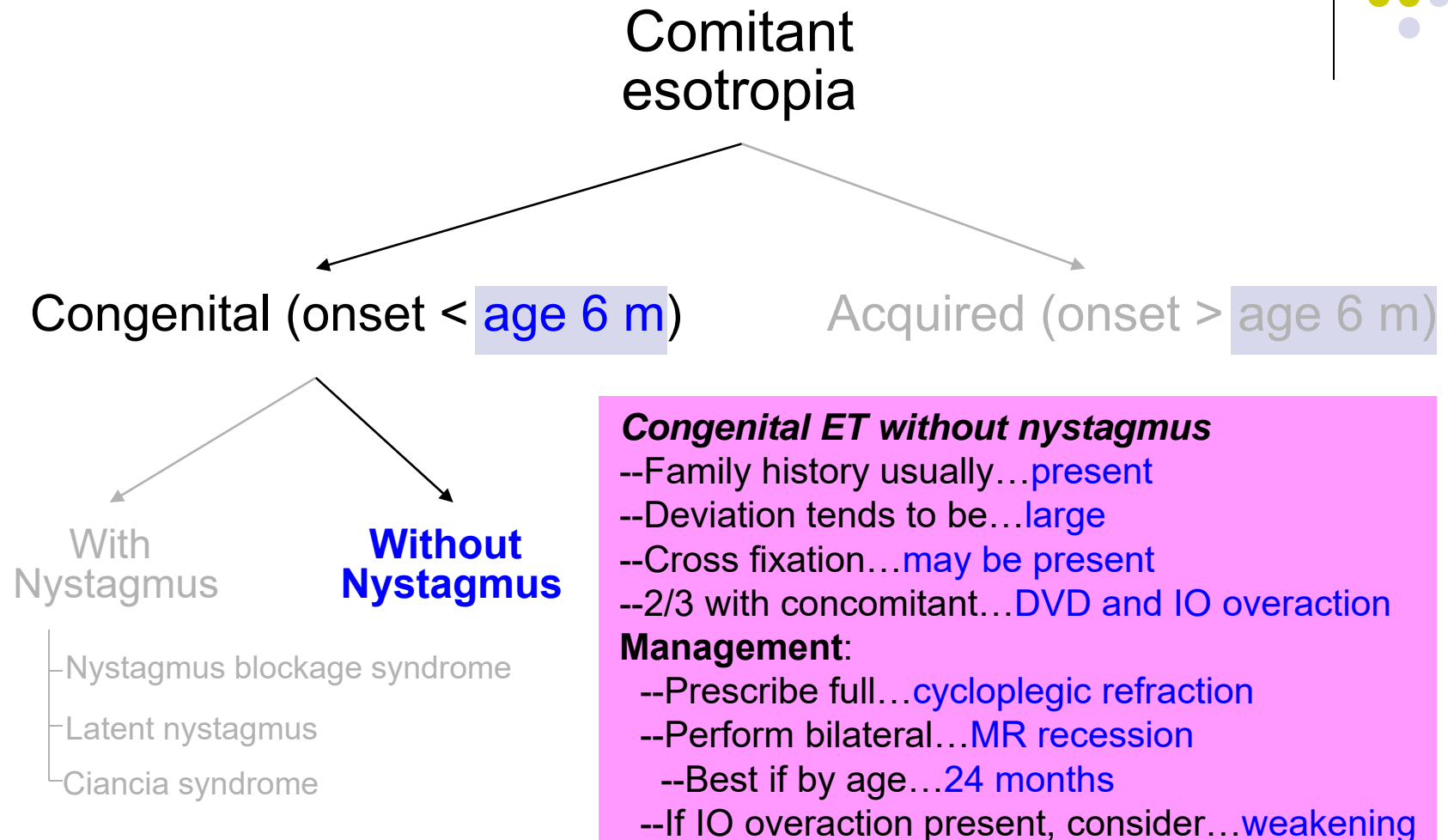


Comitant Esotropia



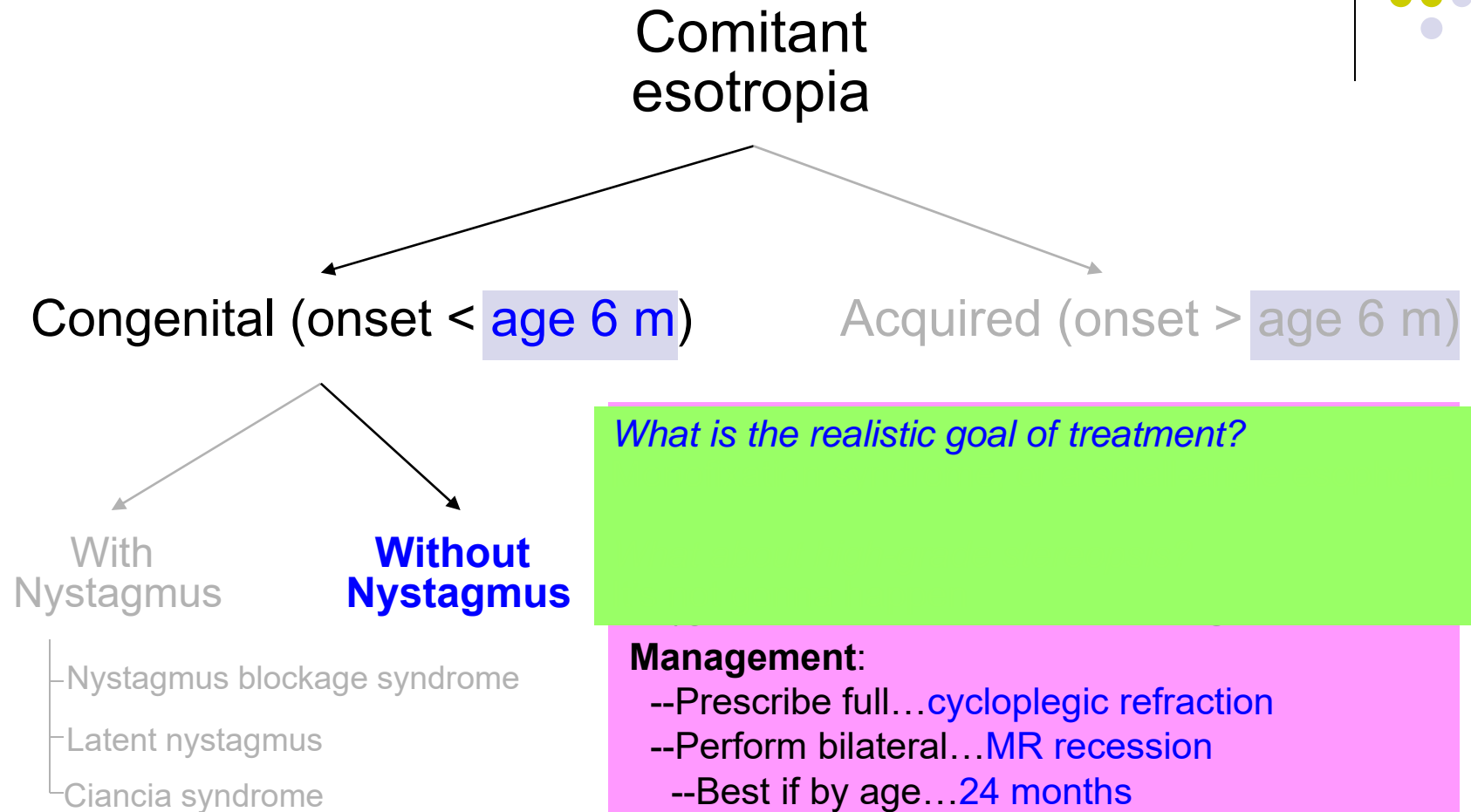


Comitant Esotropia



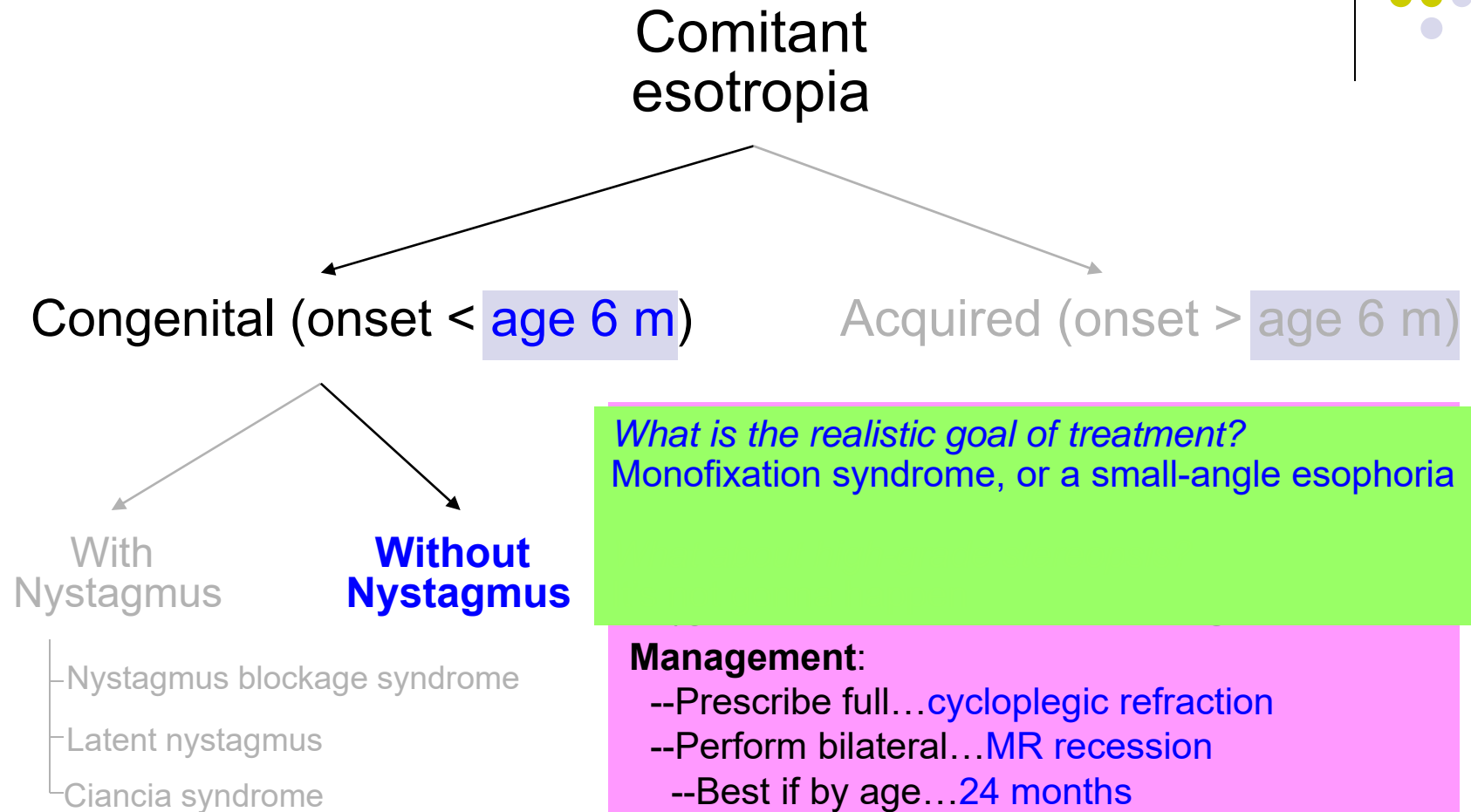


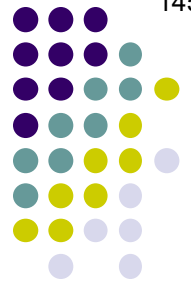
Comitant Esotropia





Comitant Esotropia





Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

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

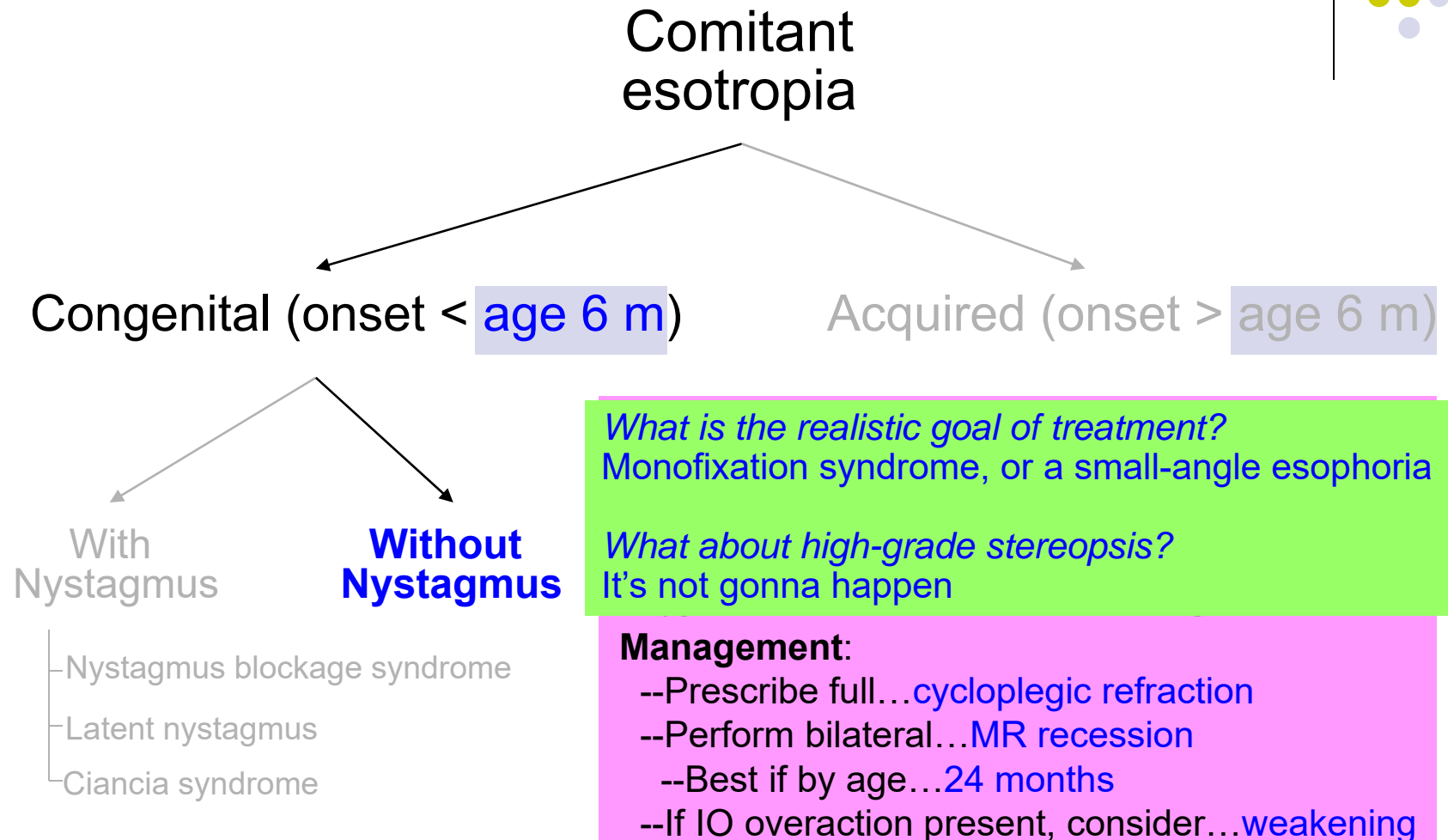
What about high-grade stereopsis?

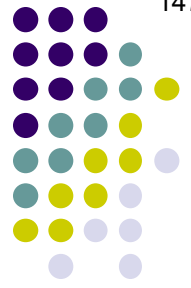
Management:

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



Comitant Esotropia





Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

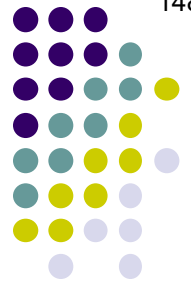
- Nystagmus block
- Latent nystagmus
- Ciancia syndrome

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

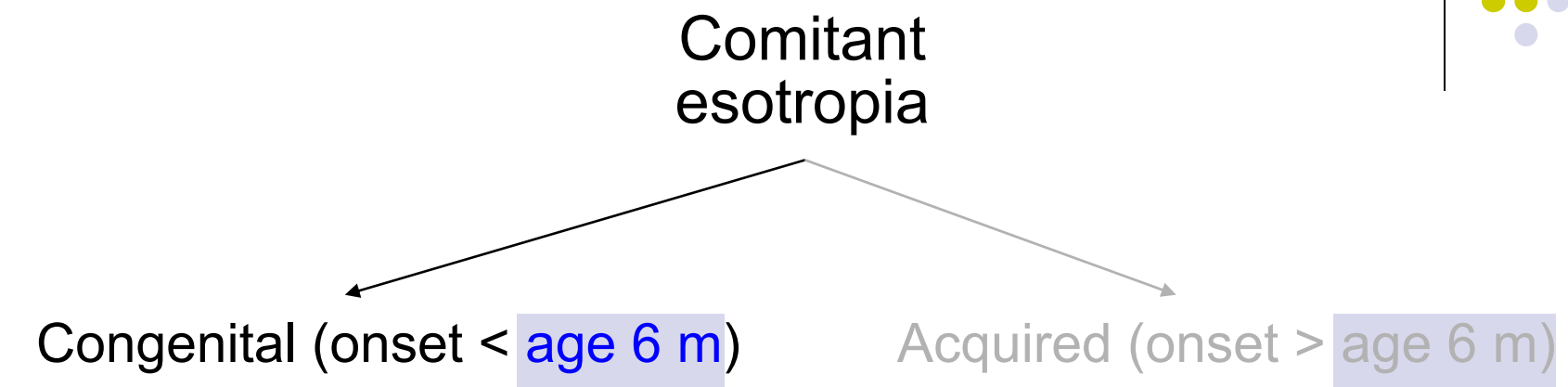
Monofixation syndrome is one of the three adaptations the immature visual system makes in response to misalignment. What are the other two?
 --
 --
 --Monofixation syndrome

Mnemonic is...

--Best if by age...24 months
 --If IO overaction present, consider...weakening



Comitant Esotropia



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

With Nystagmus

- Nystagmus block
- Latent nystagmus
- Ciancia syndrome

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

Mnemonic is... SAM

--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 for 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?

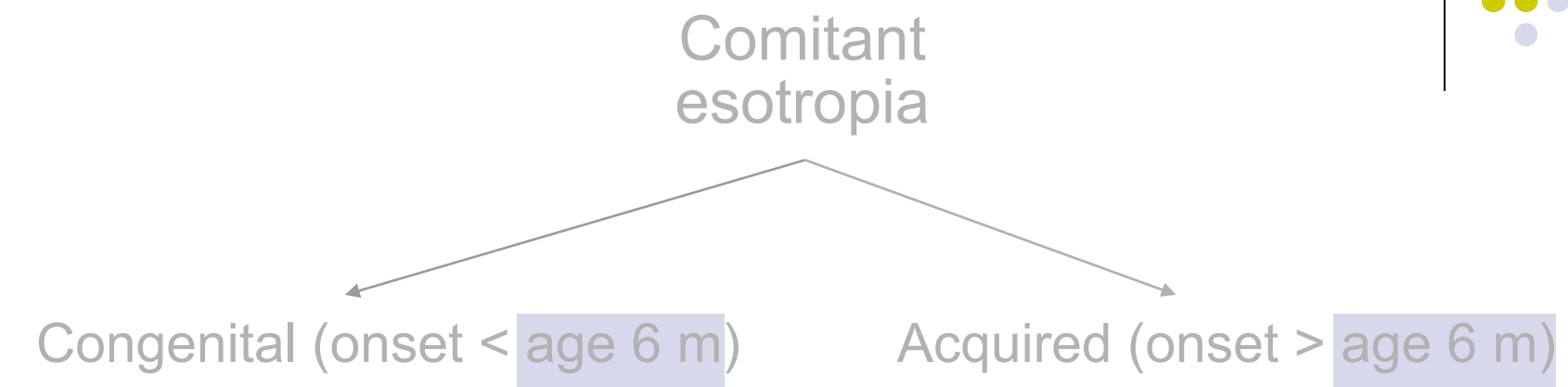
- Suppression
- Anomalous retinal correspondence
- Monofixation syndrome

Mnemonic is...SAM

--Best if by age...24 months
 --If IO overaction present, consider...weakening



Comitant Esotropia



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

With Nystagmus

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

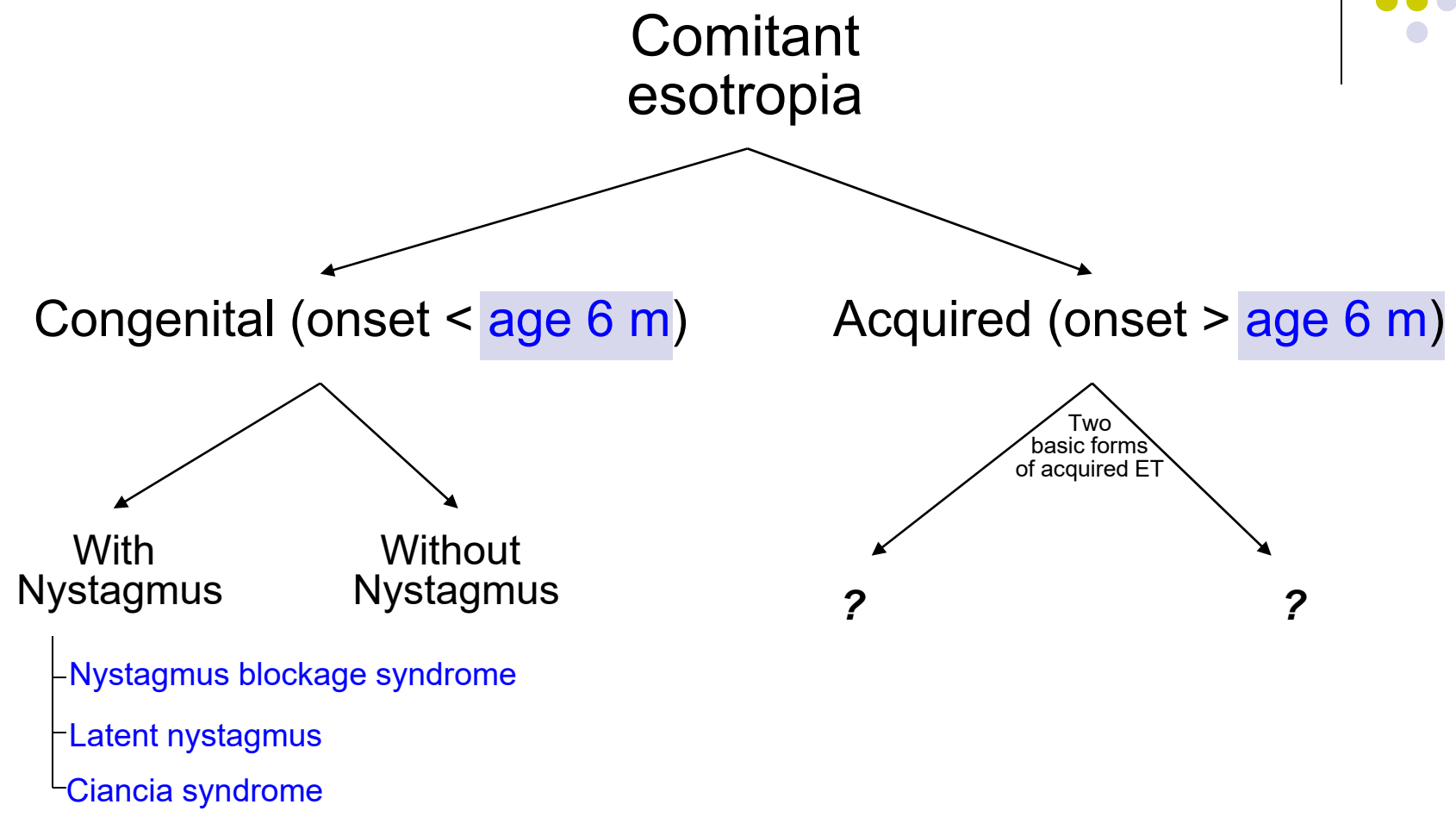
- Suppression
- Anomalous retinal correspondence
- Monofixation syndrome

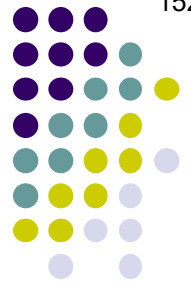
Mnemonic is... SAM

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

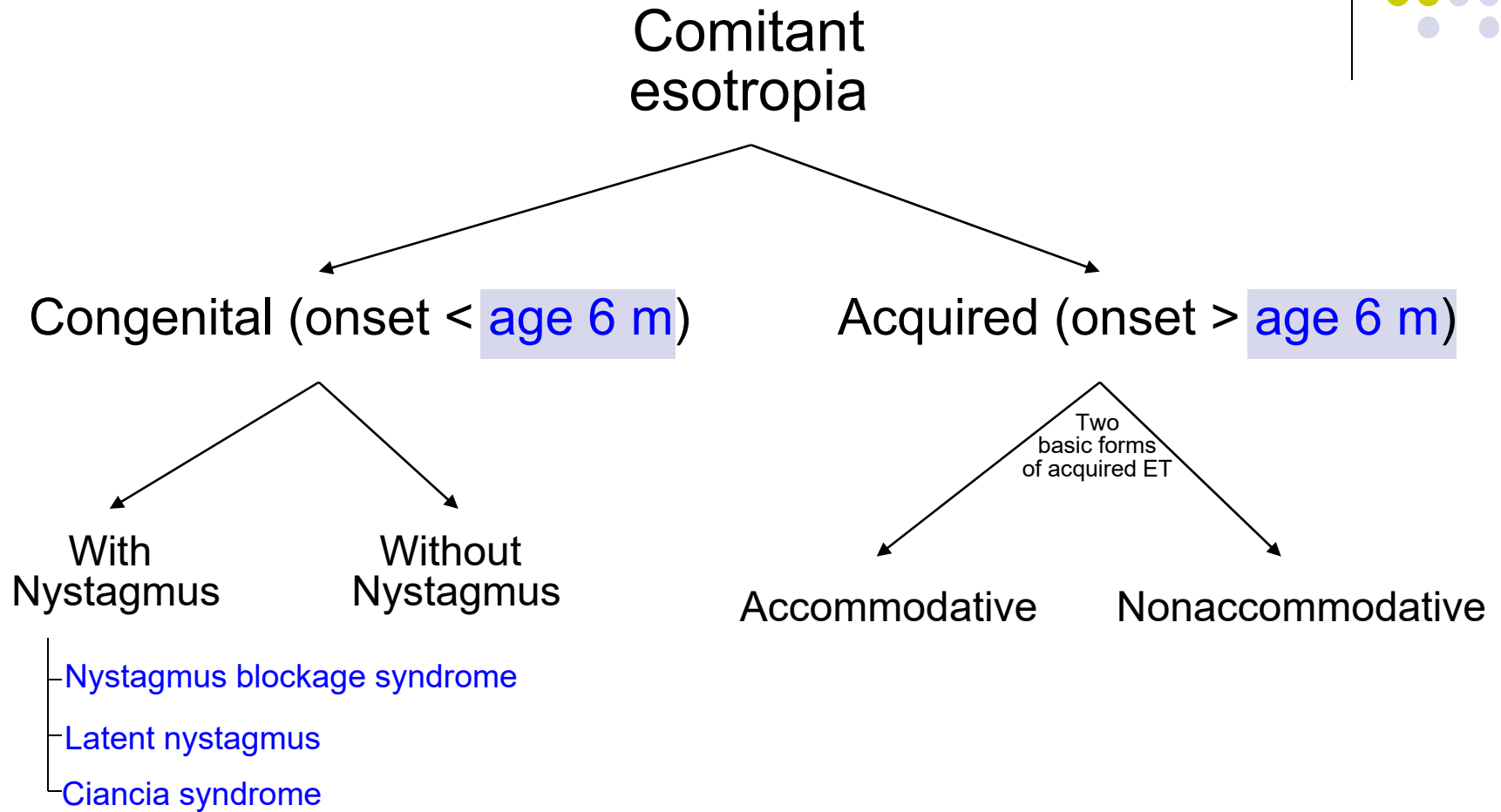


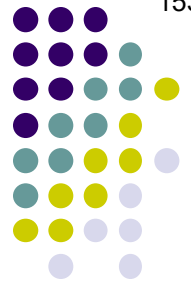
Comitant Esotropia



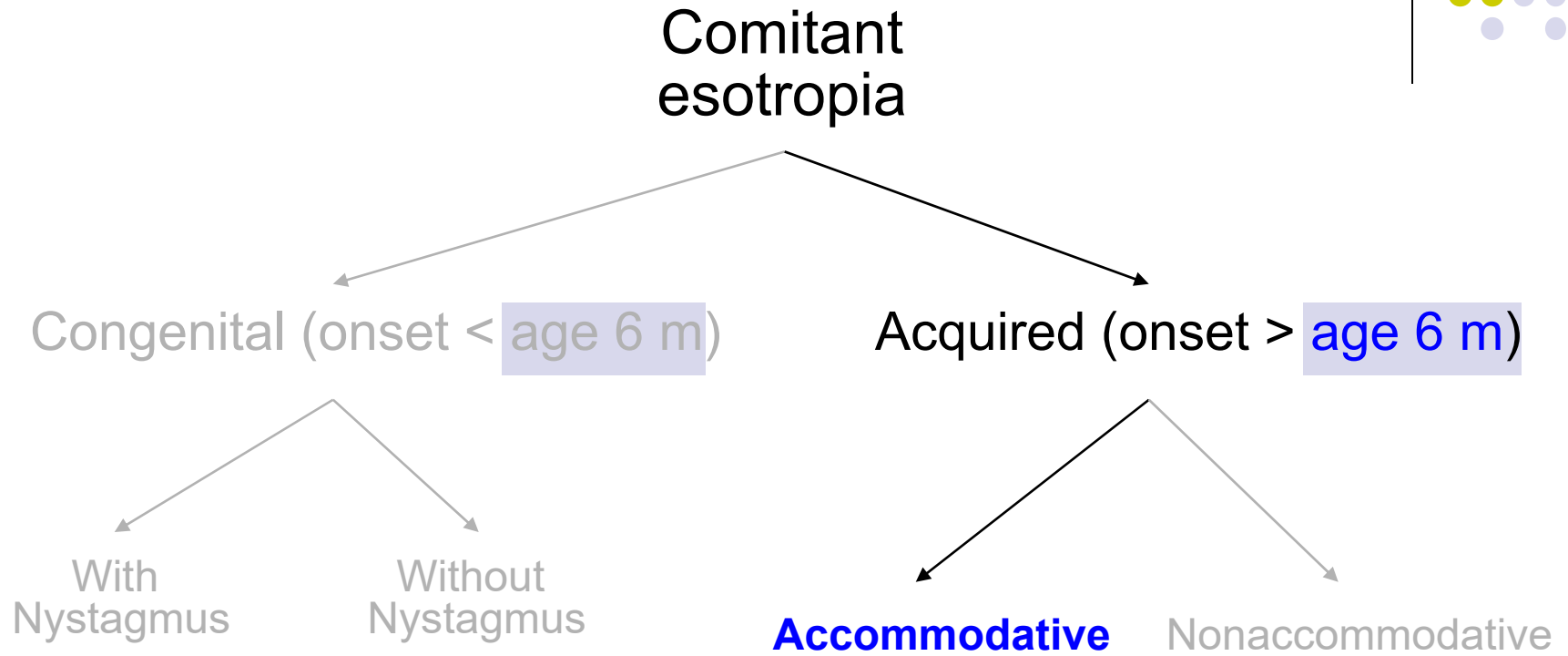


Comitant Esotropia





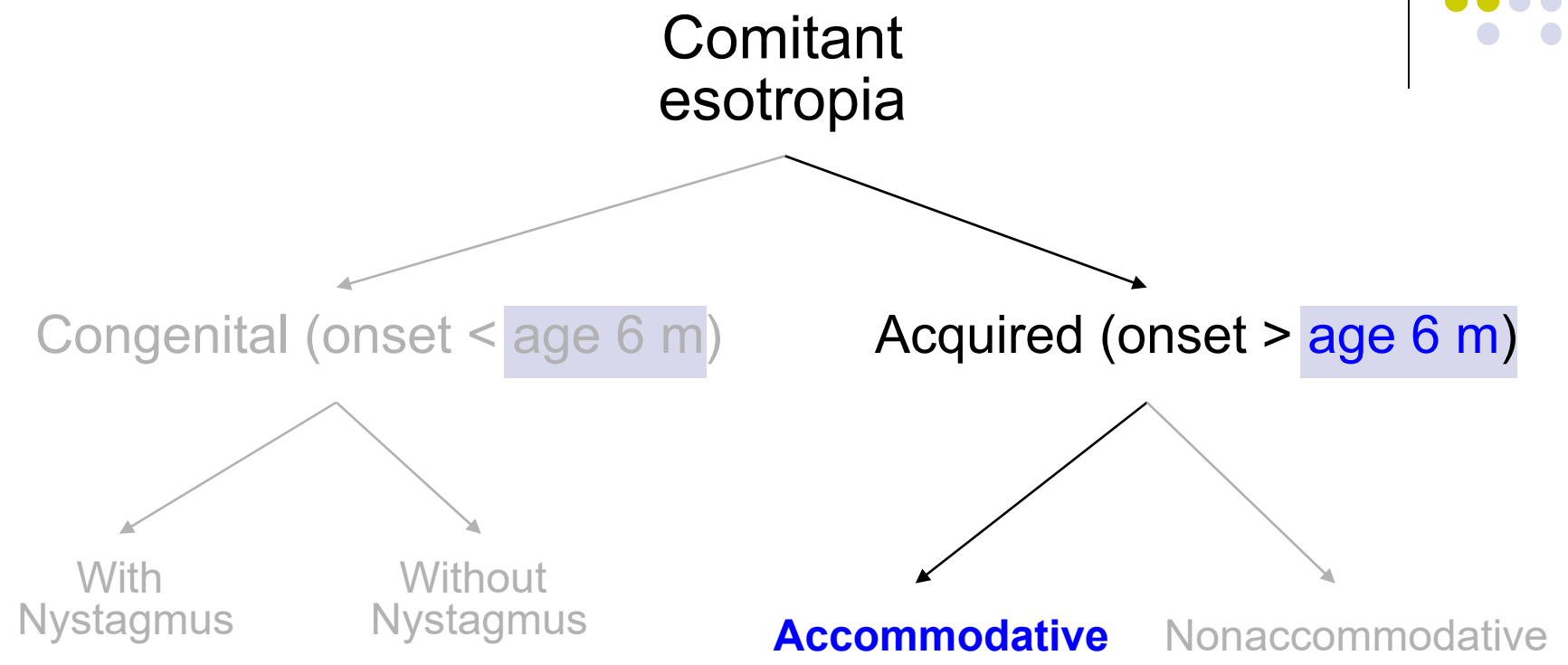
Comitant Esotropia



Accommodative
 --Onset between ages [] and []; average age []



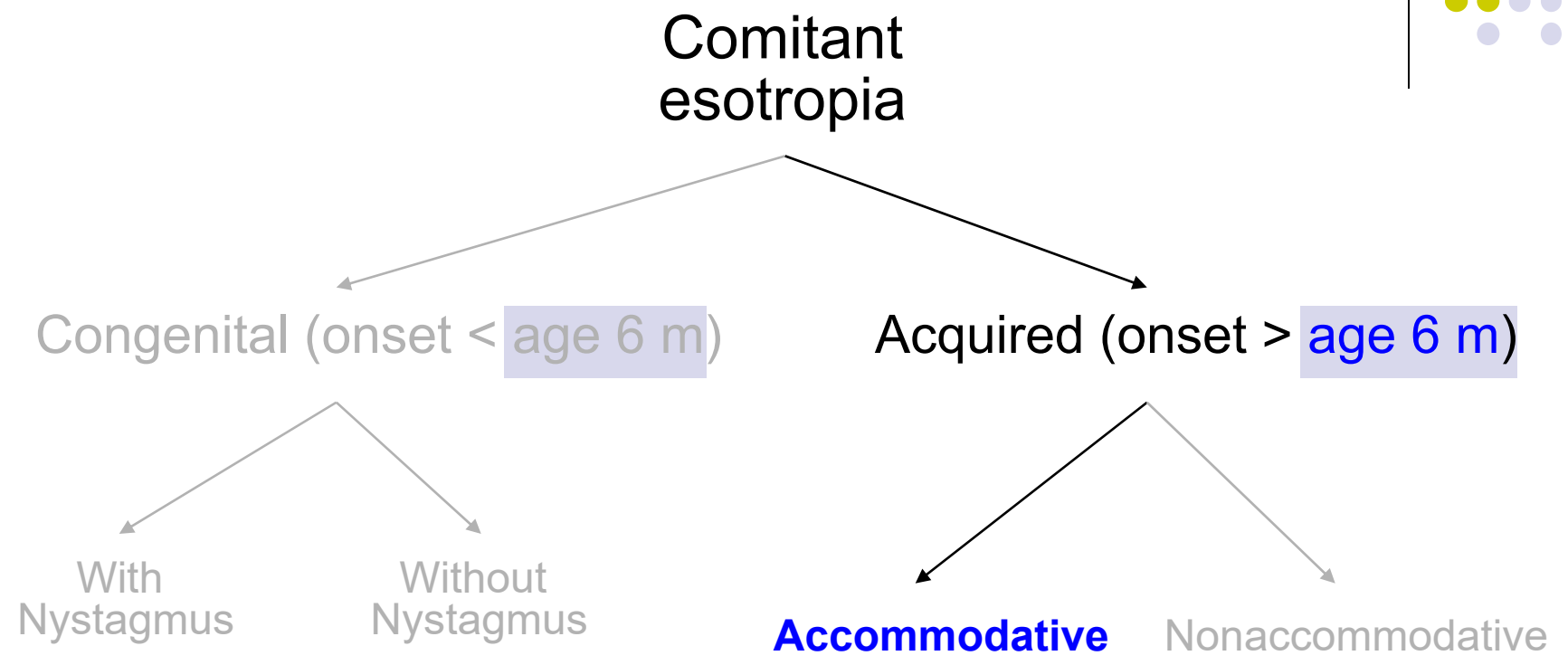
Comitant Esotropia



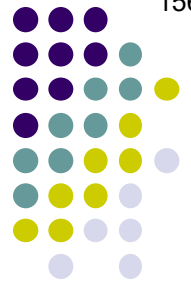
Accommodative
--Onset between ages 6 months and 7 years ; average age 2.5 years



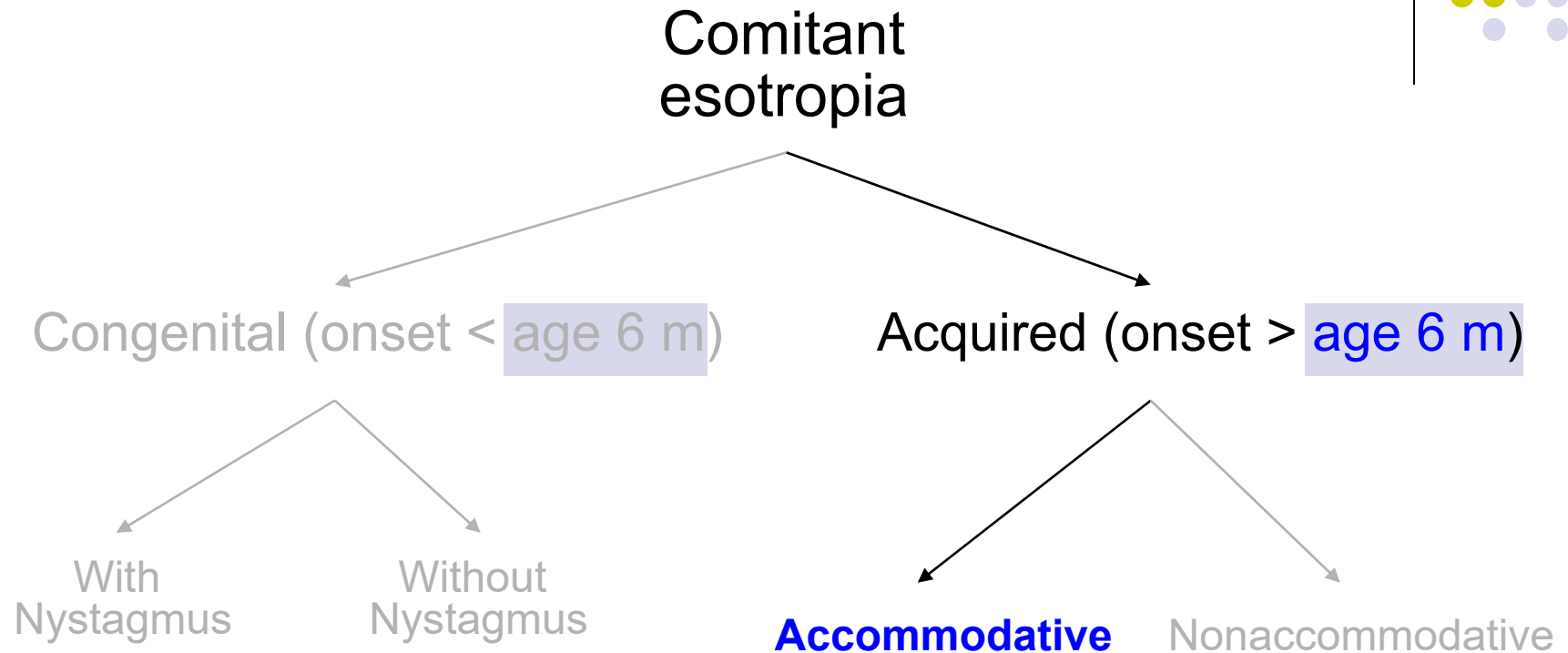
Comitant Esotropia



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



Comitant Esotropia

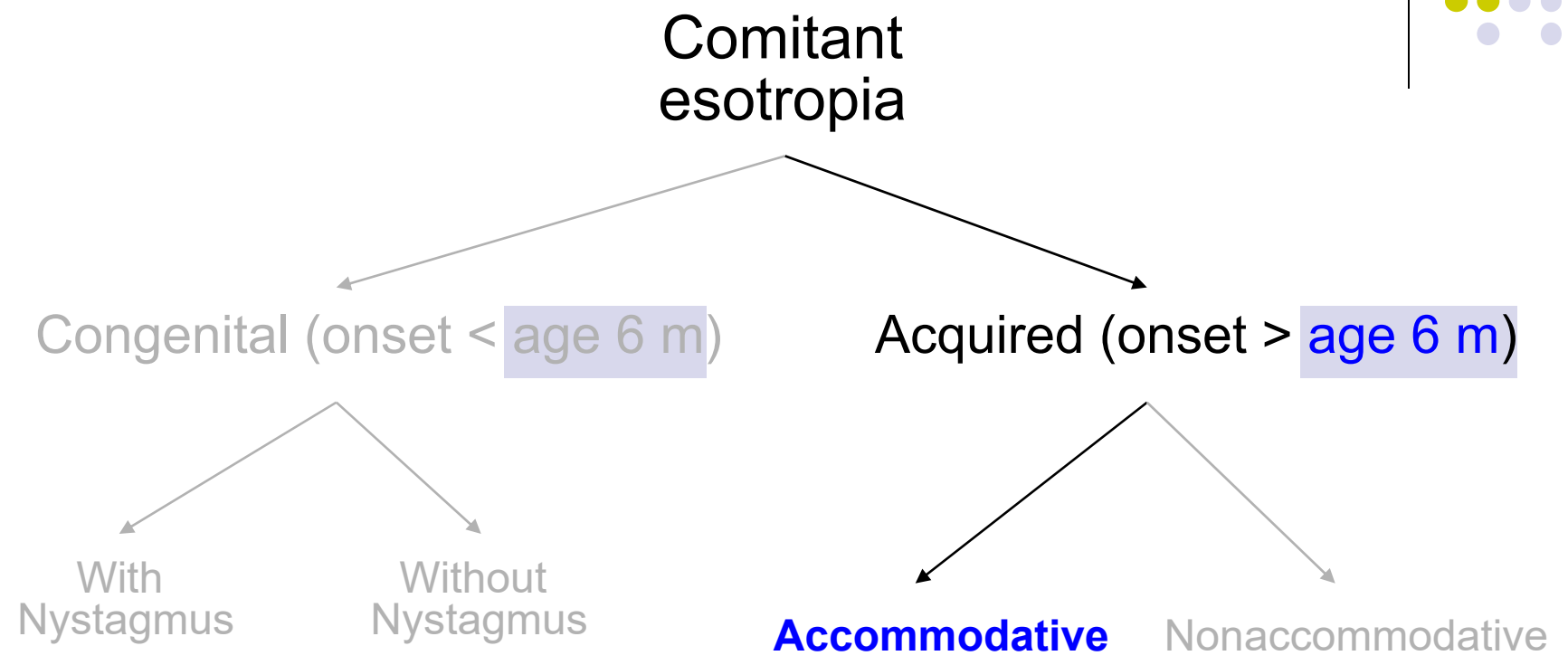


Accommodative

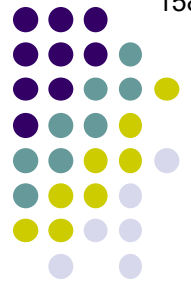
- Onset between ages 6 months and 7 years ; average age 2.5 years
- Initially...intermittent, eventually becoming...constant



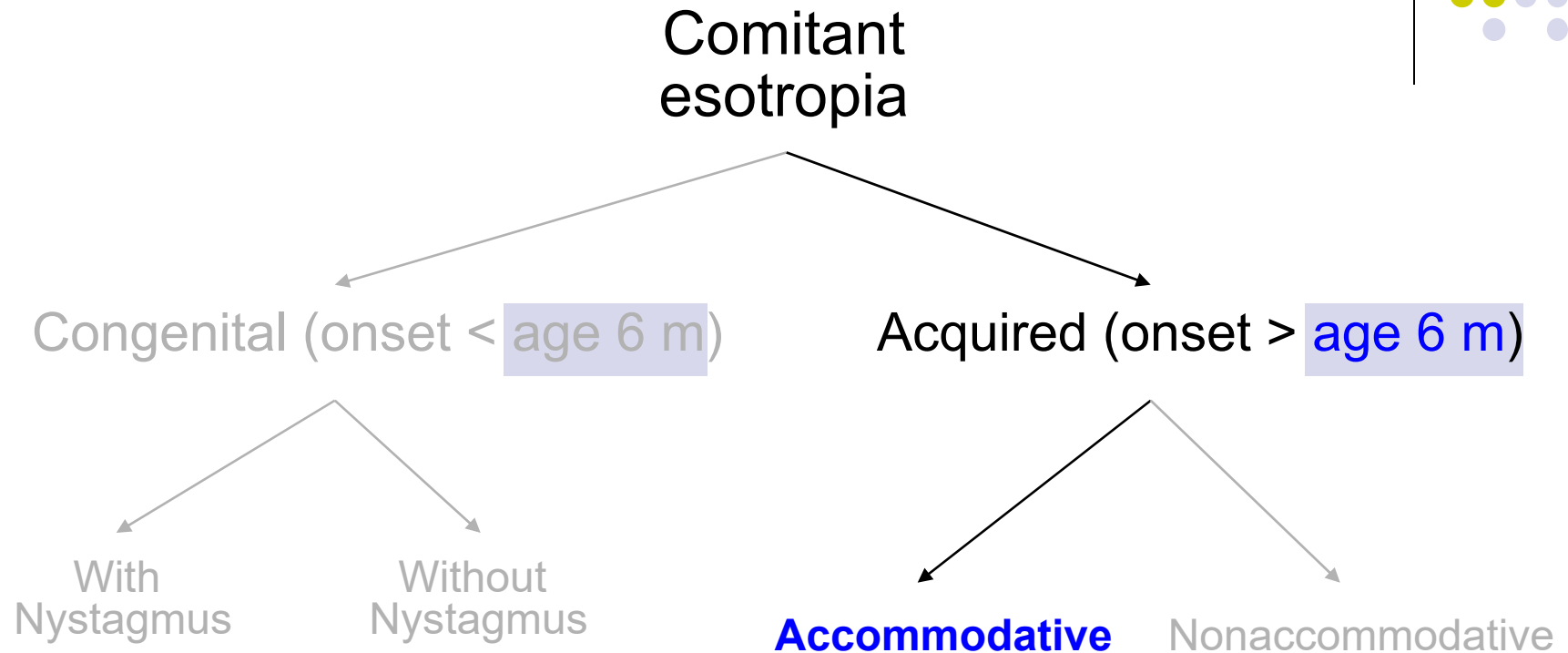
Comitant Esotropia



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

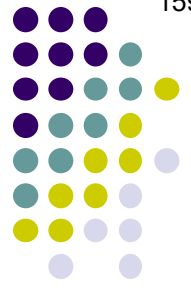


Comitant Esotropia

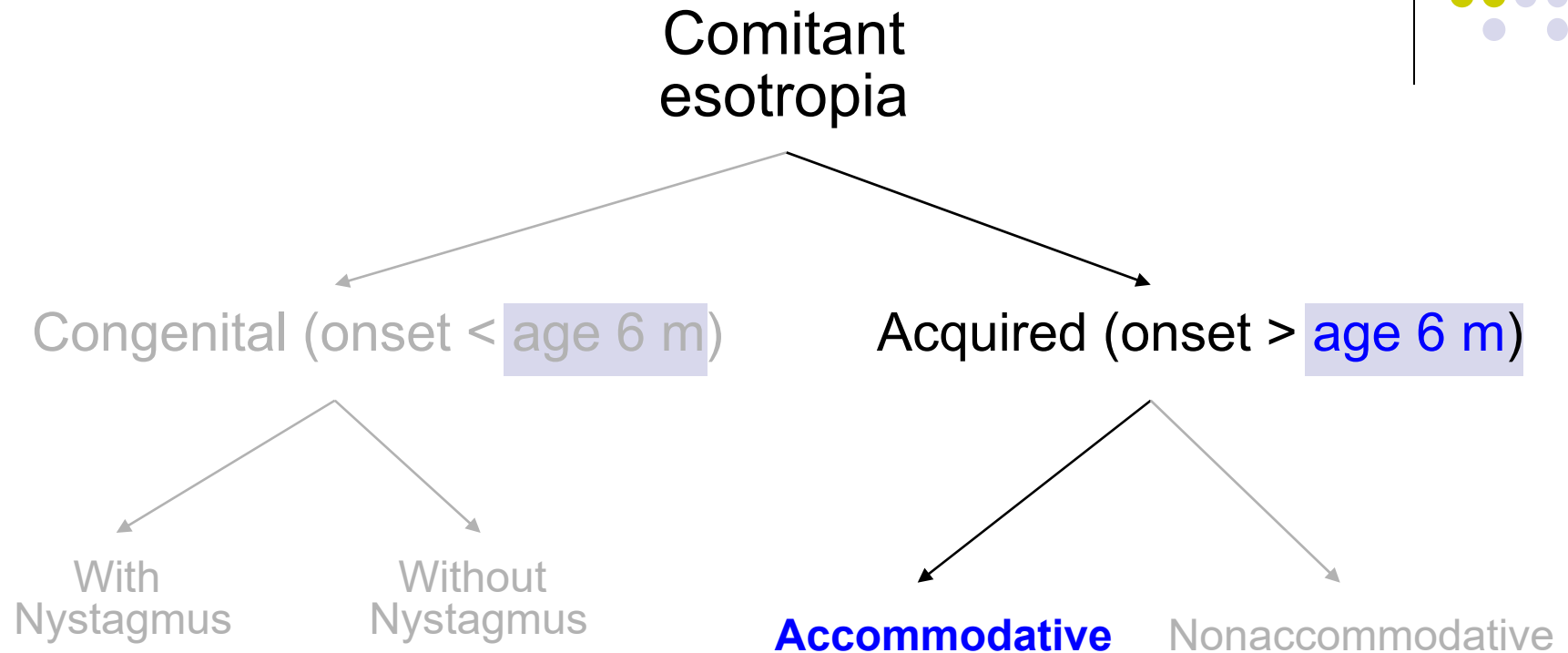


Accommodative

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

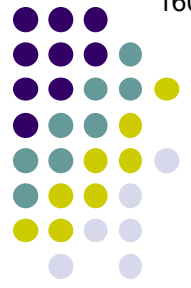


Comitant Esotropia

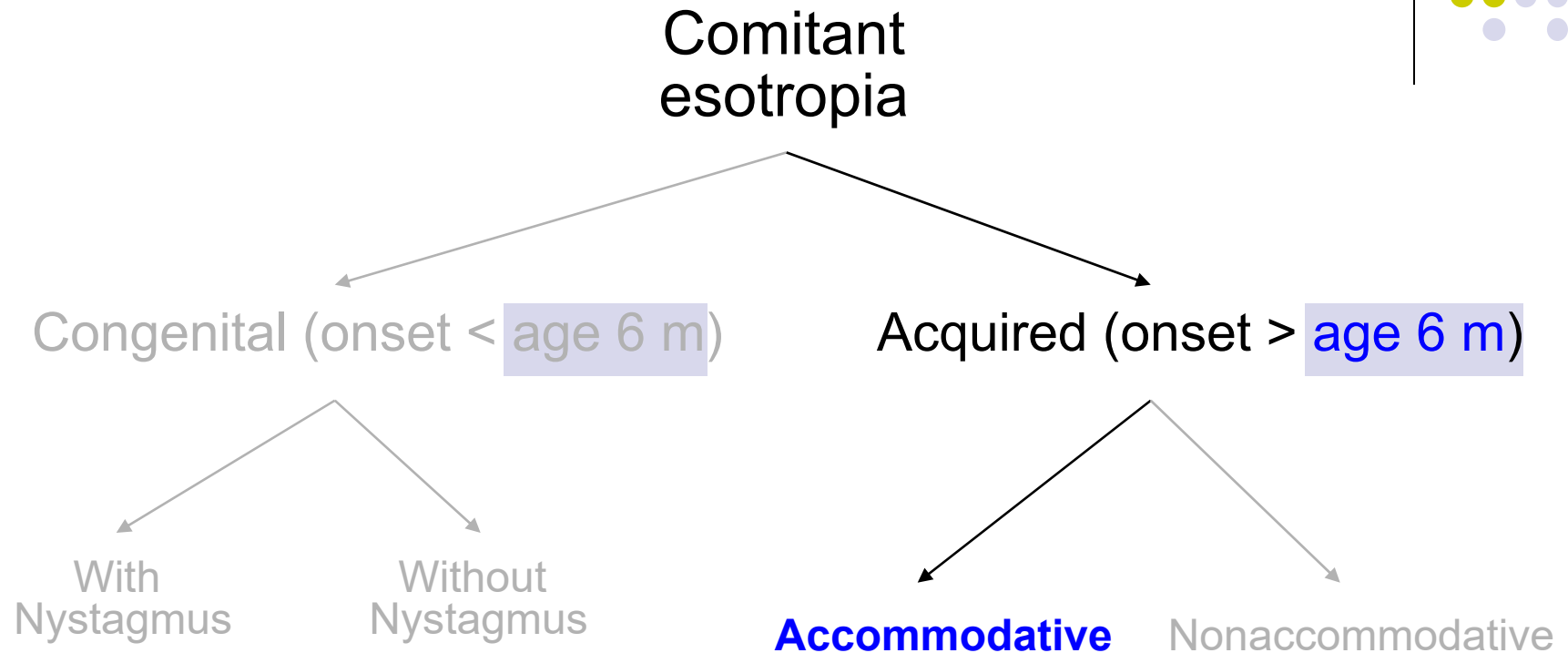


Accommodative

- 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...

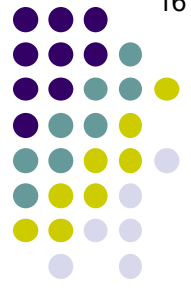


Comitant Esotropia

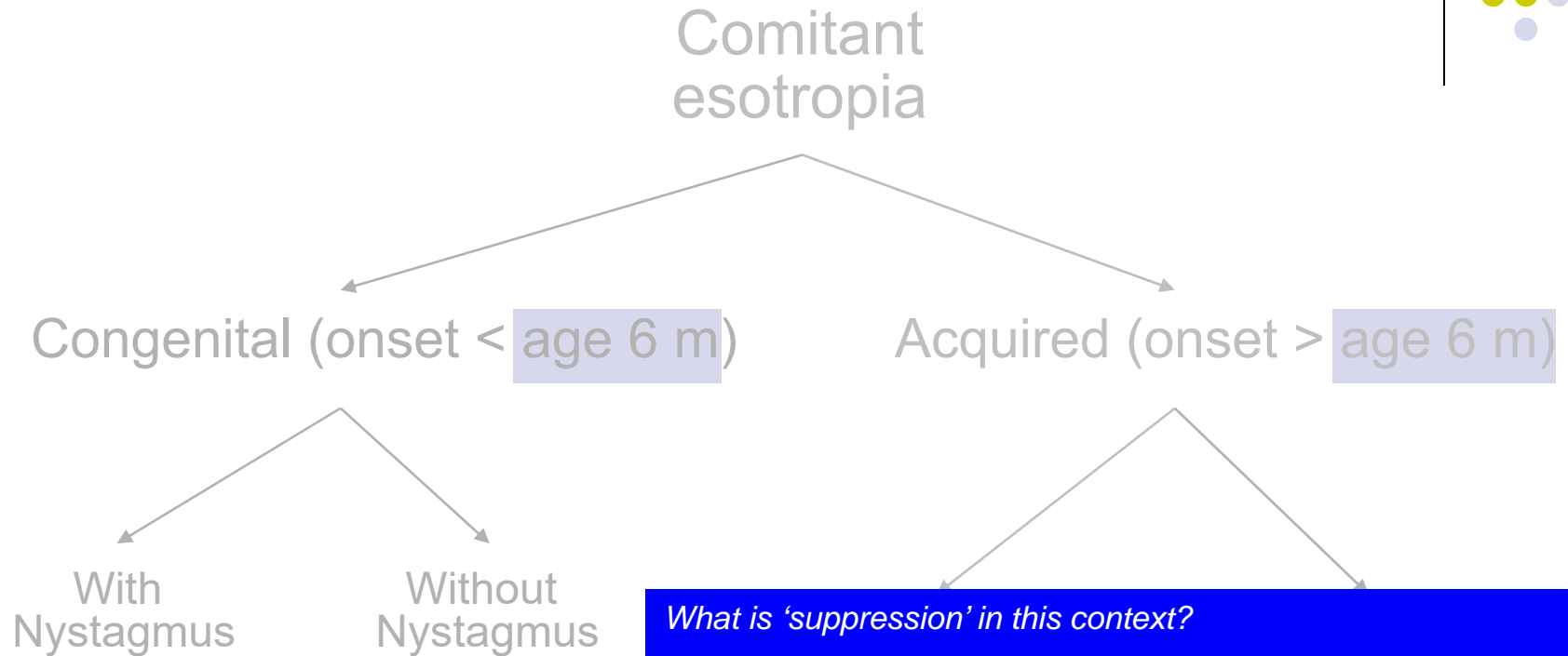


Accommodative

- 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



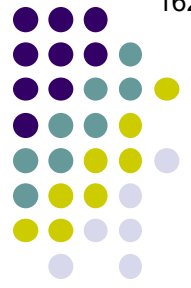
Comitant Esotropia



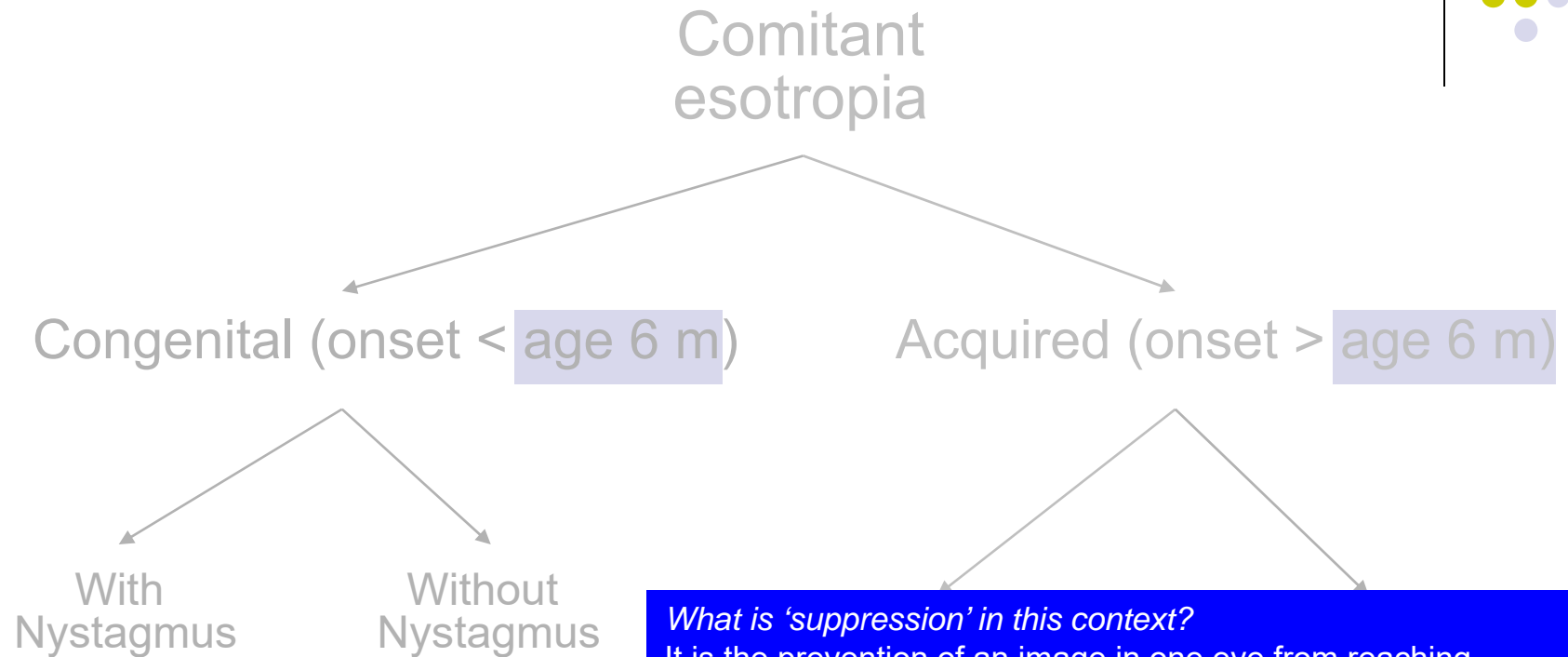
Accommodative

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

What is 'suppression' in this context?



Comitant Esotropia



What is 'suppression' in this context?

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

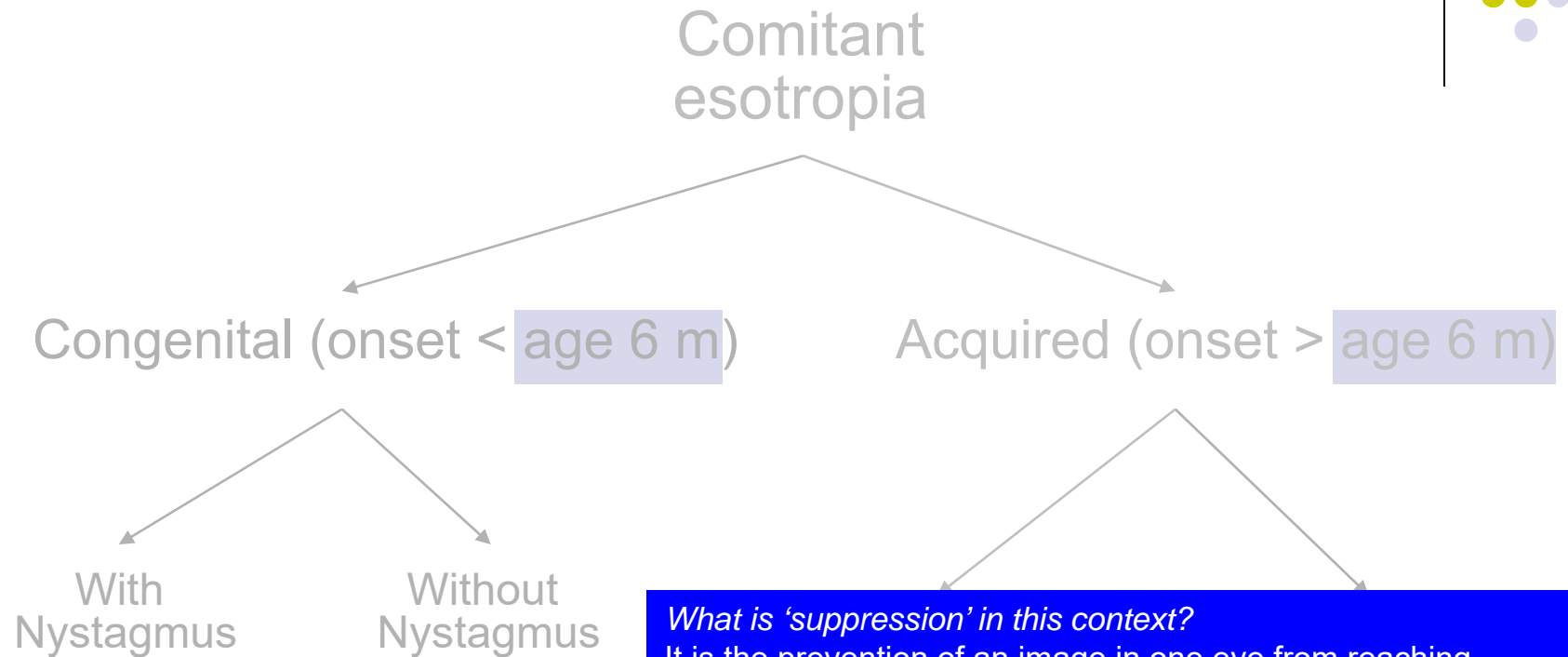
Accommodative

- 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



Accommodative

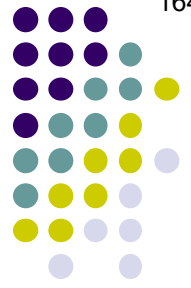
- Onset between ages 6 months
- Initially...intermittent, eventually
- Amblyopia is...common
- c/o diplopia early, but stop after developing a...facultative

suppression scotoma

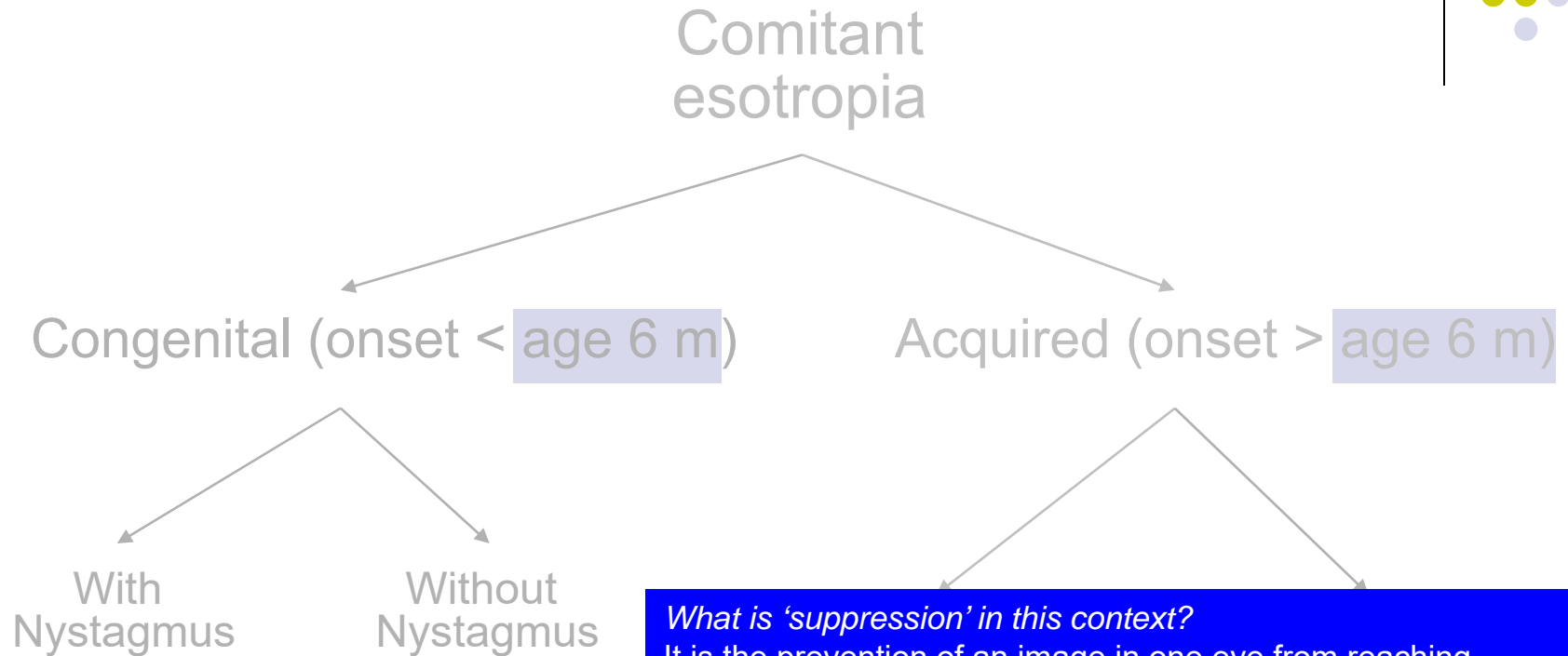
What is 'suppression' in this context?

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

How does the phenomenon of suppression come about?



Comitant Esotropia



Accommodative

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

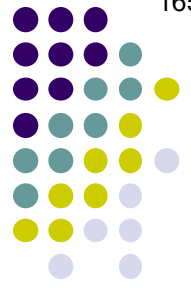
suppression scotoma

What is 'suppression' in this context?

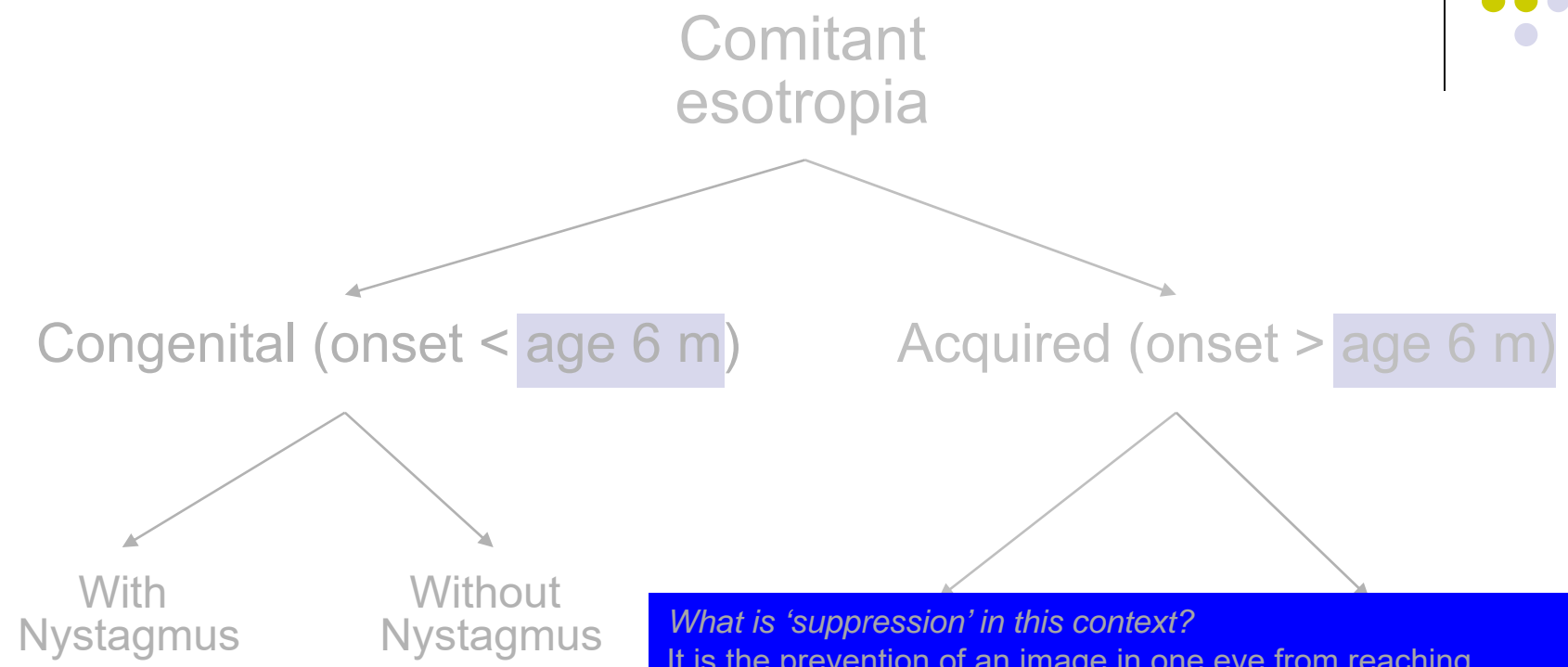
It is the prevention of an image in one eye from reaching conscious awareness

How does the phenomenon of suppression come about?

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



Comitant Esotropia



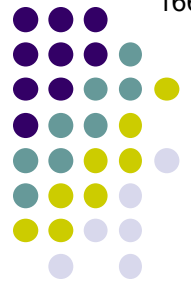
Accommodative

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

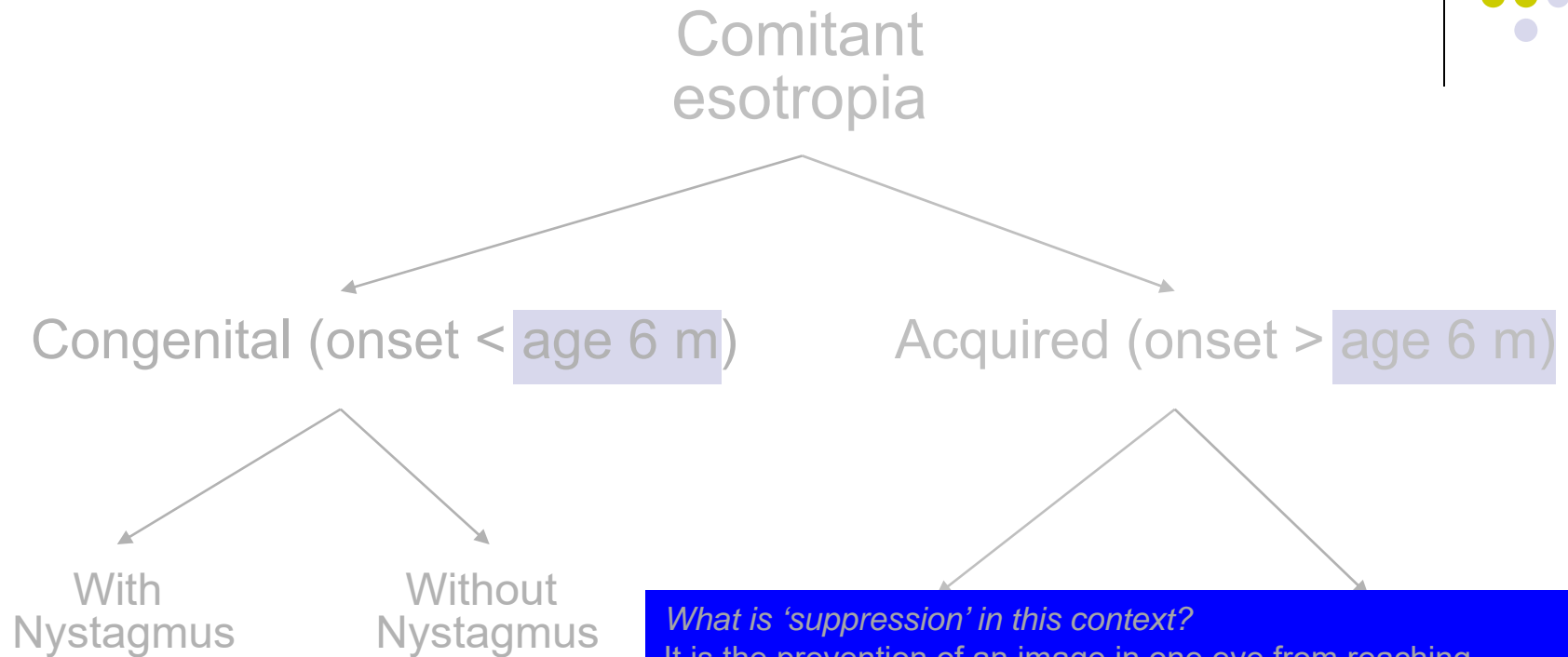
What is 'suppression' in this context?
 It is the prevention of an image in one eye from reaching conscious awareness

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

facultative suppression scotoma



Comitant Esotropia



Accommodative

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

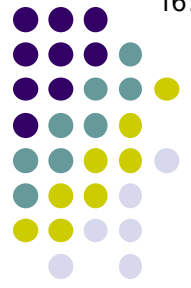
What is 'suppression' in this context?

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

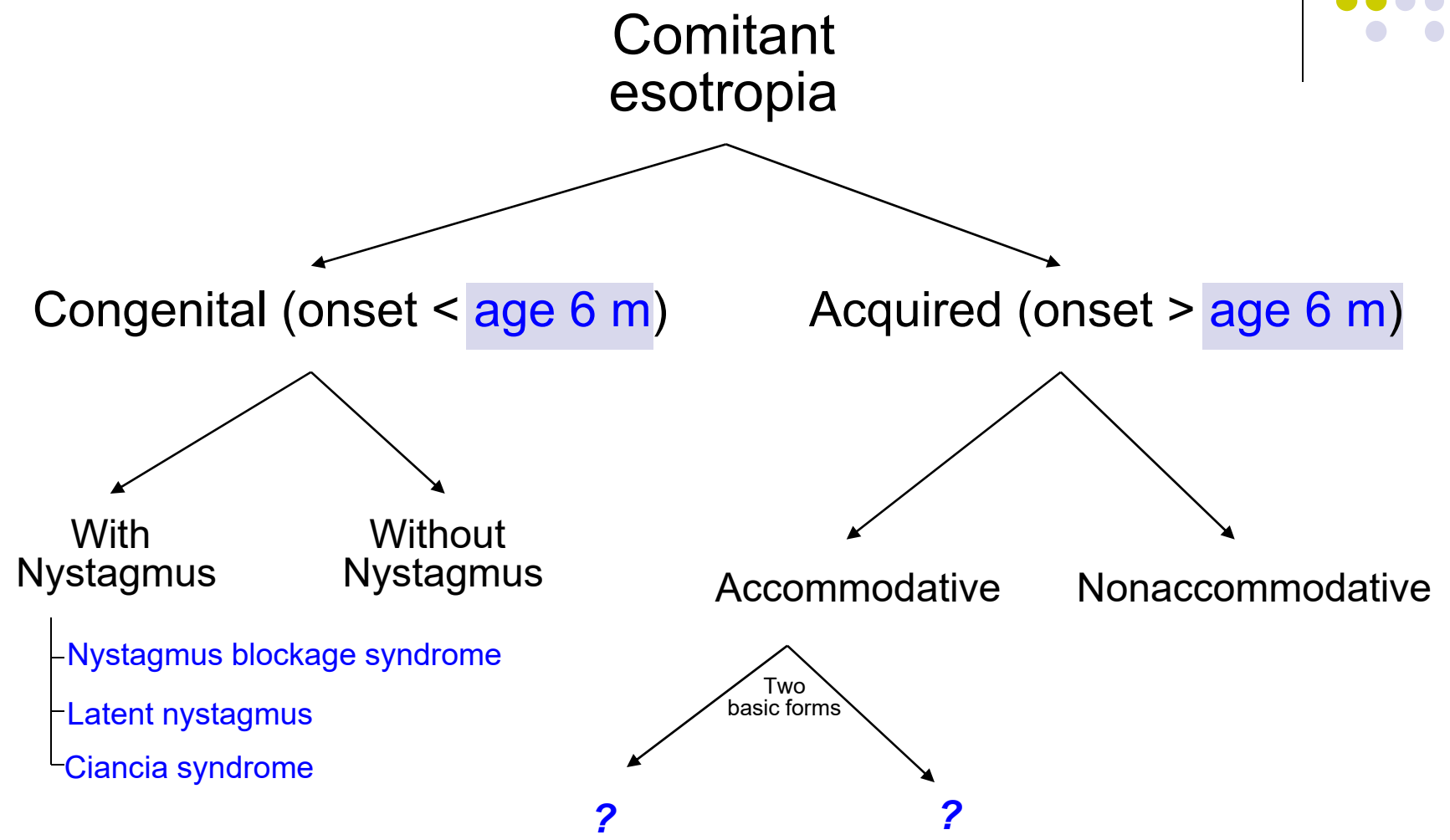
What does it mean to say a suppression scotoma is 'facultative'?

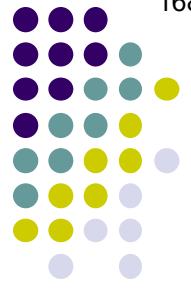
It means suppression occurs only while the eye is deviated

facultative suppression scotoma

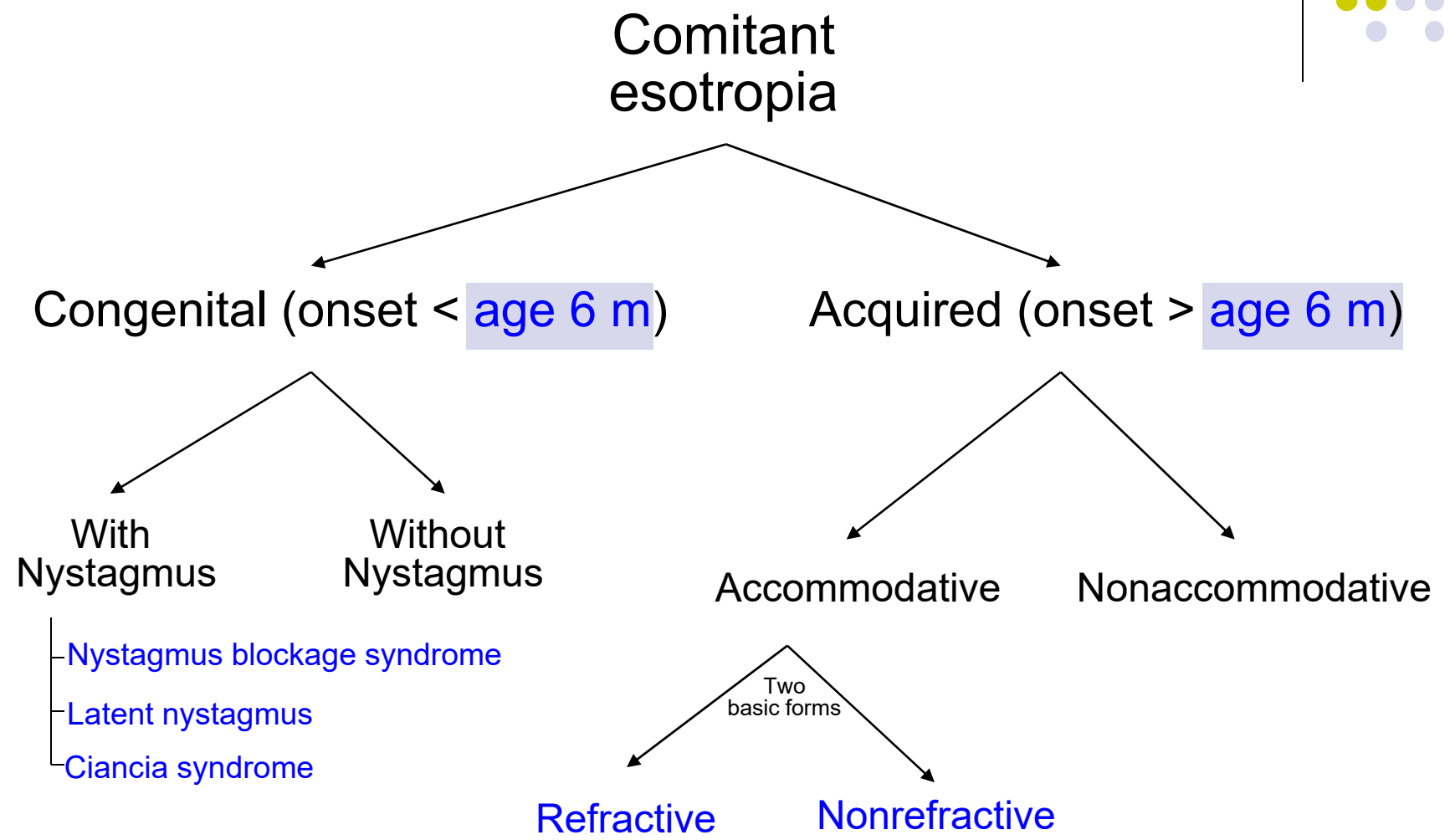


Comitant Esotropia





Comitant Esotropia





Comitant Esotropia

Comitant esotropia

Accommodative: Refractive
--Combo of uncorrected [] and inadequate []

Latent nystagmus
Ciancia syndrome

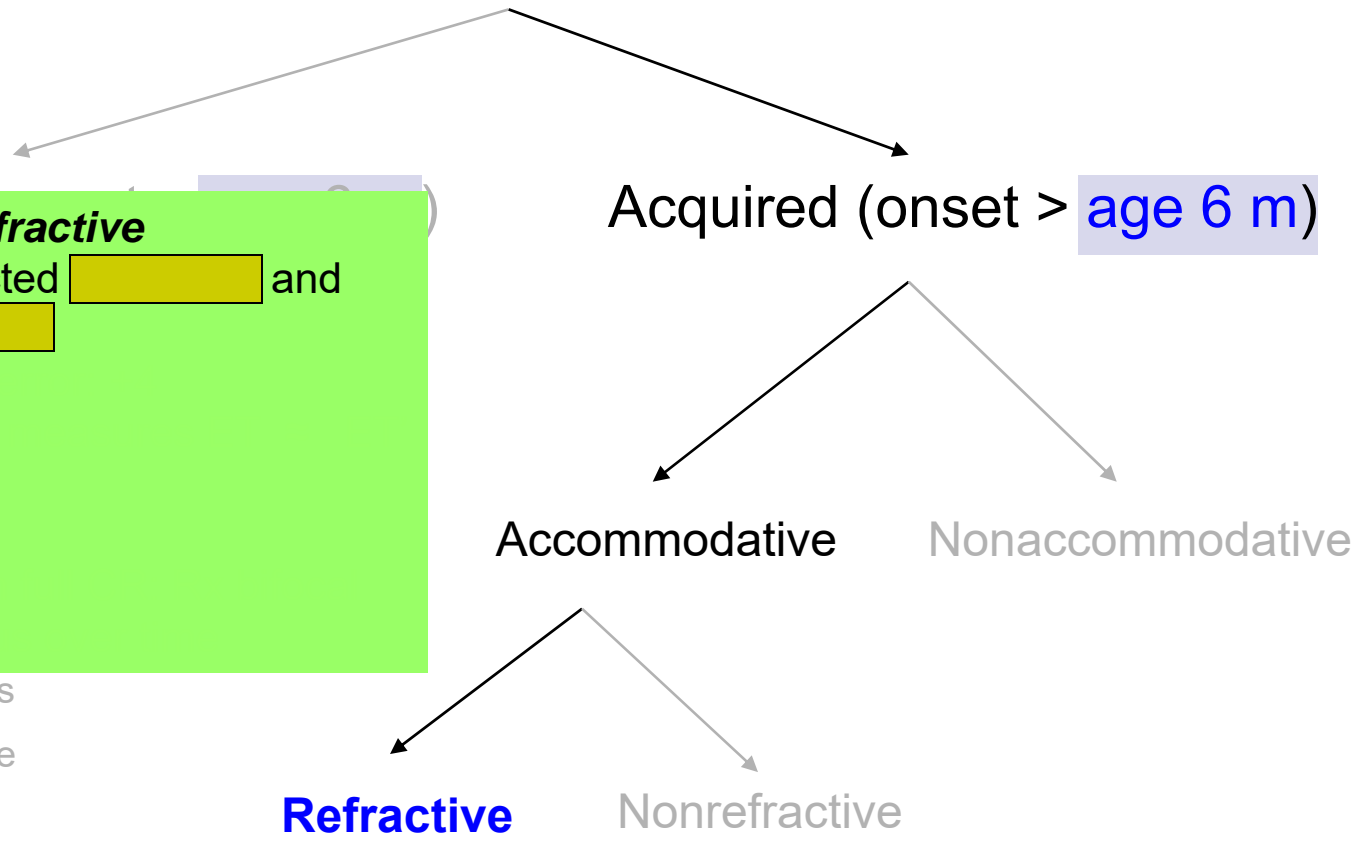
Acquired (onset > age 6 m)

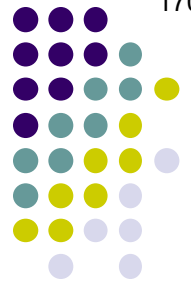
Accommodative

Nonaccommodative

Refractive

Nonrefractive





Comitant Esotropia

Comitant esotropia

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

- Latent nystagmus
- Ciancia syndrome

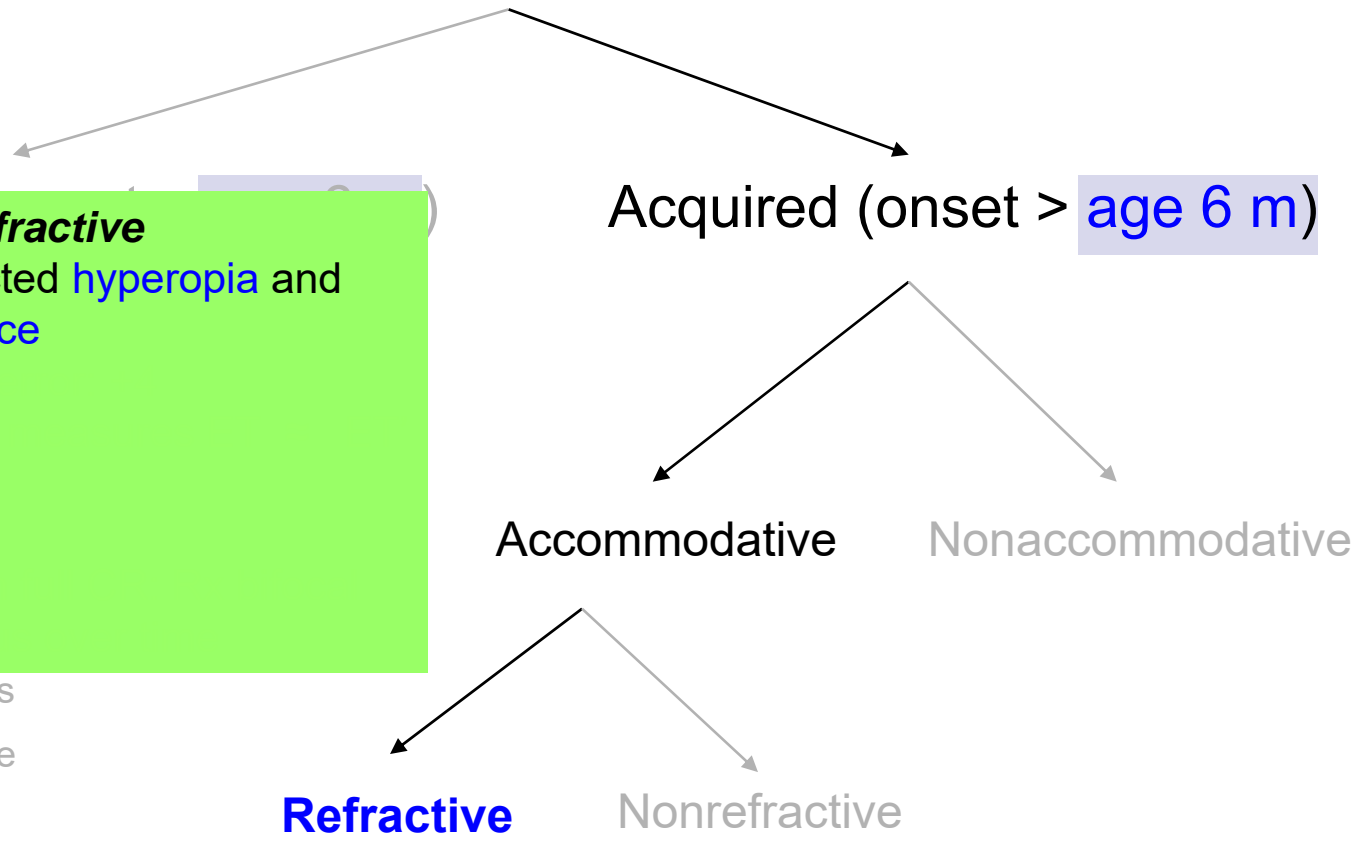
Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Refractive

Nonrefractive





Comitant Esotropia

Comitant esotropia

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

- Latent nystagmus
- Ciarcia syndrome

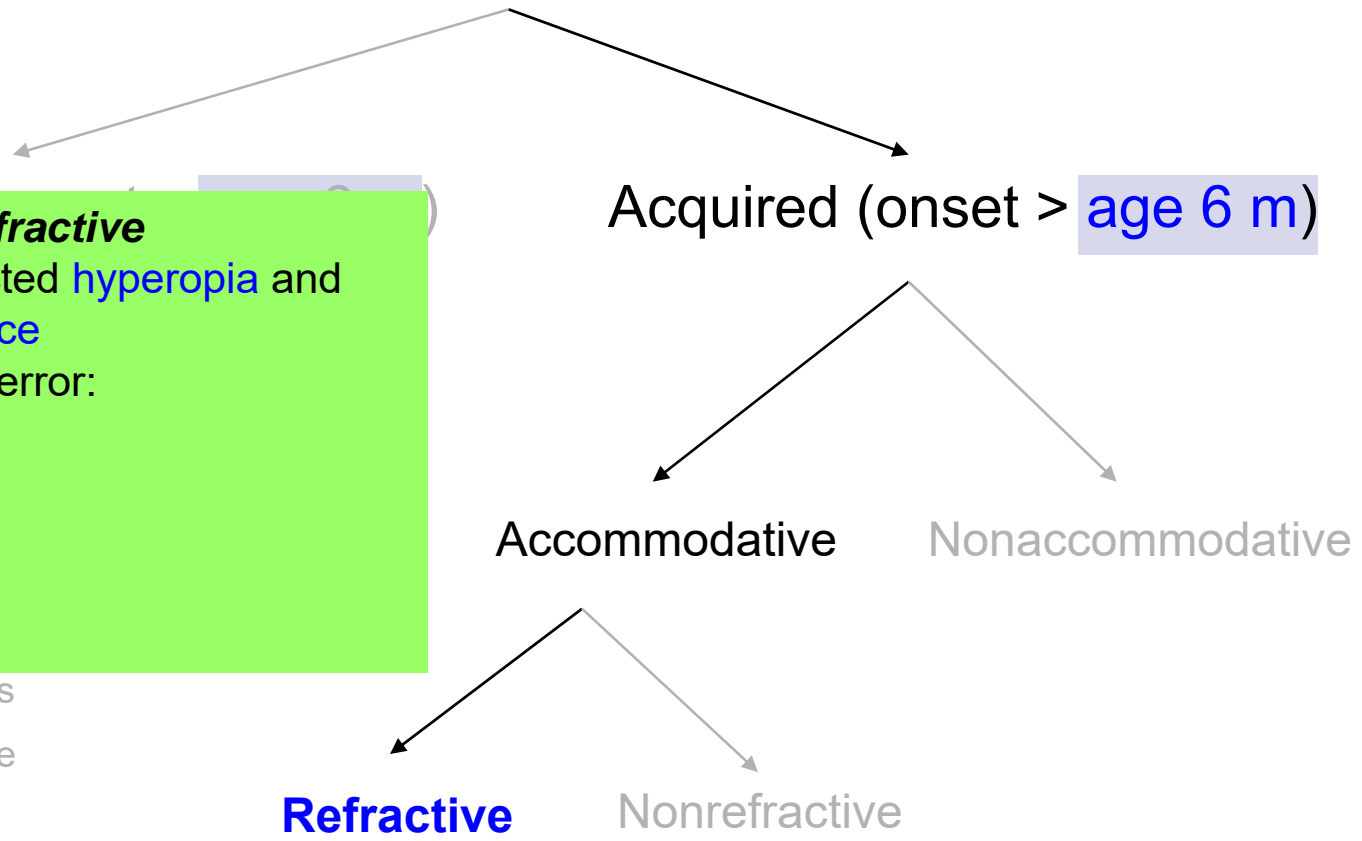
Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Refractive

Nonrefractive





Comitant Esotropia

Comitant esotropia

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

Latent nystagmus
Ciancia syndrome

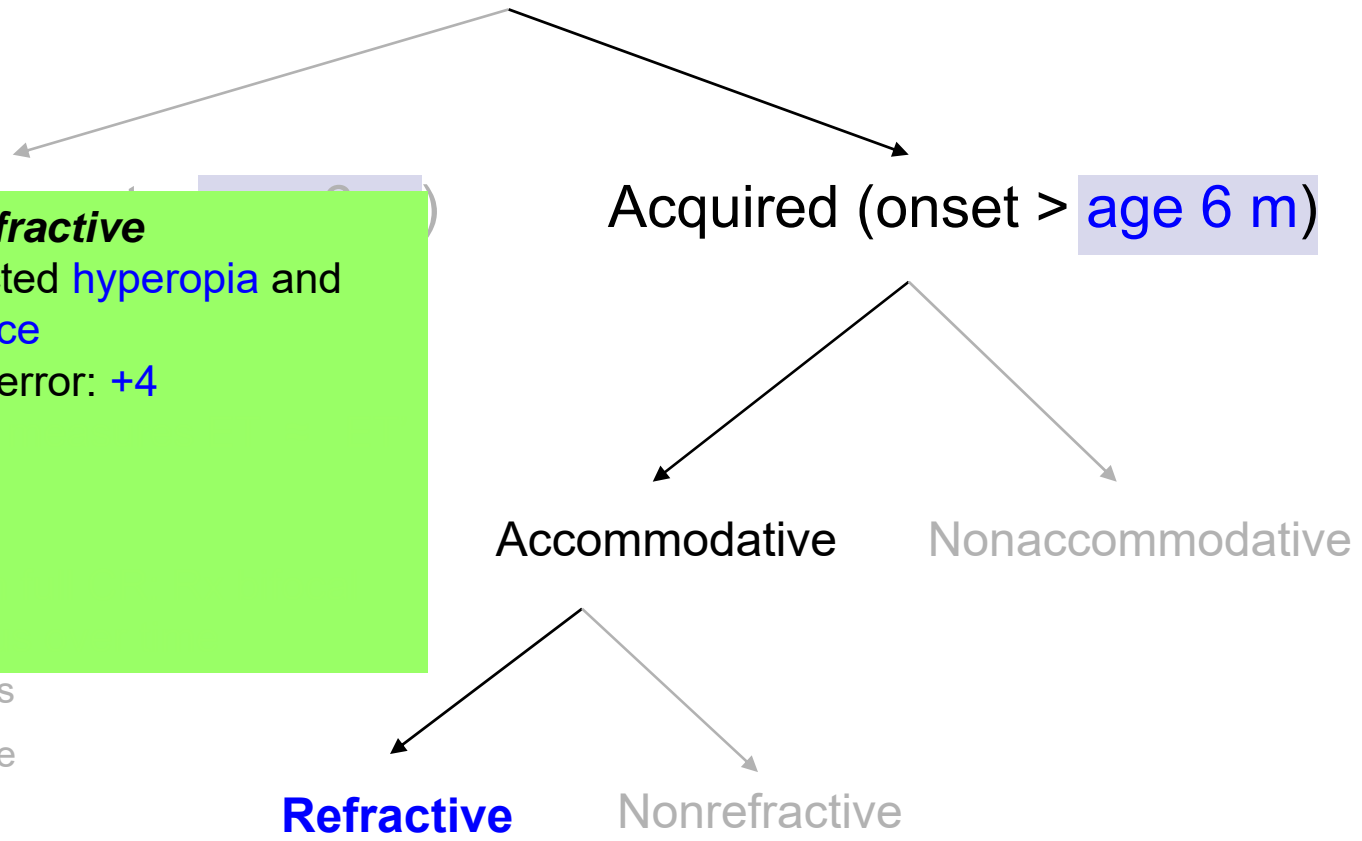
Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Refractive

Nonrefractive






Comitant Esotropia

Comitant esotropia

Acquired (onset > age 6 m)

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

Latent nystagmus
 Ciancia syndrome

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
 Ciancia syndrome

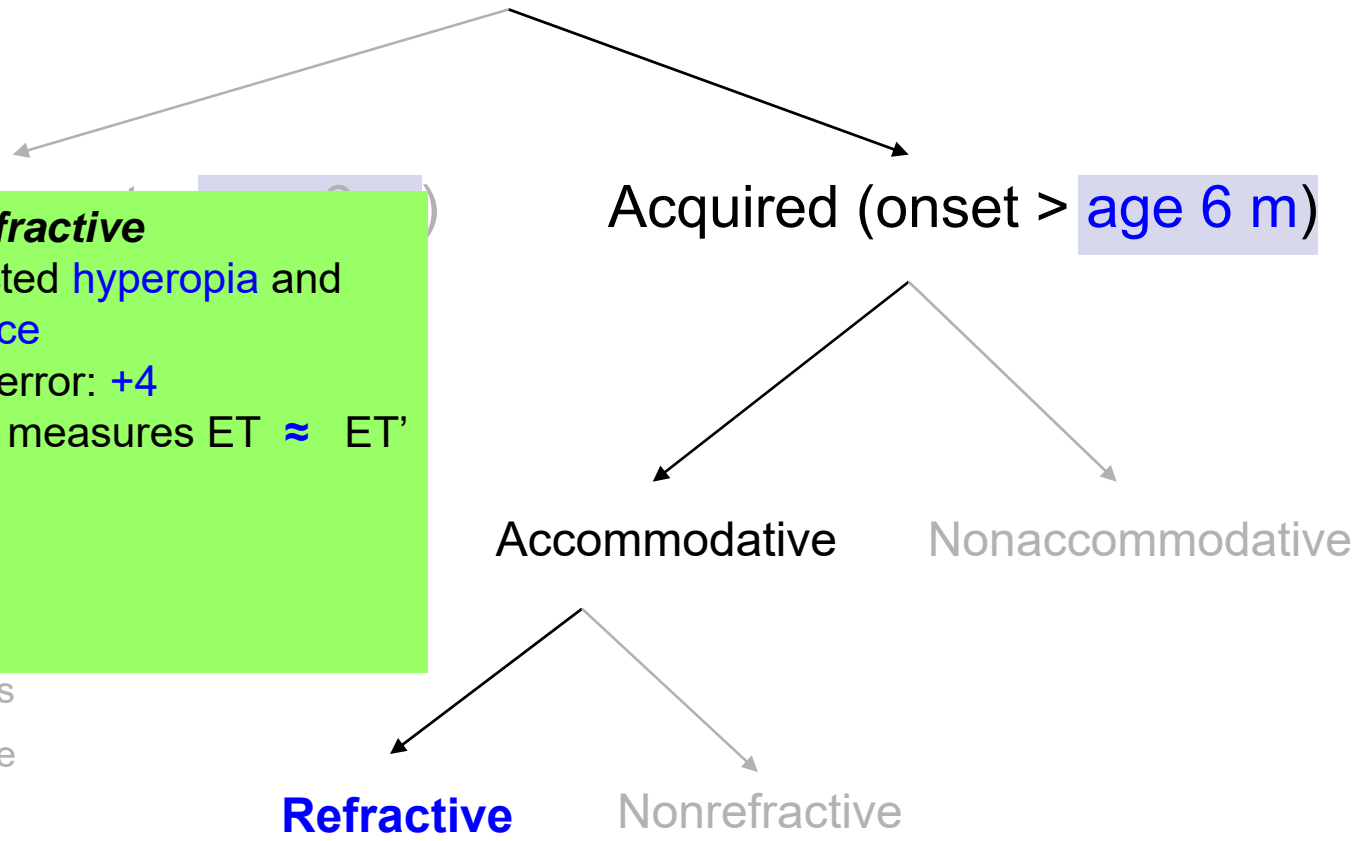
Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Refractive

Nonrefractive





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Comitant esotropia

Acquired (onset > age 6 m)

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Management
 --Prescribe...[refraction]

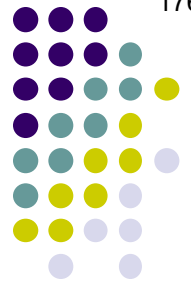
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Accommodative

Nonaccommodative

Refractive

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Management
 --Prescribe...full CR

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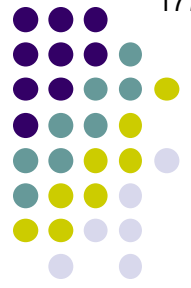
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Accommodative

Nonaccommodative

Refractive

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Acquired (onset > age 6 m)

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 --Combo of uncorrected hyperopia and inadequate divergence
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Management
 --Prescribe...full CR
 --If residual ET' with full CR: Rx...

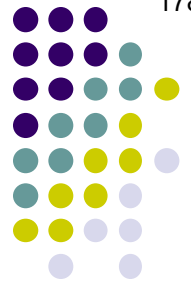
Latent nystagmus
 Ciancia syndrome

Accommodative

Nonaccommodative

Refractive

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Comitant Esotropia

Comitant esotropia

Acquired (onset > age 6 m)

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

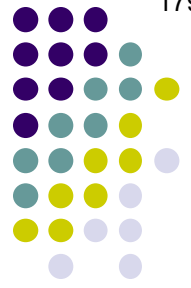
Latent nystagmus
 Ciancia syndrome

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

Comitant esotropia

Acquired (onset > age 6 m)

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

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

Latent nystagmus
 Ciancia syndrome

Accommodative

Nonaccommodative

Refractive

Nonrefractive



Comitant Esotropia

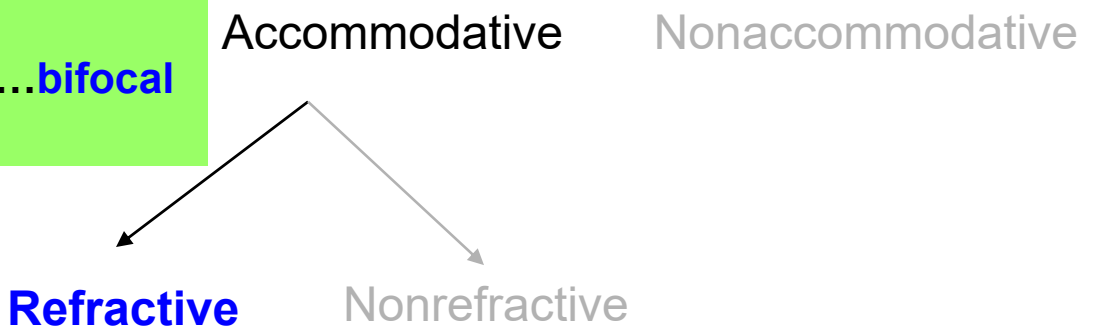
Comitant esotropia

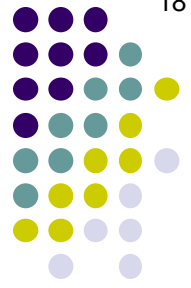
Compliance is often an issue with spectacle wear in this population—why?

> 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





Comitant Esotropia

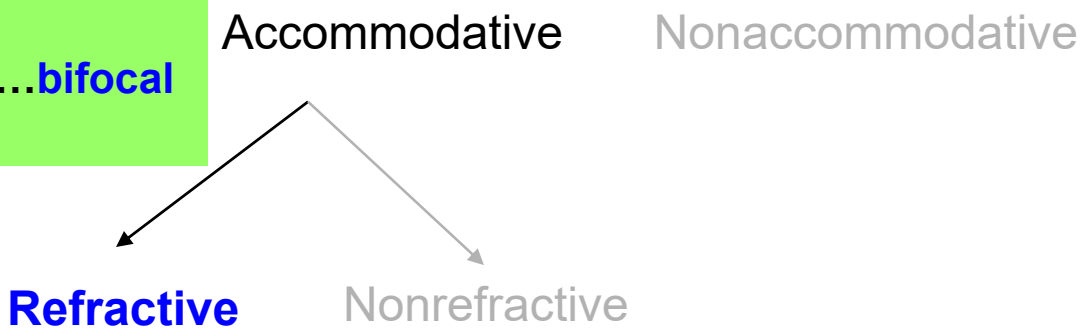
Comitant esotropia

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**
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Comitant Esotropia

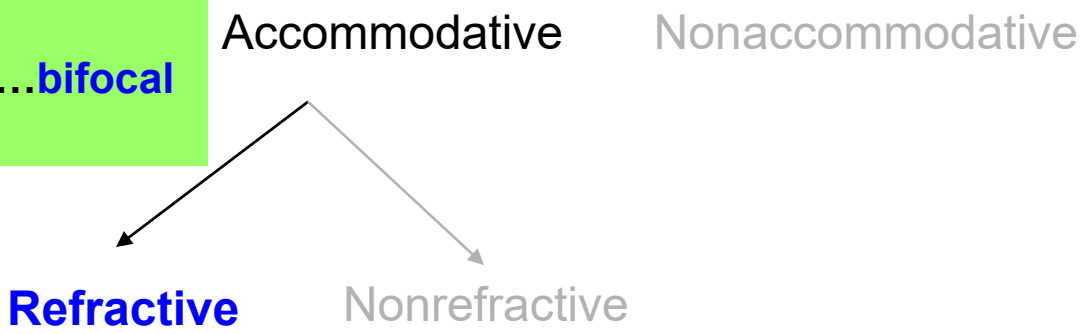
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> age 6 m)

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





Comitant Esotropia

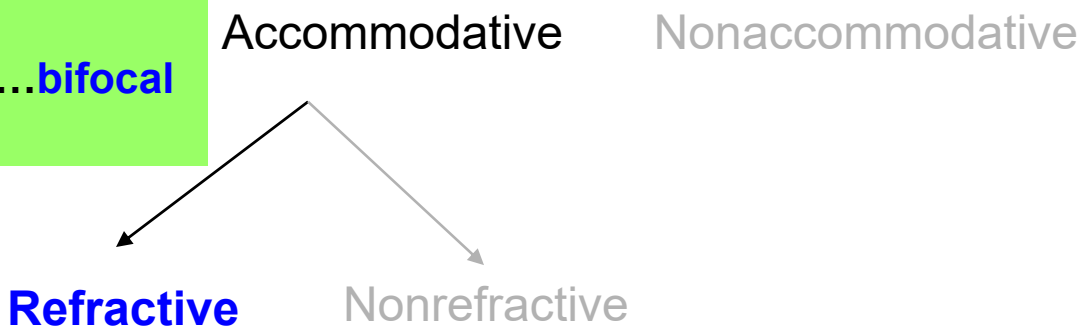
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age 6 m)

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





Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

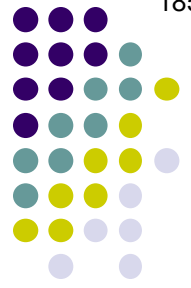
Accommodative: **Nonrefractive**
--ET secondary to...

Accommodative

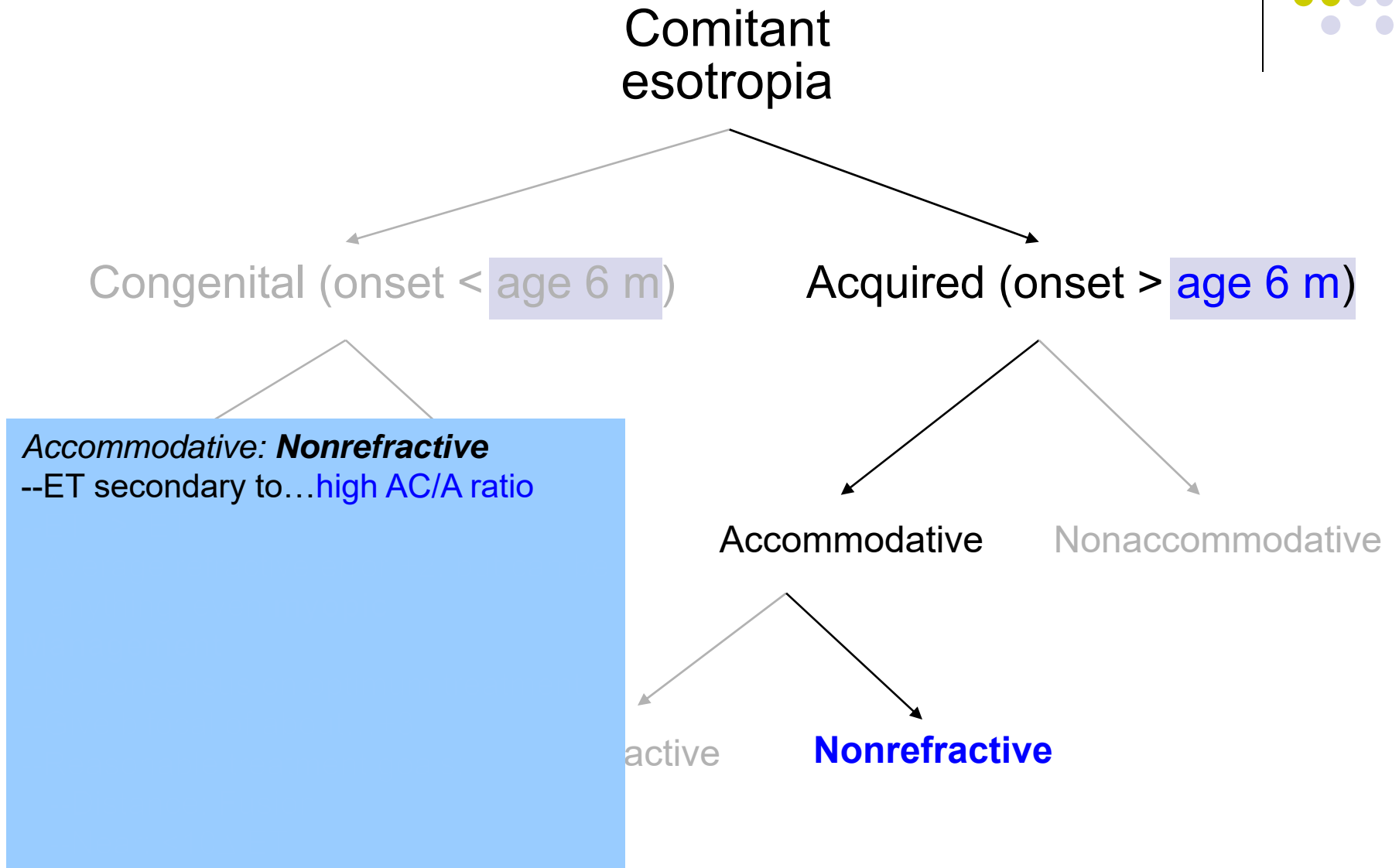
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accommodative

Nonrefractive



Comitant Esotropia



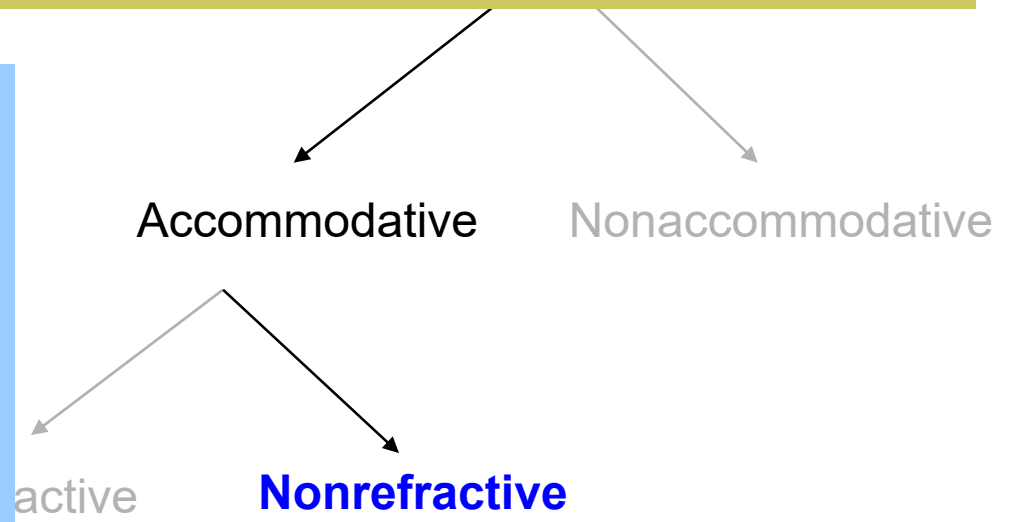


Comitant Esotropia

What is the AC/A ratio?



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

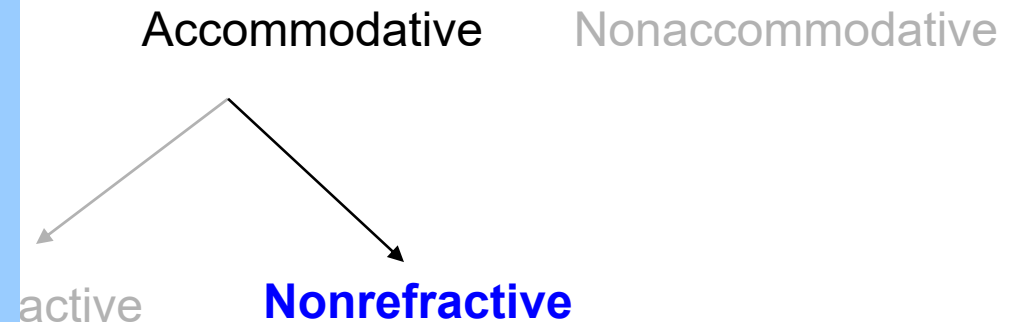


Comitant Esotropia

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~~
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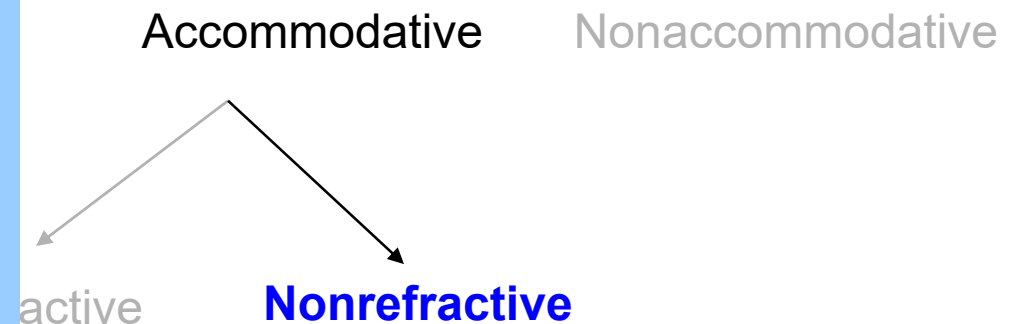


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Accommodative: ~~Nonrefractive~~
 --ET secondary to ... **high AC/A ratio**



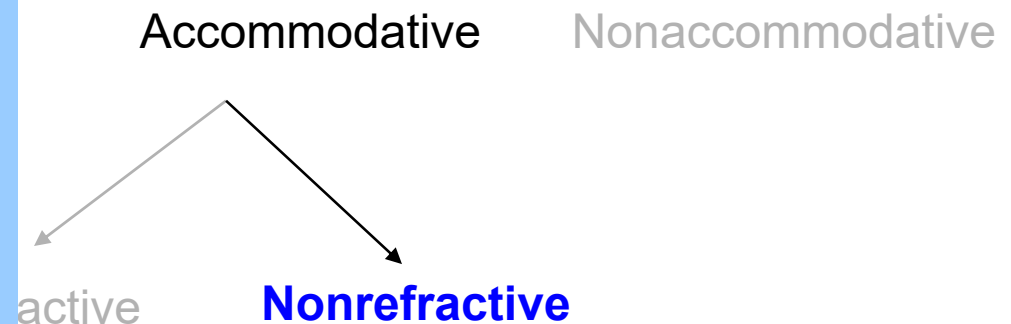
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Accommodative: ~~Nonrefractive~~
 --ET secondary to ... **high AC/A ratio**

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



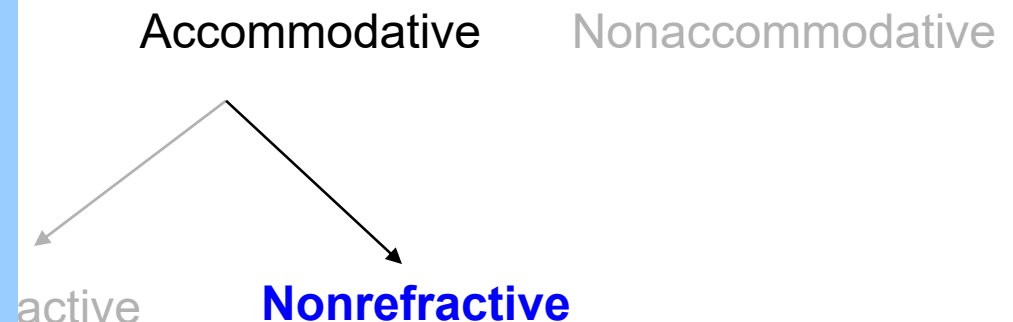
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Accommodative: ~~Nonrefractive~~
 --ET secondary to ... **high AC/A ratio**

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





Comitant Esotropia

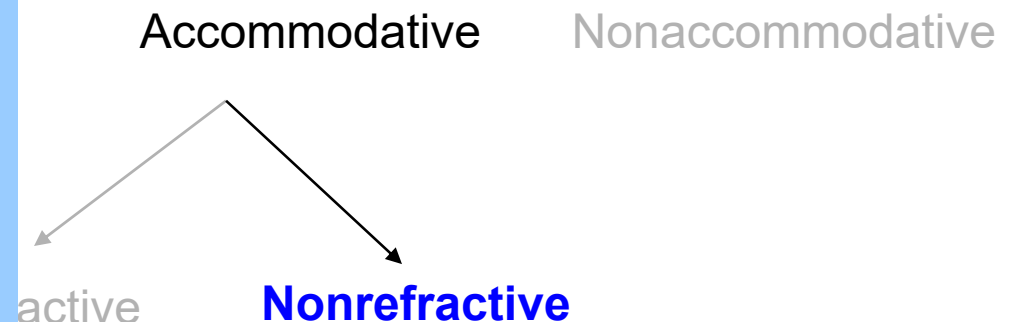
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What is a normal AC/A?



Comitant Esotropia

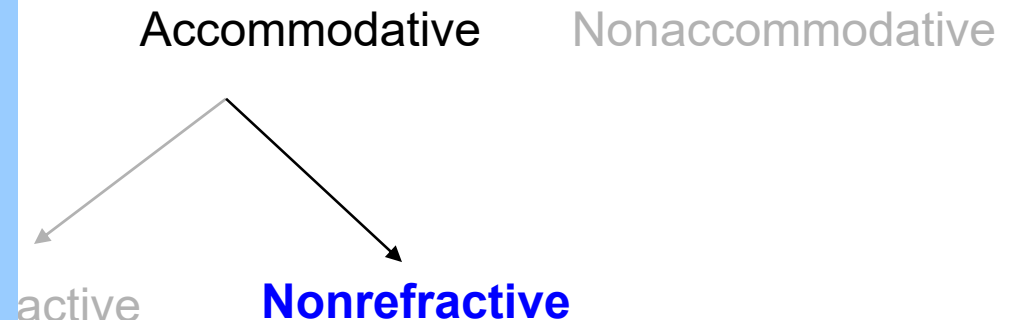
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Accommodative: ~~Nonrefractive~~
 --ET secondary to... **high AC/A ratio**

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

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





Comitant Esotropia

How is the AC/A ratio measured?

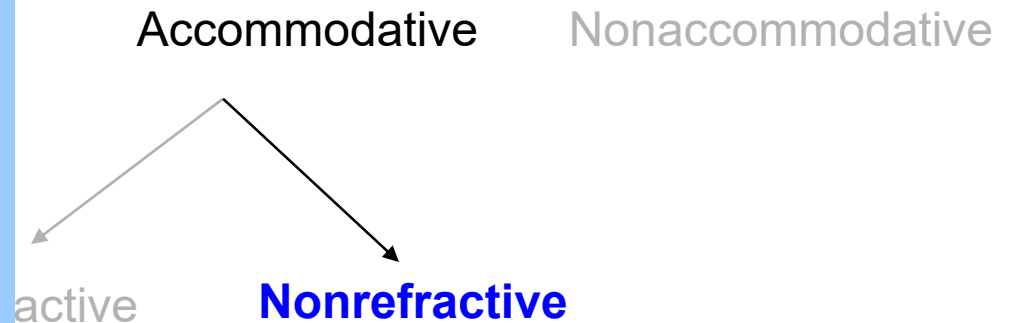


... (when there is more accommodation than distance vision, the ET is greatest at near.)

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



Comitant Esotropia



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.

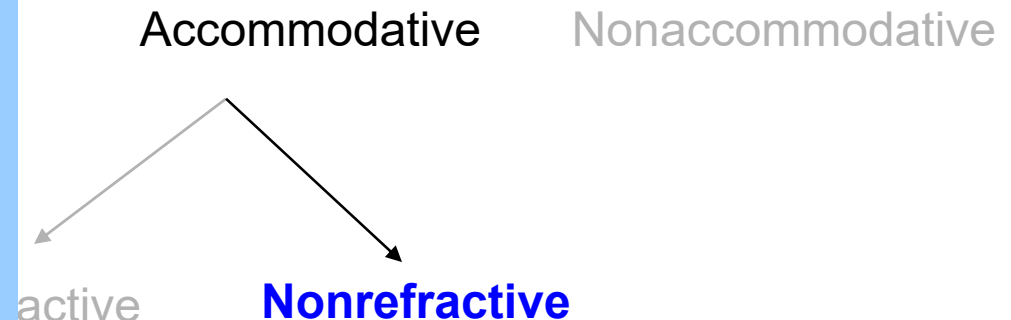
$$\text{AC/A ratio} = \frac{(\text{ET}' \text{ without add} - \text{ET}' \text{ with add})}{3}$$

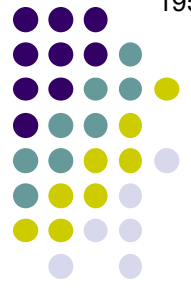
If the result is greater than 5, the child has a high AC/A ratio.

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

What are the units for:
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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)

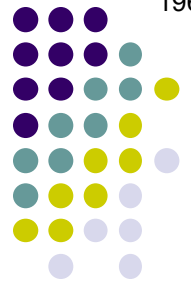
Accommodative: **Nonrefractive**
 --ET secondary to...high AC/A ratio
 --ET $\begin{matrix} > \\ = \\ < \end{matrix}$ ET'

Accommodative

Nonaccommodative

accommodative

Nonrefractive



Comitant Esotropia

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Congenital (onset < age 6 m)

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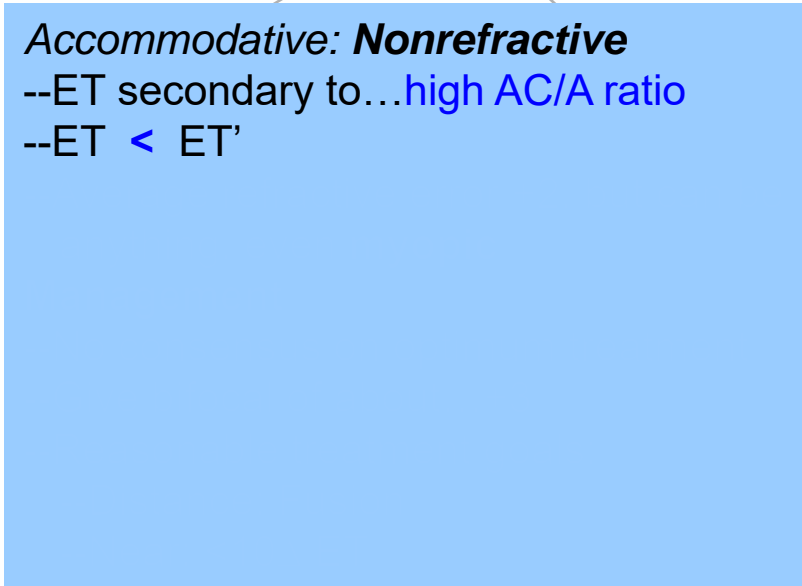
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--ET < ET'

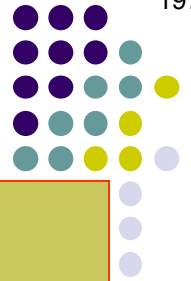
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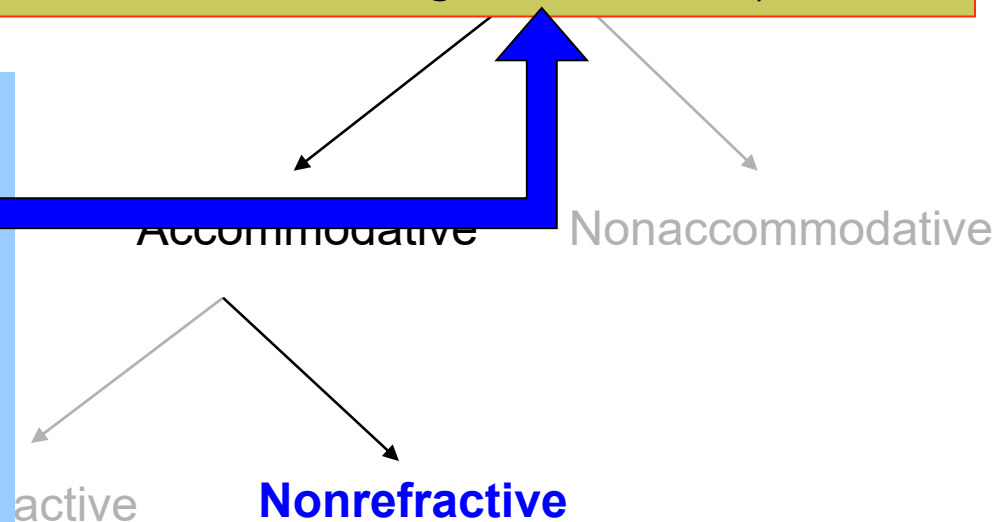
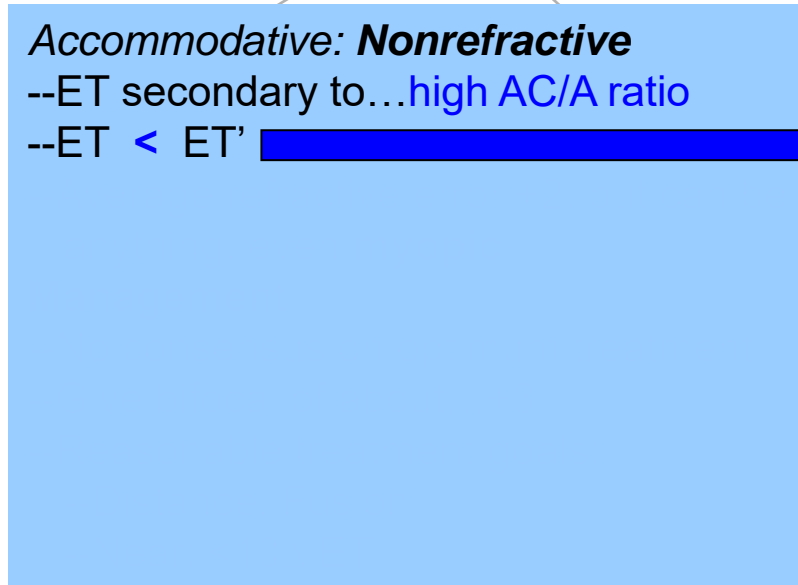
--ET < ET'

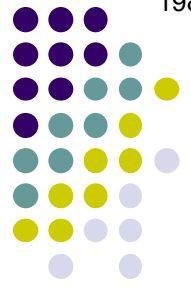
Accommodative

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
--ET < ET'

How much greater is the ET at near?

Accommodative

Nonaccommodative

accommodative

Nonrefractive

Blue rectangular area containing text about accommodative nonrefractive esotropia and a yellow box with a question.



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

Blue rectangular area containing text about accommodative nonrefractive esotropia and a yellow box with a question.



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'

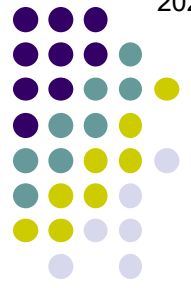
--Average refractive error +2, but can be anything, even **myopic**

Accommodative

Nonaccommodative

Accommodative

Nonrefractive



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

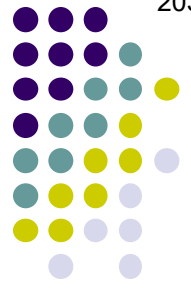
Accommodative: Nonrefractive
 --ET secondary to...high AC/A ratio
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Management
 --No consensus on optimum treatment
 --Give bifocal of about... #

Accommodative

Nonaccommodative

accommodative

Nonrefractive



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

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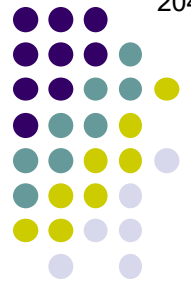
Accommodative: Nonrefractive
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Management
 --No consensus on optimum treatment
 --Give bifocal of about...+3

Accommodative

Nonaccommodative

accommodative

Nonrefractive



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

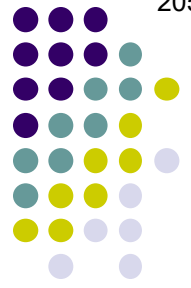
Accommodative: Nonrefractive
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 --Average refractive error +2, but can be anything, even **myopic**
Management
 --No consensus on optimum treatment
 --Give bifocal of about...+3
 --Reasonable treatment goals:
 --Distance:
 --Near:

Accommodative

Nonaccommodative

accommodative

Nonrefractive



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

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

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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**

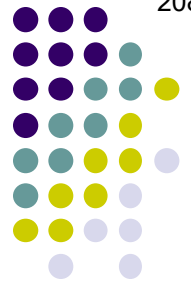
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Management

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- Give bifocal of about...+3
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 - Distance: **Fusion**
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Can a high AC/A ratio be a component of an **EXO**tropia?
Yes

active **Nonrefractive**



Comitant Esotropia

Comitant esotropia

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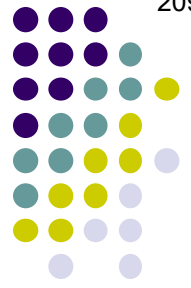
Management

- 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**

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Management

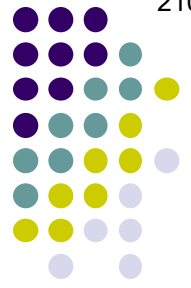
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 - Distance: **Fusion**
 - Near: **<10Δ ET**

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**

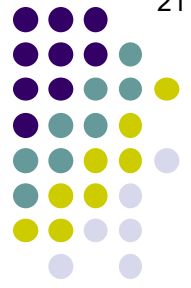
- ET secondary to... **low AC/A ratio**
- ET < ET'
- Average refractive error +2, but can be anything, even **myopic**

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**

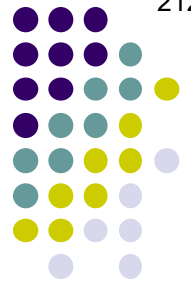
- ET secondary to... **low AC/A ratio**
- ET < ET'
- Average refractive error +2, but can be anything, even **myopic**

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**

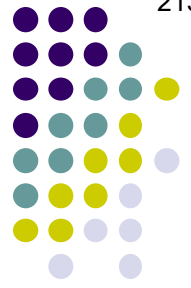
Is **low AC/A ratio** a thing?

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**

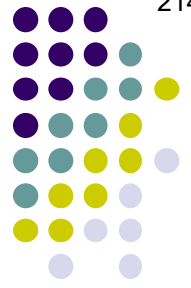
Management

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

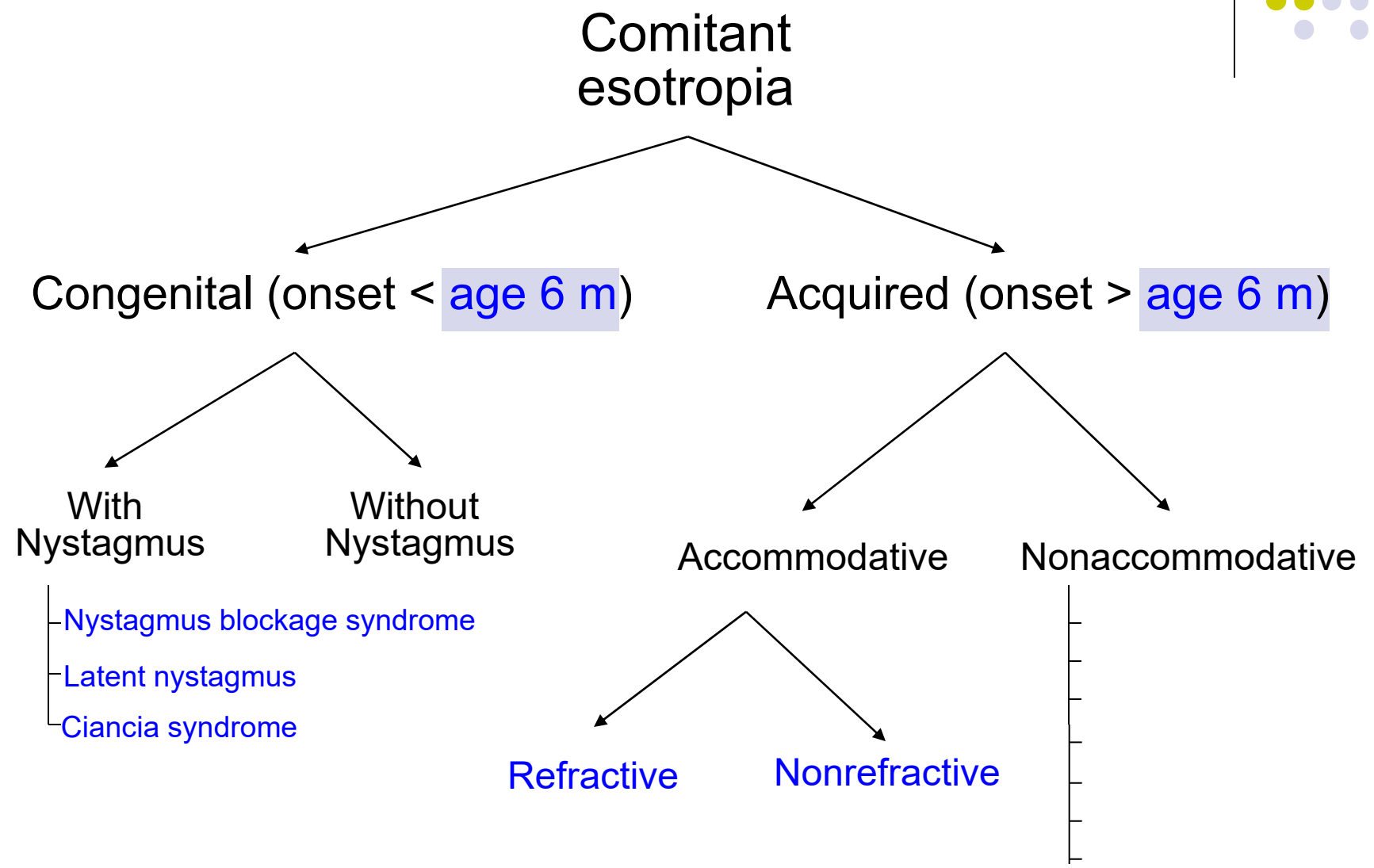
Is low AC/A ratio a thing?
Yes

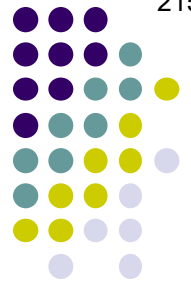
Is low AC/A ratio more likely to be associated with ET, or with XT?
XT (by a lot)

active **Nonrefractive**

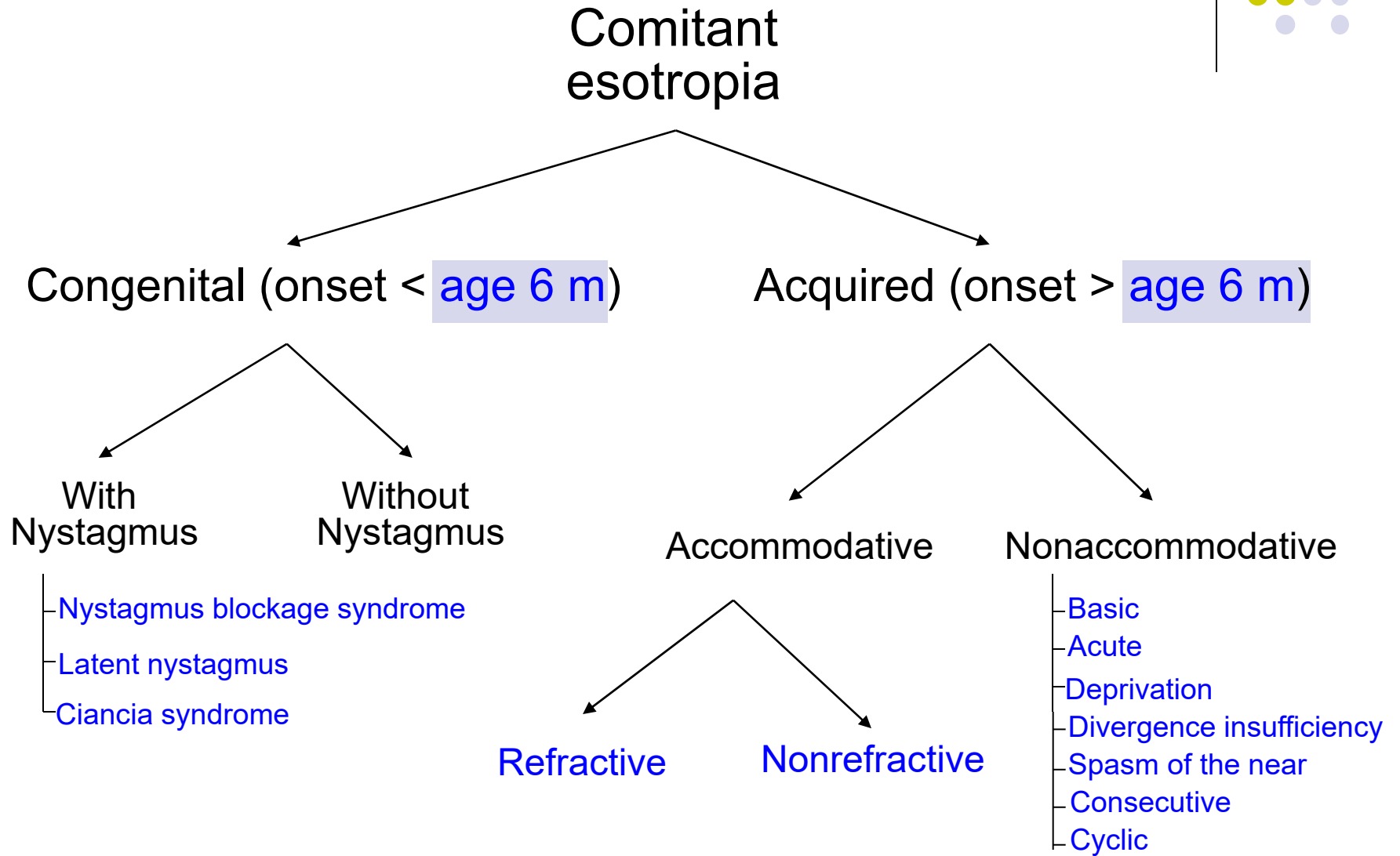


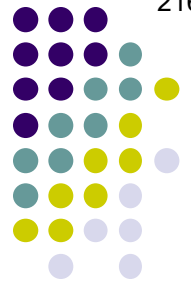
Comitant Esotropia



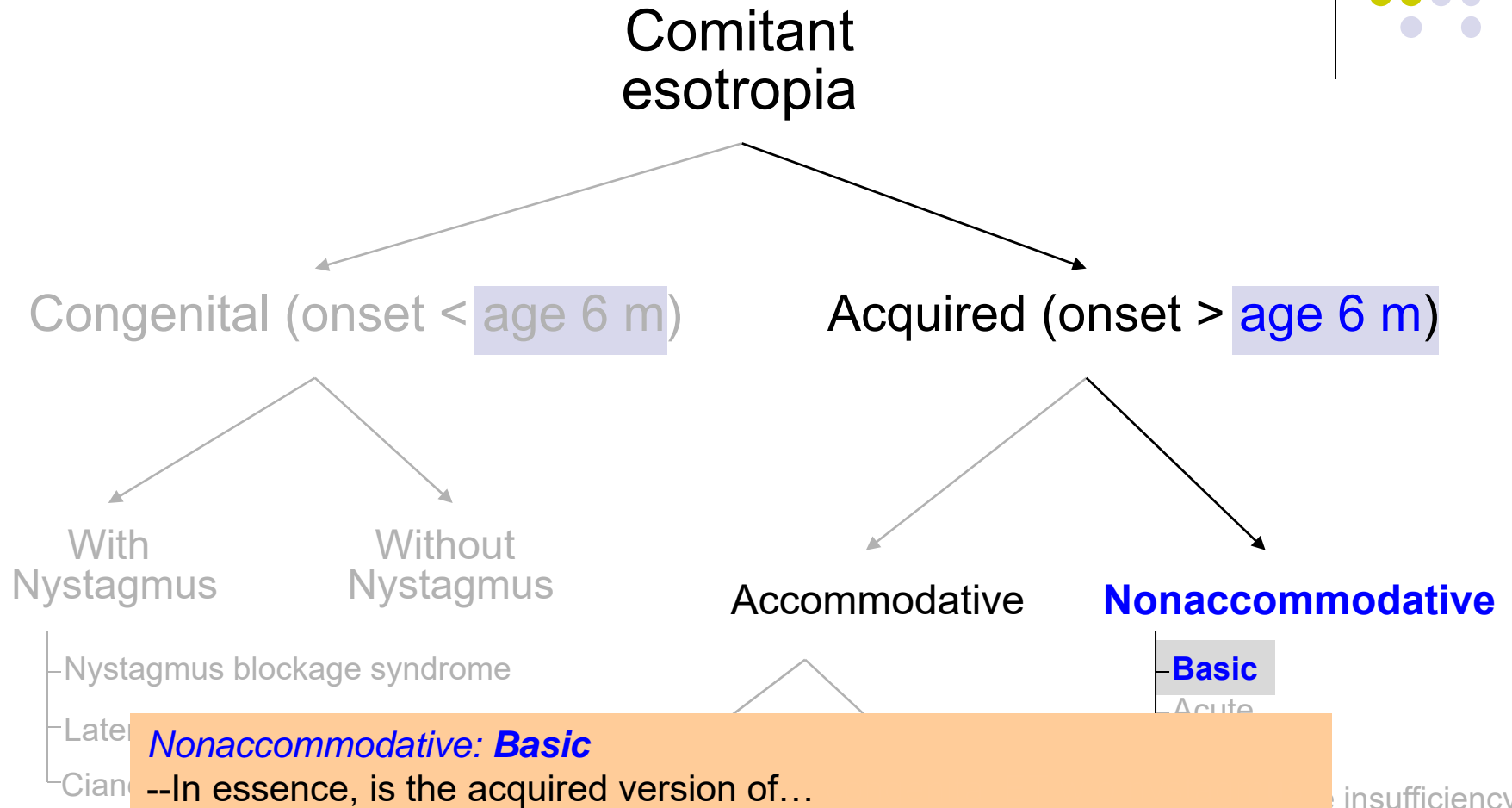


Comitant Esotropia





Comitant Esotropia

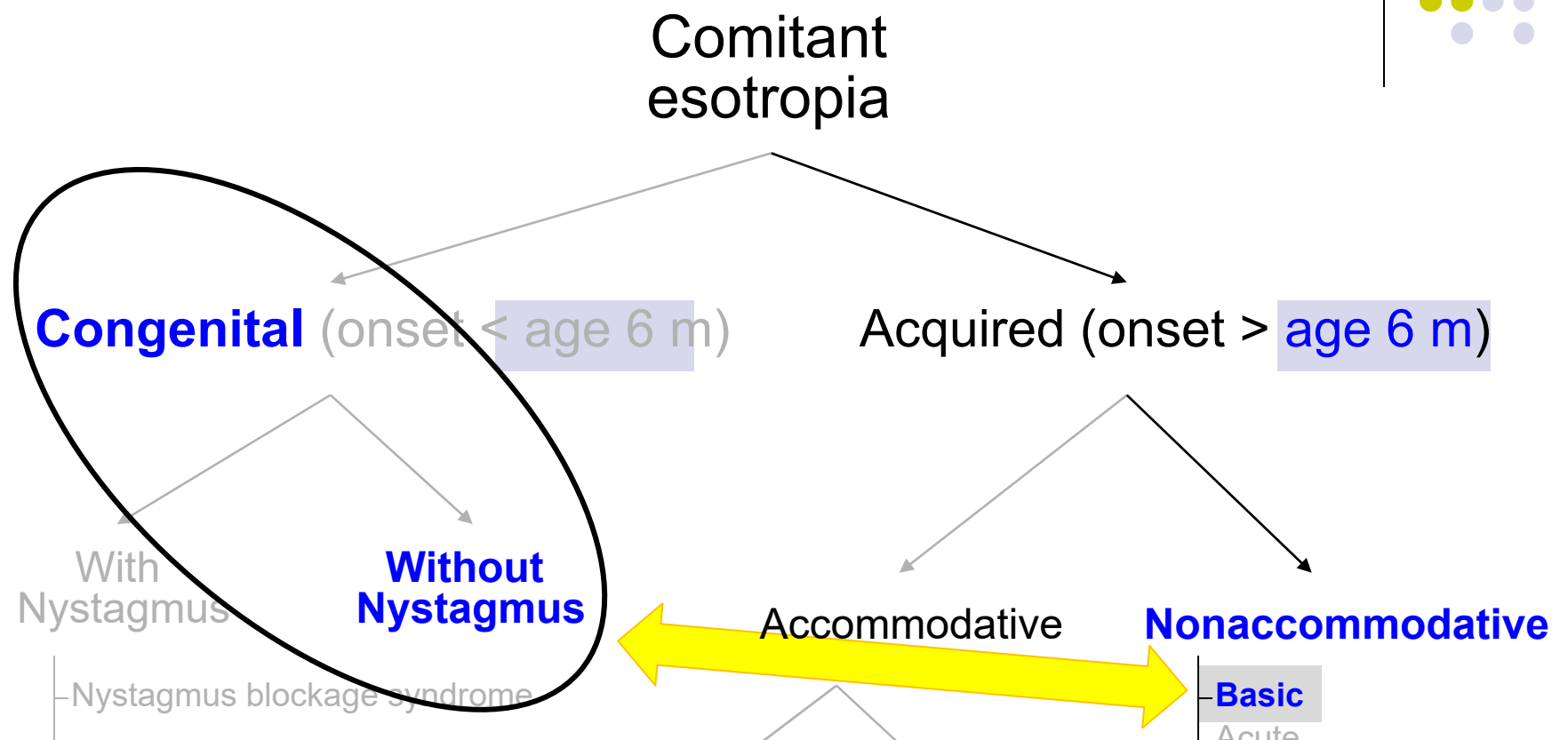


Nonaccommodative: Basic
 --In essence, is the acquired version of...

insufficiency
 ne near
 e



Comitant Esotropia



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

With Nystagmus

Without Nystagmus

Accommodative

Nonaccommodative

Basic

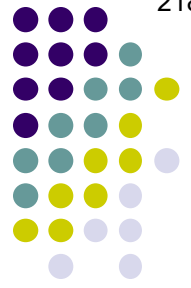
Acute

Nystagmus blockage syndrome

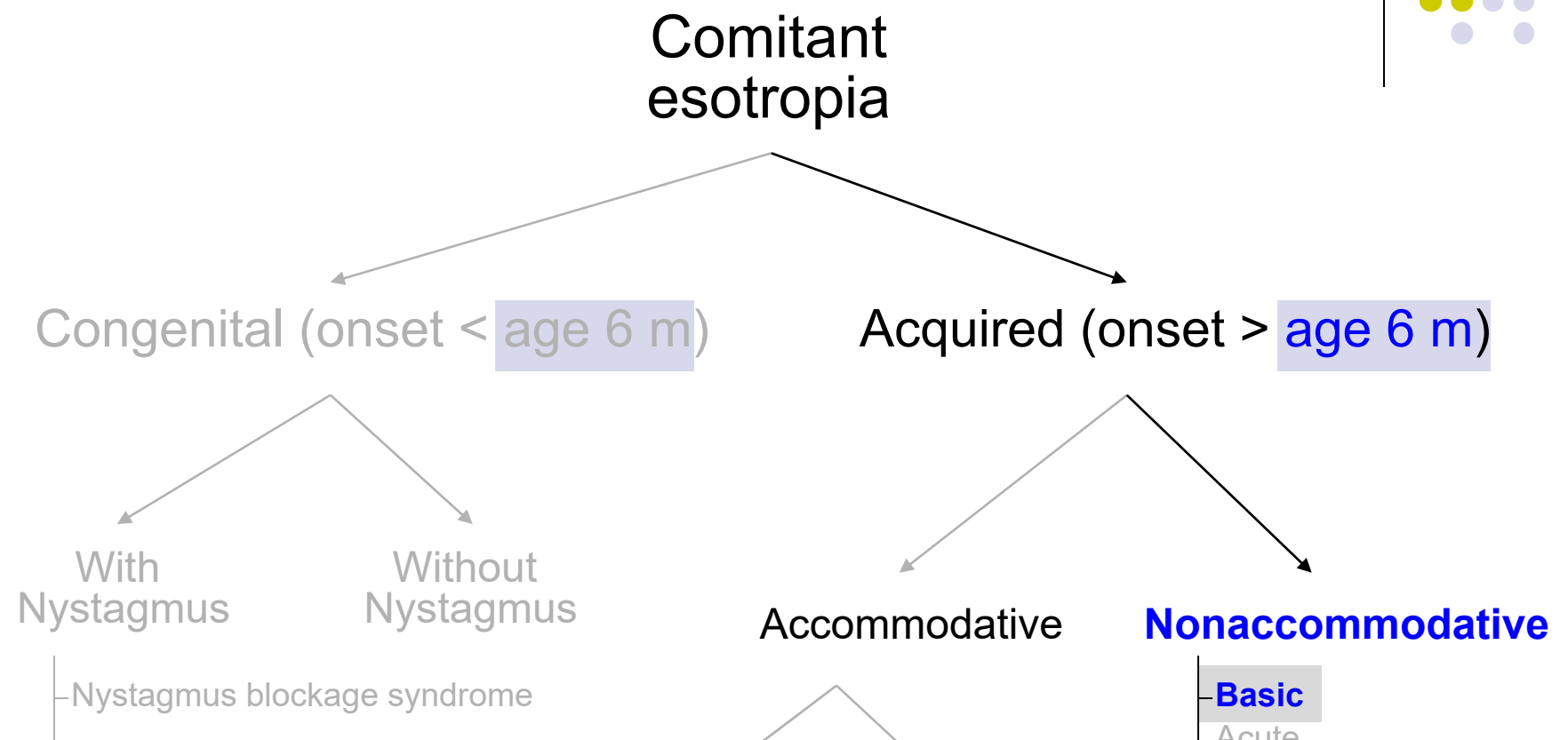
Late

Cian

insufficiency
the near
e



Comitant Esotropia



Nystagmus blockage syndrome

Late

Cyan

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

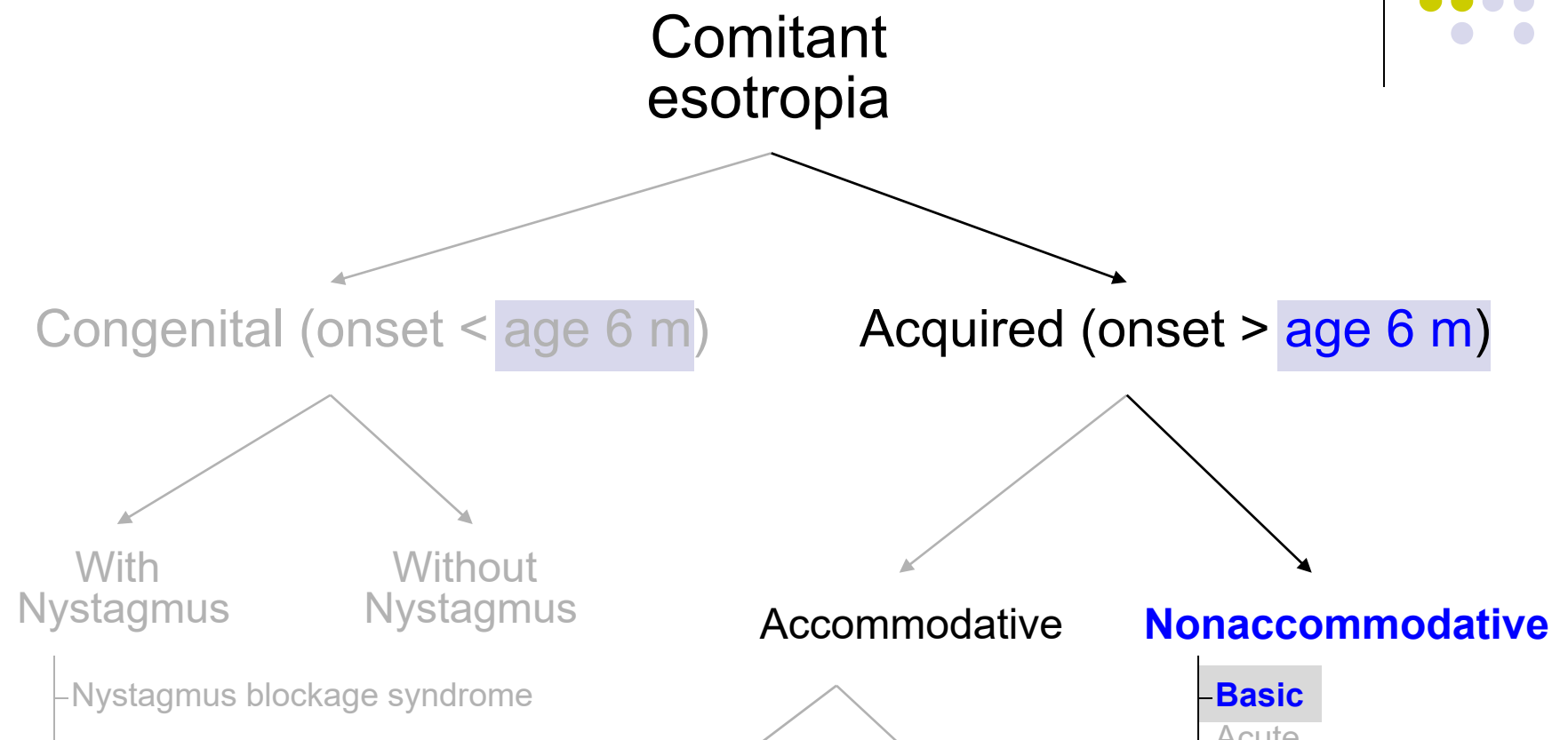
Basic

Acute

insufficiency
 the near
 e



Comitant Esotropia



Nystagmus blockage syndrome

Late

Cyan

Nonaccommodative: Basic

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

--Consider workup for a... CNS lesion

Basic

Acute

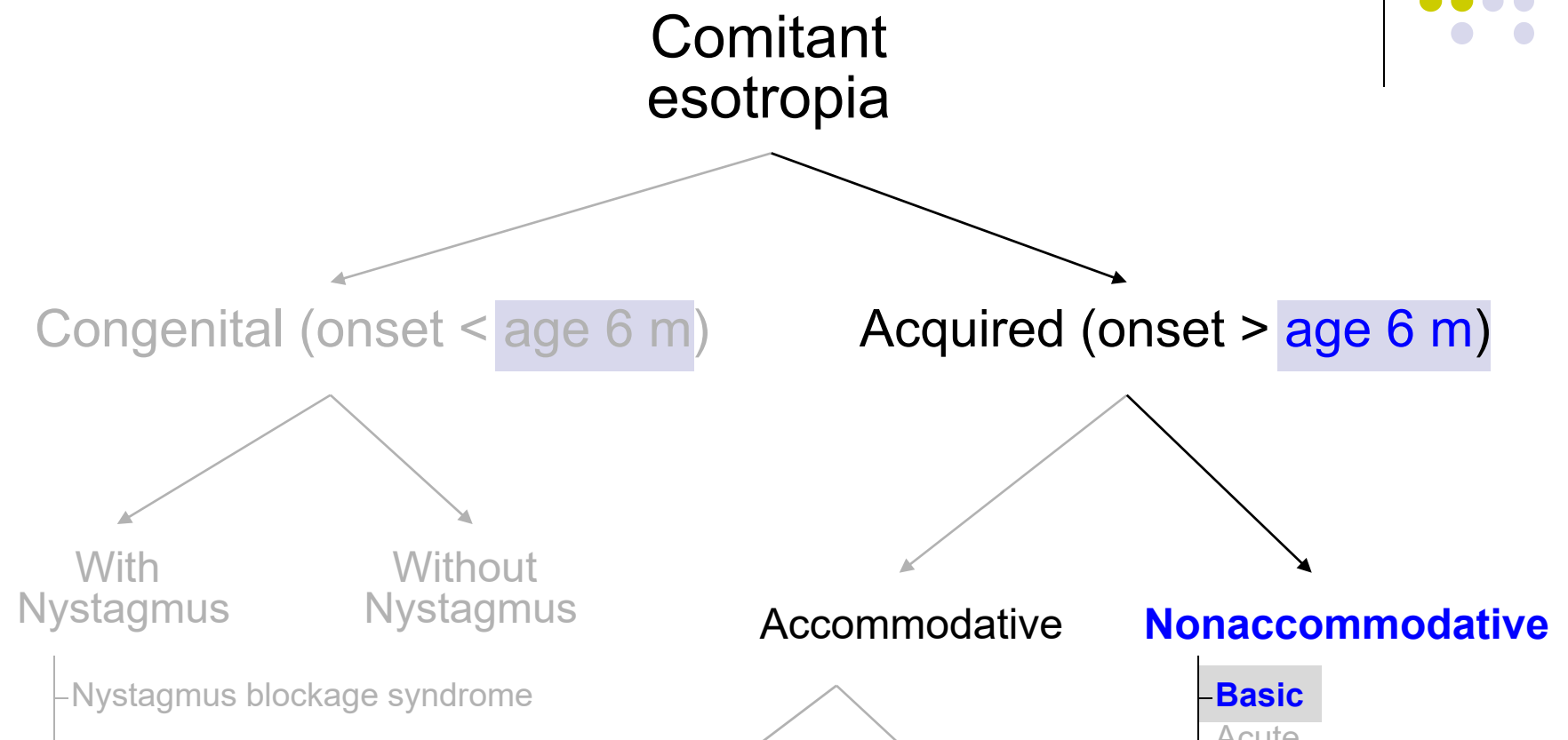
insufficiency

the near

e



Comitant Esotropia



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

Management

--CR for any accommodative component

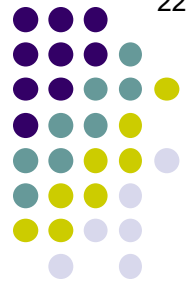
Basic

Acute

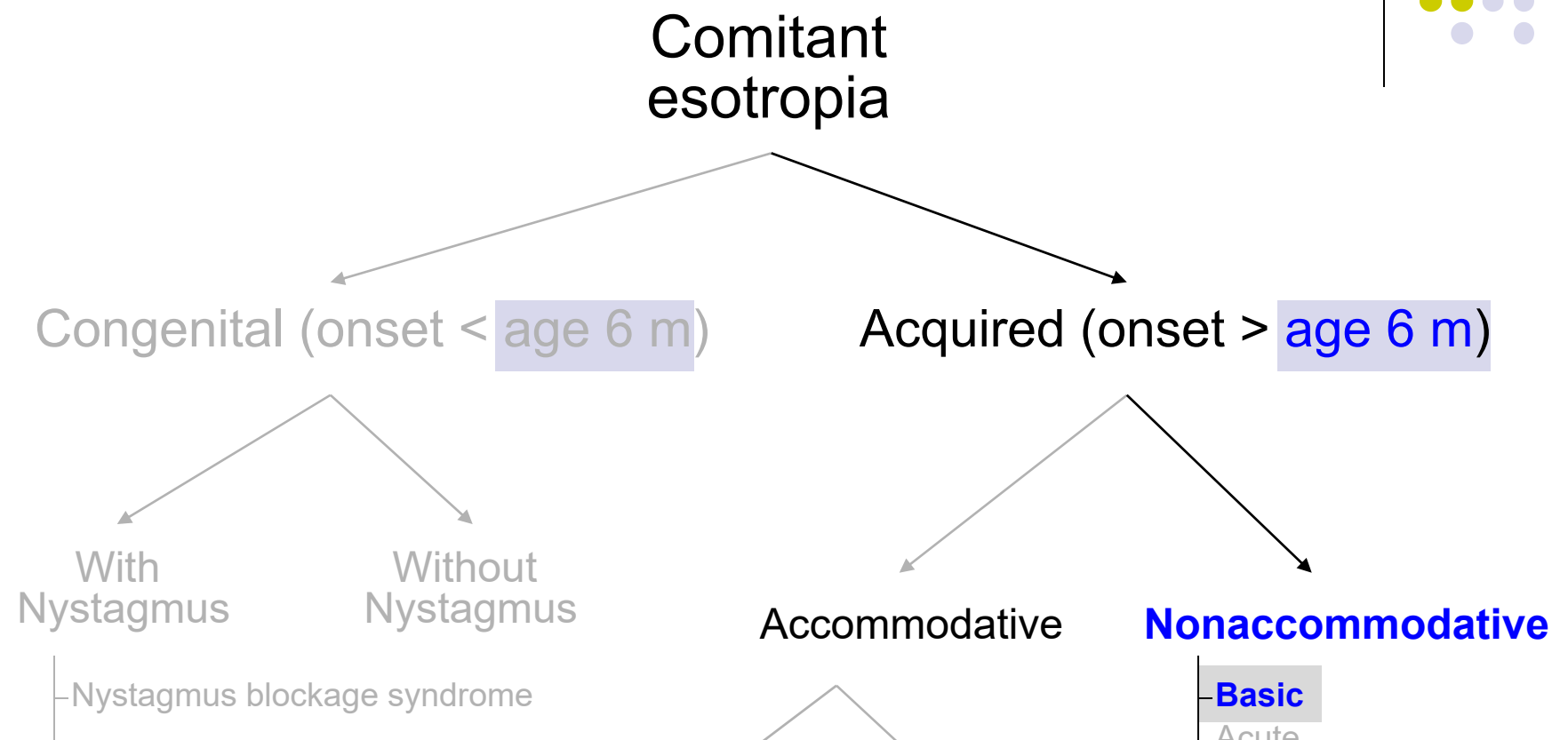
insufficiency

the near

e



Comitant Esotropia



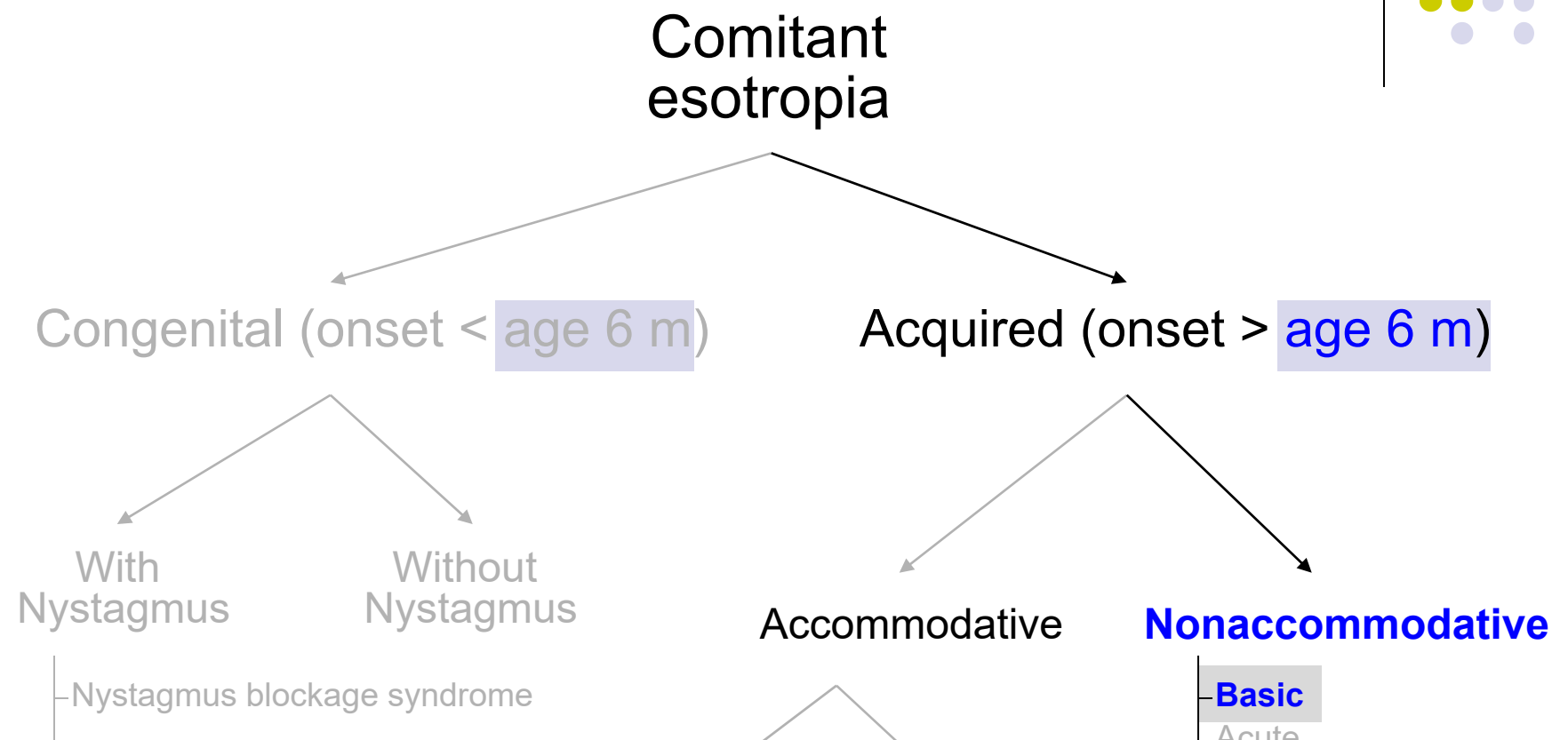
Nystagmus blockage syndrome
 Late
 Cyan

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)

insufficiency
 the near
 e



Comitant Esotropia



Nystagmus blockage syndrome

Late

Cyan

Nonaccommodative: Basic

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

--Consider workup for a... CNS lesion

Management

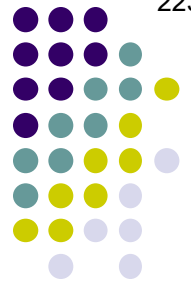
--CR for any accommodative component

--Consider prism adaptation prior to bilateral medial rectus recession

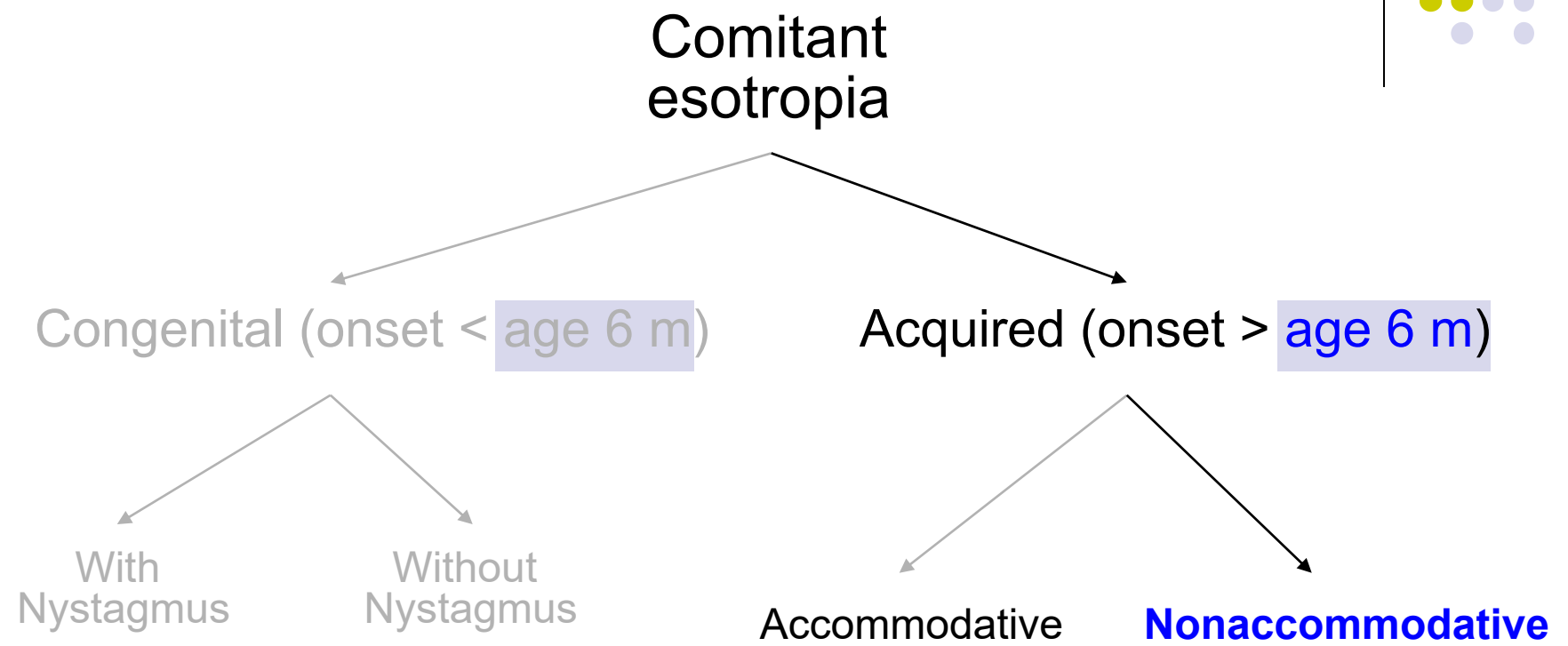
Basic

Acute

insufficiency
the near
e



Comitant Esotropia



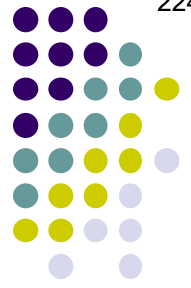
Nystagmus blockage syndrome

Basic

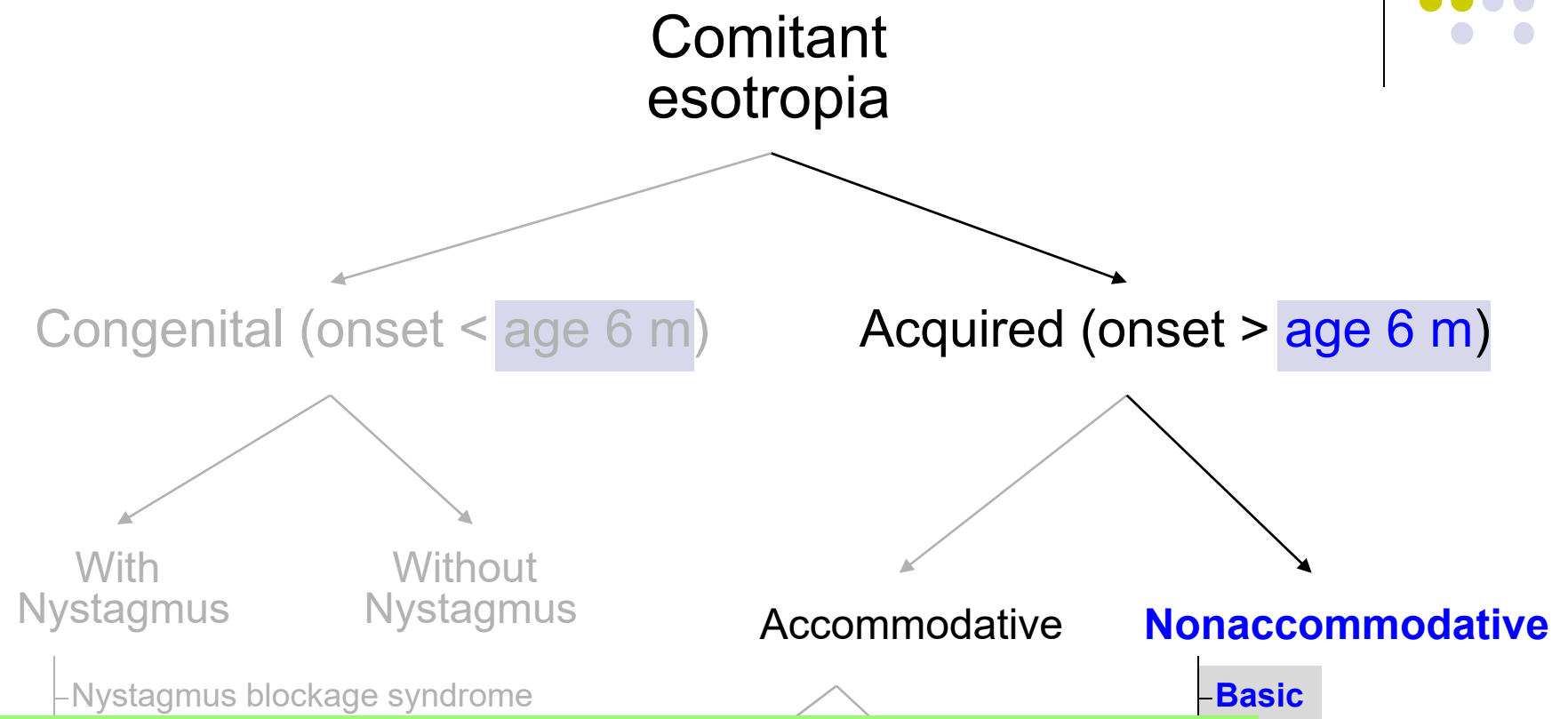
What is prism adaptation?

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

gismus' e insufficiency
he near
e



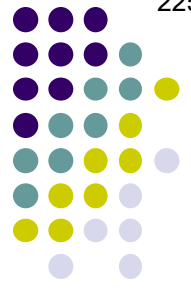
Comitant Esotropia



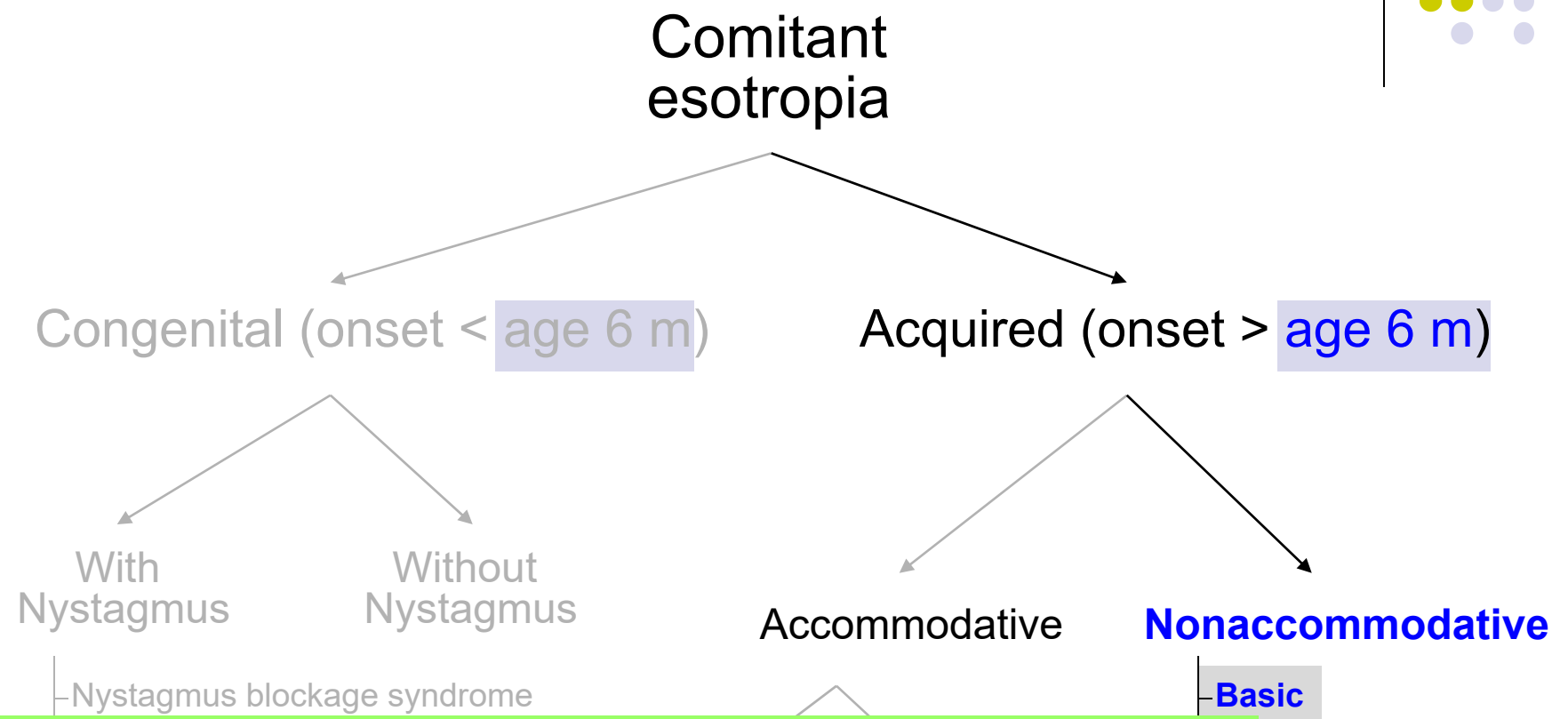
What is prism adaptation?
 It is a process in which the pt is prescribed the full prism needed to nullify their ET, then re-evaluated periodically to determine whether additional ET has been 'uncovered.' If it has, their prescription is updated to nullify the additional ET.

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

gms' e insufficiency
 he near
 re

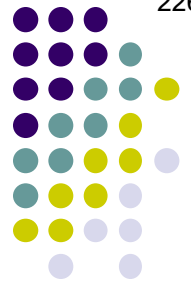


Comitant Esotropia



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

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

Without

Nonaccommodative: Other types
--**Acute**: Will have diplopia. Need neuro workup

Nonaccommodative

- Basic
- **Acute**
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

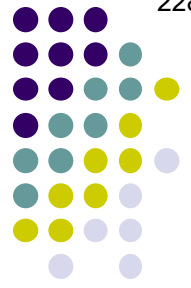
Without

Nonaccommodative: Other types
--Acute: Will have diplopia. Need neuro workup

How does acute acquired ET differ from a plain ol' CN6 palsy?

Nonaccommodative

- Basic
- **Acute**
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

Without

Nonaccommodative: Other types

--**Acute**: Will have diplopia. Need neuro workup

How does acute acquired ET differ from a plain ol' CN6 palsy?

The acute acquired ET is **comitant**; CN6 palsy is incomitant

Nonaccommodative

Basic

Acute

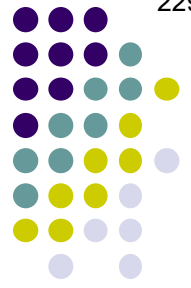
Deprivation

Divergence insufficiency

Spasm of the near

Consecutive

Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

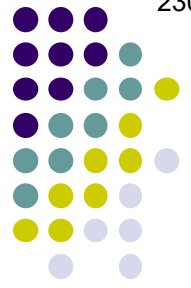
With

Without

Nonaccommodative: Other types
 --**Acute**: Will have diplopia. Need neuro workup
 --**Deprivation**: Secondary to cataracts, corneal scars, amblyopia

Nonaccommodative

- Basic
- Acute
- **Deprivation**
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

Without

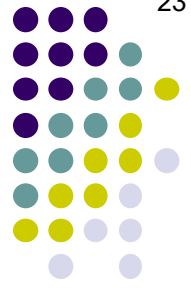
Nonaccommodative: Other types

- Acute:** Will have diplopia. Need neuro workup
- Deprivation:** Secondary to cataracts, corneal scars, amblyopia

How does deprivation strabismus differ in children vs adults?

Nonaccommodative

- Basic
- Acute
- Deprivation**
 - Congenital
 - Acquired
 - Congenital: lens insufficiency
 - Acquired: loss of the near point
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

Without

Nonaccommodative: Other types

--**Acute:** Will have diplopia. Need neuro workup

--**Deprivation:** Secondary to cataracts, corneal scars, amblyopia

How does deprivation strabismus differ in children vs adults?

In young children, deprivation produces XT and ET in approximately equal proportions.

However, in older children and adults, deprivation strabismus is usually an XT.

Nonaccommodative

- Basic
- Acute
- Deprivation
- Consecutive
- Cyclic

accommodation insufficiency

of the near



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

Without

Nonaccommodative: Other types

- Acute: Will have diplopia. Need neuro workup
- Deprivation: Secondary to cataracts, corneal scars, amblyopia

How does deprivation strabismus differ in children vs adults?

In young children, deprivation produces XT and ET in approximately equal proportions. However, in older children and adults, deprivation strabismus is usually an XT.

Nonaccommodative

- Basic
- Acute
- Intermittent
- Consecutive
- Cyclic

Deprivation

refractive error
 convergence insufficiency
 near vision



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

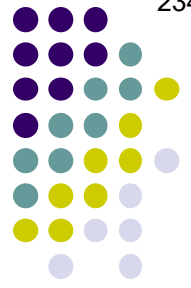
Without

Nonaccommodative: Other types

- Acute**: Will have diplopia. Need neuro workup
- Deprivation**: Secondary to cataracts, corneal scars, amblyopia
- Divergence insufficiency**: ET>ET'. 2 forms: benign (idiopathic, transient) and 2° to trauma or pontine lesion

Nonaccommodative

- Basic
- Acute
- Deprivation
- **Divergence insufficiency**
- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

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 $\left[\begin{array}{c} > \\ < \\ = \end{array} \right] ET'$

Nonrefractive (high AC/A ratio): ET $\left[\begin{array}{c} > \\ < \\ = \end{array} \right] ET'$

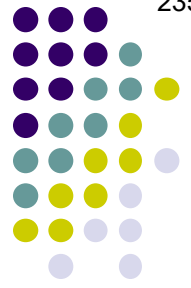
Divergence insufficiency: ET $\left[\begin{array}{c} > \\ < \\ = \end{array} \right] ET'$

- Latent nystagmus
- Ciancia syndrome

Refractive

Nonrefractive

- Deprivation
- **Divergence insufficiency**
- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

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): $ET < ET'$

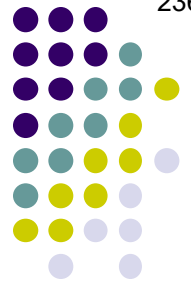
Divergence insufficiency: $ET > ET'$

- Latent nystagmus
- Ciancia syndrome

Refractive

Nonrefractive

- Deprivation
- **Divergence insufficiency**
- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

Without

Nonaccommodative: Other types

--**Acute**: Will have diplopia. Need neuro workup

--**Deprivation**: Secondary to cataracts, corneal scars, amblyopia

--**Divergence insufficiency**: $ET > ET'$. 2 forms: benign (idiopathic, transient) and 2° to trauma or pontine lesion

--**Spasm of the near**: Will demonstrate near triad

Nonaccommodative

Basic

Acute

Deprivation

Divergence insufficiency

Spasm of the near

Consecutive

Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

What is the near triad?
amblyopia, strabismic, and 2 to trauma or pontine lesion

--Spasm of the near: Will demonstrate near triad

amblyopia
opathic,

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

What is the near triad?
Convergence + accommodation + miosis

amblyopia
opathic,

--**Spasm of the near: Will demonstrate near triad**

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- **Spasm of the near**
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

What is the near triad?
 Convergence + accommodation + miosis

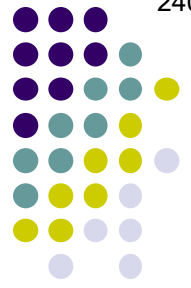
Who is the classic spasm-of-the-near patient?

amblyopia
opathic,

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- **Spasm of the near**
- Consecutive
- Cyclic

--**Spasm of the near: Will demonstrate near triad**



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

What is the near triad?
 Convergence + accommodation + miosis

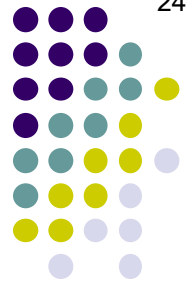
Who is the classic spasm-of-the-near patient?
 A teenaged female

amblyopia
opacities,

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- **Spasm of the near**
- Consecutive
- Cyclic

--**Spasm of the near: Will demonstrate near triad**



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

What is the near triad?
Convergence + accommodation + miosis

Who is the classic spasm-of-the-near patient?
A teenaged female

What clinical maneuver can help make this diagnosis?

--**Spasm of the near: Will demonstrate near triad**

amblyopia
opacities,

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- **Spasm of the near**
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

What is the near triad?
 Convergence + accommodation + miosis

Who is the classic spasm-of-the-near patient?
 A teenaged female

What clinical maneuver can help make this diagnosis?
 Have the patient perform monocular abductions (will be full OU)

--Spasm of the near: Will demonstrate near triad

amblyopia
opathic,

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- **Spasm of the near**
- Consecutive
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

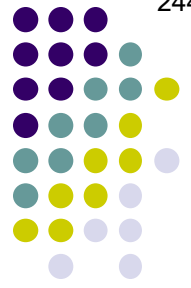
Without

Nonaccommodative: Other types

- Acute:** Will have diplopia. Need neuro workup
- Deprivation:** Secondary to cataracts, corneal scars, amblyopia
- Divergence insufficiency:** ET>ET'. 2 forms: benign (idiopathic, transient) and 2° to trauma or pontine lesion
- Spasm of the near:** Will demonstrate near triad
- Consecutive:** Fancy term for XT surgery overcorrection

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- **Consecutive**
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

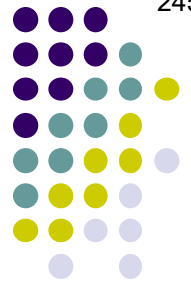
Without

Nonaccommodative: Other types

- Acute:** Will have diplopia. Need neuro workup
- Deprivation:** Secondary to cataracts, corneal scars, amblyopia
- *Is consecutive ET an indication for immediate re-op?*
- Consecutive:** Fancy term for XT surgery overcorrection

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- **Consecutive**
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

Without

Nonaccommodative: Other types

--**Acute:** Will have diplopia. Need neuro workup

--**Deprivation:** Secondary to cataracts, corneal scars, amblyopia

-- *Is consecutive ET an indication for immediate re-op?*

No--wait several months at least, unless the ET is **two words** and/or **one word**

--**Consecutive:** Fancy term for XT surgery overcorrection

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- **Consecutive**
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

Without

Nonaccommodative: Other types

- Acute:** Will have diplopia. Need neuro workup
- Deprivation:** Secondary to cataracts, corneal scars, amblyopia
- *Is consecutive ET an indication for immediate re-op?*
No--wait several months at least, unless the ET is very large and/or symptomatic
- Consecutive:** Fancy term for XT surgery overcorrection

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- **Consecutive**
- Cyclic



Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With

Without

Nonaccommodative: Other types

- Acute**: Will have diplopia. Need neuro workup
- Deprivation**: Secondary to cataracts, corneal scars, amblyopia
- Divergence insufficiency**: $ET > ET'$. 2 forms: benign (idiopathic, transient) and 2° to trauma or pontine lesion
- Spasm of the near**: Will demonstrate near triad
- Consecutive**: Fancy term for XT surgery overcorrection
- Cyclic**: Initially every other day; progresses to constant

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- **Cyclic**