Before you begin: This is a big topic, and big topics beget big slide-sets. There are natural breaks around slides 159 and 303; *break time!* slides have been placed at those locations.
In a nutshell, what is amblyopia?
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

So does this mean that if an eye with reduced BCVA has a structural abnormality, the eye cannot have amblyopia?
In a nutshell, what is amblyopia?

A reduction in BCVA that isn’t direct attributable to a **structural abnormality of the eye and/or visual pathway**

So does this mean that if an eye with reduced BCVA has a structural abnormality, the eye cannot have amblyopia?

It does not. Just like a dog can have both ticks and fleas, so too can an eye have both a vision-reducing structural abnormality and amblyopia. Plenty of eyes have, say, both optic nerve hypoplasia and amblyopia, with **both** conditions contributing to the eye’s reduced BCVA.
In a nutshell, what is amblyopia?

A reduction in BCVA that isn’t direct attributable to a **structural abnormality of the eye and/or visual pathway**

So does this mean that if an eye with reduced BCVA has a structural abnormality, the eye cannot have amblyopia?

It does not. Just like a dog can have both ticks and fleas, so too can an eye have both a vision-reducing structural abnormality and amblyopia. Plenty of eyes have, say, both optic nerve hypoplasia and amblyopia, with both conditions contributing to the eye’s reduced BCVA.

What should you do if you suspect a pt with a structural abnormality has amblyopia as well?
In a nutshell, what is amblyopia?

A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

So does this mean that if an eye with reduced BCVA has a structural abnormality, the eye cannot have amblyopia?

It does not. Just like a dog can have both ticks and fleas, so too can an eye have both a vision-reducing structural abnormality and amblyopia. Plenty of eyes have, say, both optic nerve hypoplasia and amblyopia, with both conditions contributing to the eye’s reduced BCVA.

What should you do if you suspect a pt with a structural abnormality has amblyopia as well?

Undertake a therapeutic trial of amblyopia treatment (covered later). If it works, your suspicion is confirmed.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The visual cortex contains cells that respond to inputs from both eyes.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of critical periods... The Peds book identifies three key development periods related to amblyopia. What are they?
1) ?
2) ?
3) ?
**Amblyopia**

In a nutshell, what is amblyopia?  
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?  
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of critical periods…The Peds book identifies three key development periods related to amblyopia. What are they?  
1) The development of visual acuity  
2) The period during which degraded vision can cause amblyopia  
3) The period during which amblyopia tx may be effective
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of critical periods…The Peds book identifies three key development periods related to amblyopia. What are they? What are the age ranges for each?
1) The development of visual acuity: ?
2) The period during which degraded vision can cause amblyopia
3) The period during which amblyopia tx may be effective
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of critical periods... The Peds book identifies three key development periods related to amblyopia. What are they? What are the age ranges for each?
1) The development of visual acuity: Birth to ~5 years
2) The period during which degraded vision can cause amblyopia
3) The period during which amblyopia tx may be effective
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of critical periods…The Peds book identifies three key development periods related to amblyopia. What are they? What are the age ranges for each?
1) The development of visual acuity: Birth to ~5 years
2) The period during which degraded vision can cause amblyopia: 9 months or two post-birth
3) The period during which amblyopia tx may be effective
**In a nutshell, what is amblyopia?**
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

**In the broadest possible terms, what does it result from?**
From a failure of normal development of the immature visual system. The *primary visual cortex* contains cells that respond to inputs from both eyes. Early in postnatal life,  __this visual cortex passes through a ‘critical period’__ in which its development is exquisitely dependent on the quality of the visual input from the two eyes.

If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

**Speaking of critical periods…** The Peds book identifies three key development periods related to amblyopia. What are they?  
What are the age ranges for each?

1) The development of visual acuity: Birth to ~5 years
2) The period during which degraded vision can cause amblyopia: Birth to ~8 years
3) The period during which amblyopia tx may be effective
**In a nutshell, what is amblyopia?**
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

**In the broadest possible terms, what does it result from?**
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

**Speaking of critical periods…** The Peds book identifies three key development periods related to amblyopia. What are they? What are the age ranges for each?
1) The development of visual acuity: Birth to ~5 years
2) The period during which degraded vision can cause amblyopia: Birth to ~8 years
3) The period during which amblyopia tx may be effective: ?
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of critical periods…The Peds book identifies three key development periods related to amblyopia. What are they? What are the age ranges for each?
1) The development of visual acuity: Birth to ~5 years
2) The period during which degraded vision can cause amblyopia: Birth to ~8 years
3) The period during which amblyopia tx may be effective: Up to ~9 years*

*That said, there is evidence that tx initiated in the teens can be at least somewhat effective, especially in tx-naïve cases
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of checking acuity in amblyopia…The Peds book discusses a phenomenon in amblyopia that is rather unique to the condition. What is it?
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of checking acuity in amblyopia…The Peds book discusses a phenomenon in amblyopia that is rather unique to the condition. What is it?
The phenomenon
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of checking acuity in amblyopia…The Peds book discusses a phenomenon in amblyopia that is rather unique to the condition. What is it?
The crowding phenomenon
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of checking acuity in amblyopia…The Peds book discusses a phenomenon in amblyopia that is rather unique to the condition. What is it?
The crowding phenomenon

What is the crowding phenomenon?
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of checking acuity in amblyopia…The Peds book discusses a phenomenon in amblyopia that is rather unique to the condition. What is it?
The crowding phenomenon

What is the crowding phenomenon?
The finding that a letter on the acuity chart is more difficult for amblyopes to read when it is surrounded (or ‘crowded’) by figure of similar shape.
‘Crowded’ HOTV optotypes. An amblyope who has no difficulty reading letters this size on a standard chart might be unable to read them when they’re surrounded by crowding bars as above.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of checking acuity in amblyopia…The Peds book discusses a phenomenon in amblyopia that is rather unique to the condition. What is it?
The crowding phenomenon

What is the crowding phenomenon?
The finding that a letter on the acuity chart is more difficult for amblyopes to read when it is surrounded (or ‘crowded’) by figure of similar shape

Is the crowding phenomenon pathognomonic for amblyopia?
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of checking acuity in amblyopia… The Peds book discusses a phenomenon in amblyopia that is rather unique to the condition. What is it?
The crowding phenomenon

What is the crowding phenomenon?
The finding that a letter on the acuity chart is more difficult for amblyopes to read when it is surrounded (or ‘crowded’) by figure of similar shape

Is the crowding phenomenon pathognomonic for amblyopia?
No
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of checking acuity in amblyopia…The Peds book discusses a phenomenon in amblyopia that is rather unique to the condition. What is it?
The crowding phenomenon

What is the crowding phenomenon?
The finding that a letter on the acuity chart is more difficult for amblyopes to read when it is surrounded (or ‘crowded’) by figure of similar shape

Is the crowding phenomenon pathognomonic for amblyopia?
No

Is it always present in amblyopia?
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Speaking of checking acuity in amblyopia…The Peds book discusses a phenomenon in amblyopia that is rather unique to the condition. What is it?
The crowding phenomenon

What is the crowding phenomenon?
The finding that a letter on the acuity chart is more difficult for amblyopes to read when it is surrounded (or ‘crowded’) by figure of similar shape

Is the crowding phenomenon pathognomonic for amblyopia? No

Is it always present in amblyopia?
While typically present, it is not universally present
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Does amblyopia tend to manifest unilaterally, or bilaterally?
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Does amblyopia tend to manifest unilaterally, or bilaterally?
While it can be one, the vast majority of cases are the other
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Does amblyopia tend to manifest unilaterally, or bilaterally?
While it can be bilateral, the vast majority of cases are unilateral.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Does amblyopia tend to manifest unilaterally, or bilaterally?
While it can be bilateral, the vast majority of cases are unilateral.

Does unilateral amblyopia result in an RAPD?
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Does amblyopia tend to manifest unilaterally, or bilaterally?
While it can be bilateral, the vast majority of cases are unilateral.

Does unilateral amblyopia result in an RAPD?
The Peds book says RAPDs “are not typical in amblyopia alone,” and the presence of one “should raise suspicion” for optic nerve and/or retinal pathology.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Does amblyopia tend to manifest unilaterally, or bilaterally?
While it can be bilateral, the vast majority of cases are unilateral.

Does unilateral amblyopia result in an RAPD?
The *Peds* book says RAPDs “are not typical in amblyopia alone,” and the presence of one “should raise suspicion” for optic nerve and/or retinal pathology. The *Neuro* book states flatly that “dense” amblyopia can produce an RAPD.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Does amblyopia tend to manifest unilaterally, or bilaterally?
While it can be bilateral, the vast majority of cases are unilateral

Does unilateral amblyopia result in an RAPD?
The Peds book says RAPDs “are not typical in amblyopia alone,” and the presence of one “should raise suspicion” for optic nerve and/or retinal pathology. The Neuro book states flatly that “dense” amblyopia can produce an RAPD. Thus, the answer to this question is along the lines of ‘It can, but only in severe cases, and the presence of an RAPD should prompt a search for other pathology.’
In a nutshell, what is amblyopia? A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from? From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Does amblyopia tend to manifest unilaterally, or bilaterally? While it can be bilateral, the vast majority of cases are unilateral.

Where does amblyopia rank as a cause of unilateral vision loss in kids?
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Does amblyopia tend to manifest unilaterally, or bilaterally?
While it can be bilateral, the vast majority of cases are unilateral.

Where does amblyopia rank as a cause of unilateral vision loss in kids?
It’s #1—the most common cause.
In a nutshell, what is amblyopia? A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from? From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Is it #1 by a little, or a lot? A lot. As in, it is more common than all other causes (of unilateral decreased vision) combined.

Where does amblyopia rank as a cause of unilateral vision loss in kids? It’s #1—the most common cause.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Is it #1 by a little, or a lot?
A lot. As in, it is more common than all other causes (of unilateral decreased vision) combined.

Where does amblyopia rank as a cause of unilateral vision loss in kids?
It’s #1—the most common cause.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Is it #1 by a little, or a lot?
A lot. As in, it is more common than all other causes (of unilateral decreased vision) combined. In fact, it remains the #1 cause of unilateral decreased vision into adulthood all the way up to age 60.

Where does amblyopia rank as a cause of unilateral vision loss in kids?
It’s #1—the most common cause.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Is it #1 by a little, or a lot?
A lot. As in, it is more common than all other causes (of unilateral decreased vision) combined. In fact, it remains the #1 cause of unilateral decreased vision into adulthood all the way up to age 60!

It’s #1—the most common cause.
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc), the primary visual cortex cells in question will lose the ability to respond to inputs from the eye with degraded vision. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye will qualify as amblyopic.

Time for a Terminology aside… In unilateral amblyopia, the amblyopic eye is, unsurprisingly, referred to as the amblyopic eye.

Is it #1 by a little, or a lot?
A lot. As in, it is more common than all other causes (of unilateral decreased vision) combined. In fact, it remains the #1 cause of unilateral decreased vision into adulthood all the way up to age 60!

Where does amblyopia rank as a cause of unilateral vision loss in kids?
It’s #1—the most common cause.
In a nutshell, what is amblyopia?  
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?  
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal life, this visual cortex passes through a ‘critical period’ in which its development is exquisitely dependent on the quality of the visual input from the two eyes.

Time for a Terminology aside…In unilateral amblyopia, the amblyopic eye is, unsurprisingly, referred to as the amblyopic eye.

Is it #1 by a little, or a lot?  
A lot. As in, it is more common than all other causes (of unilateral decreased vision) combined. In fact, it remains the #1 cause of unilateral decreased vision into adulthood all the way up to age 60!
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of
the eye and/or visual pathway

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary
visual cortex contains cells that respond to inputs from both eyes. Early in
postnatal life, this visual cortex passes through a 'critical period' in which its
development is exquisitely dependent on the quality of the visual input from these
two eyes. If the input from an eye is degraded (due to defocus, occlusion, etc),
the primary visual cortex cells in question will lose the ability to respond to inputs
from the eye with degraded vision. Subsequent measurement of that eye’s acuity
will be less-than-normal, and thus the eye will qualify as amblyopic.

Time for a Terminology aside… In unilateral amblyopia, the amblyopic
eye is, unsurprisingly, referred to as the amblyopic eye. But what
term is used when referring to the visually intact fellow eye?
The sound eye

Is it #1 by a little, or a lot?
A lot. As in, it is more common than all other causes (of unilateral
decreased vision) combined. In fact, it remains the #1 cause of
unilateral decreased vision into adulthood all the way up to age 60!

Where does amblyopia rank as a cause of unilateral vision loss in kids?
It’s #1—the most common cause
In a nutshell, what is amblyopia?
A reduction in BCVA that isn’t direct attributable to a structural abnormality of the eye and/or visual pathway.

In the broadest possible terms, what does it result from?
From a failure of normal development of the immature visual system. The primary visual cortex contains cells that respond to inputs from both eyes. Early in postnatal development, the two eyes share input to the primary visual cortex. However, the primary visual cortex is developmentally most sensitive to the quality of the vision from both eyes during this period. If one eye’s vision is degraded (due to defocus, occlusion, etc), the primary visual cortex cells that respond to inputs from the eye with degraded vision lose the ability to respond. Subsequent measurement of that eye’s acuity will be less-than-normal, and thus the eye qualifies as amblyopic.

Does amblyopia tend to manifest unilaterally, or bilaterally?
While it can be bilateral, the vast majority of cases are unilateral.

Where does amblyopia rank as a cause of unilateral vision loss in kids?
It’s #1—the most common cause.

Time for a Terminology aside… In unilateral amblyopia, the amblyopic eye is, unsurprisingly, referred to as the amblyopic eye. But what term is used when referring to the visually intact fellow eye? The sound eye.

Is it #1 by a little, or a lot?
A lot. As in, it is more common than all other causes (of unilateral decreased vision) combined. In fact, it remains the #1 cause of unilateral decreased vision into adulthood all the way up to age 60!
The Peds book identifies three basic etiologies of amblyopia. What are they?
The Peds book identifies three basic etiologies of amblyopia. What are they?
Which is the most common cause of amblyopia?
Which is the most common cause of amblyopia?
Q

Amblyopia

Strabismic?

Refractive?

Deprivational?

*Which is the least common?*
Which is the least common?
Amblyopia

Strabismic?  Refractive?  Deprivational?

Which tends to produce the most severe amblyopia?
Which tends to produce the most severe amblyopia?
Which tends to produce the most severe amblyopia?

What makes deprivational amblyopia worse?
Which tends to produce the most severe amblyopia?

What makes deprivational amblyopia worser?
It develops faster, and is deeper
Amblyopia

Strabismic

Refractive

Deprivational

What makes deprivational amblyopia worser?
It develops faster, and is ‘deeper’

Which tends to produce the most severe amblyopia?
Amblyopia stemming from which type is the most difficult to treat?
Amblyopia stemming from which type is the most difficult to treat?
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--?
--?
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?

--If it is **constant** vs **intermittent**

--If fixation is **alternating** vs **nonalternating**
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?

--If it is constant
--If fixation is nonalternating
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?

Nonfusible input from the two eyes
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?
Nonfusible input from the two eyes
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?
Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons [buzzword #1] with and [buzzword #2] one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be [buzzword #2].
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?
Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?
Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of and/or two words.
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?
Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion.
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?

Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion.

Q

I know what diplopia is, but what is visual confusion?

No disrespect homie, but if that sounds like diplopia, it turns out you didn’t know what diplopia is after all. To spill the tea: Whereas visual confusion consists of seeing two objects in one location, diplopia consists of seeing one object in two locations.
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation of the cause of strabismic amblyopia, two key words are covered. What are they?

Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion.

I know what diplopia is, but what is visual confusion?
It’s the visual experience of seeing two objects as occupying the same location in space.
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation of the cause of strabismic amblyopia, two key words are covered. What are they?
Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion.

I know what diplopia is, but what is visual confusion?
It’s the visual experience of seeing two objects as occupying the same location in space.

That sounds like diplopia to me. How is it different?
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?
Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.

I know what diplopia is, but what is visual confusion?
It’s the visual experience of seeing two objects as occupying the same location in space.

That sounds like diplopia to me. How is it different?
No disrespect homie, but if that sounds like diplopia, it turns out you didn’t know what diplopia is after all. To spill the tea: Whereas visual confusion consists of seeing two objects in one location, diplopia consists of seeing one object in two locations.

I know what diplopia is, but what is visual confusion?
It’s the visual experience of seeing two objects as occupying the same location in space.

That sounds like diplopia to me. How is it different?
No disrespect homie, but if that sounds like diplopia, it turns out you didn’t know what diplopia is after all. To spill the tea: Whereas visual confusion consists of seeing two objects in one location, diplopia consists of seeing one object in two locations.
In these misaligned eyes, the image of a single object is being projected to noncorresponding areas of the retinas.
In these misaligned eyes, the image of a single object is being projected to noncorresponding areas of the retinas.

You say, ‘Ugh! I’m seeing double!’

You say, ‘It’s located here!’

OD says ‘It’s located here!’

OS says ‘It’s located here!’

Unpacking diplopia

Amblyopia

Eyes esodeviated

(Fovea

Fovea
In these misaligned eyes, the image of a single object is being projected to noncorresponding areas of the retinas. If the brain interprets this situation by creating a percept of this one object occupying two separate locations in space, this would constitute diplopia.
These misaligned eyes are foveating different objects, and thus each is projecting a different image to the visual cortex as being the object of regard.
These misaligned eyes are foveating different objects, and thus each is projecting a different image to the visual cortex as being the object of regard. If the brain deal with this conundrum by creating a percept of the two objects occupying the same space, this would constitute visual confusion.
Suppression prevents conscious awareness of the image transmitted by one eye, thereby precluding visual confusion.

(Note that the fill-lines in the two objects run in opposite directions)

Unpacking *visual confusion*
Visualizing Suppression
Think about what you see when you cross your eyes. Better yet, go ahead and try it—look at something across the room, then cross your eyes. The image of regard immediately becomes doubled (and blurred from induced accommodation, but that’s a topic for another day).


**Visualizing Suppression**
Think about what you see when you cross your eyes. Better yet, go ahead and try it—look at something across the room, then cross your eyes. The image of regard immediately becomes doubled (and blurred from induced accommodation, but that’s a topic for another day). But note what you **don’t** see—whatever image is falling on the fovea of your nonfixating eye. The fovea of your nonfixating eye must be pointing at something; so why don’t you see it?
**Visualizing Suppression**

Think about what you see when you cross your eyes. Better yet, go ahead and try it—look at something across the room, then cross your eyes. The image of regard immediately becomes doubled (and blurred from induced accommodation, but that’s a topic for another day). But note what you **don’t** see—whatever image is falling on the fovea of your nonfixating eye. The fovea of your nonfixating eye must be pointing at **something**; so why don’t you see it?

You don’t see it because this foveal image is prevented from reaching consciousness by the sensory adaptation of **central suppression**. What would you see without central suppression? You would see the two foveal images-of-regard seeming to occupy the same location in visual space—the definition of **visual confusion**. You would see **two** objects in **one** location. But you don’t, thanks to central suppression.
**Visualizing Suppression**

Think about what you see when you cross your eyes. Better yet, go ahead and try it—look at something across the room, then cross your eyes. The image of regard immediately becomes doubled (and blurred from induced accommodation, but that’s a topic for another day). But note what you don’t see—whatever image is falling on the fovea of your nonfixating eye. The fovea of your nonfixating eye must be pointing at something; so why don’t you see it?

You don’t see it because this foveal image is prevented from reaching consciousness by the sensory adaptation of central suppression. What would you see without central suppression? You would see the two foveal images-of-regard seeming to occupy the same location in visual space—the definition of visual confusion. You would see two objects in one location. But you don’t, thanks to central suppression.

On the other hand, the image of regard in the fixating eye is also falling on a peripheral retinal area in your nonfixating eye, and suppression of this image (peripheral suppression) is a sensory adaptation available only on an acquired basis in an immature visual system—it can’t be ‘conjured up on the fly’ during volitional eye-crossing. The result is that crossing one’s eyes produces diplopia—one object seen in two locations—but (thanks to central suppression) not visual confusion.
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?
Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will be suppressed. It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion. Suppression is one of the sensory adaptations to strabismus that serve this purpose.
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?
Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion. Suppression is one of the three sensory adaptations to strabismus that serve this purpose.
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?

--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?

Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion. Suppression is one of the three sensory adaptations to strabismus that serve this purpose.

What are the other two mechanisms the immature visual system uses to avoid diplopia and visual confusion?

--Suppression
--?
--?

But first a mnemonic, which is…

three sensory adaptations to strabismus
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?

--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?

Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye's image will receive priority processing—and conversely, which eye's will be suppressed.

It's important to note that suppression isn't a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and visual confusion. Suppression is one of the three sensory adaptations to strabismus that serve this purpose.

What are the other two mechanisms the immature visual system uses to avoid diplopia and visual confusion?

--Suppression

--A

But first a mnemonic, which is...SAM (now, name the other two)

--M

three sensory adaptations to strabismus
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
-- If it is constant
-- If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?

*Nonfusible input from the two eyes.* When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion. Suppression is one of the three sensory adaptations to strabismus that serve this purpose.

What are the other two mechanisms the immature visual system uses to avoid diplopia and visual confusion?

-- *Suppression*
-- *Anomalous retinal correspondence (ARC)*
-- *Monofixation syndrome*
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?
Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and visual confusion. Suppression is one of the three sensory adaptations to strabismus that serve this purpose.

What are the other two mechanisms the immature visual system uses to avoid diplopia and visual confusion? Briefly, what are they/how do they work?

--Suppression: Preventing the image of one eye from reaching conscious awareness
--Anomalous retinal correspondence (ARC)
--Monofixation syndrome

Review of this one (we just talked about it)
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?

--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?

Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion. Suppression is one of the three sensory adaptations to strabismus that serve this purpose.

What are the other two mechanisms the immature visual system uses to avoid diplopia and visual confusion? Briefly, what are they/how do they work?

--Suppression: Preventing the image of one eye from reaching conscious awareness
--Anomalous retinal correspondence (ARC): ?
--Monofixation syndrome

Now do this one
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?
--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?
Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion. Suppression is one of the three sensory adaptations to strabismus that serve this purpose.

What are the other two mechanisms the immature visual system uses to avoid diplopia and visual confusion?

--Suppression: Preventing the image of one eye from reaching conscious awareness
--Anomalous retinal correspondence (ARC): The development of a common visual direction between the fovea of the fixating eye and a peripheral retinal area of the deviating eye
--Monofixation syndrome
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?

--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?

Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion. Suppression is one of the three sensory adaptations to strabismus that serve this purpose.

What are the other two mechanisms the immature visual system uses to avoid diplopia and visual confusion? Briefly, what are they/how do they work?

--Suppression: Preventing the image of one eye from reaching conscious awareness
--Anomalous retinal correspondence (ARC): The development of a common visual direction between the fovea of the fixating eye and a peripheral retinal area of the deviating eye
--Monofixation syndrome: ?
The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?

--If it is constant
--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?

Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion. Suppression is one of the three sensory adaptations to strabismus that serve this purpose.

What are the other two mechanisms the immature visual system uses to avoid diplopia and visual confusion? Briefly, what are they/how do they work?

--Suppression: Preventing the image of one eye from reaching conscious awareness

--Anomalous retinal correspondence (ARC): The development of a common visual direction between the fovea of the fixating eye and a peripheral retinal area of the deviating eye

--Monofixation syndrome: The presence of peripheral fusion in the absence of central fusion owing to a suppression scotoma in the deviating eye
Amblyopia

Strabismic

Refractive

Deprivational

The book notes that a strabismic child is at particular risk of amblyopia if her strabismus has one or both of two characteristics—what are they?

--If fixation is nonalternating

In the explanation below of the cause of strabismic amblyopia, two key words are covered. What are they?

Nonfusible input from the two eyes. When visual-cortex neurons carry nonfusible inputs, the neurons compete with and inhibit one another to determine which eye’s image will receive priority processing—and conversely, which eye’s will be suppressed.

It’s important to note that suppression isn’t a bad thing—it serves to save the individual from experiencing the unpleasantness of diplopia and/or visual confusion. Suppression is one of the three sensory adaptations to strabismus that serve this purpose.

For more on the sensory responses to strabismus, see slide-set P14
The Peds book identifies two features of amblyopia 2ndry to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

--?

--?
The Peds book identifies two features of amblyopia second to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

--- Grating acuity
--- Eccentric fixation
The Peds book identifies two features of amblyopia 2ndry to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?
--Grating acuity
--Eccentric fixation
The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

---

- **Grating acuity**
- **Eccentric fixation**

To what does grating acuity refer in this context?

A preferential looking test used to assess VA in preverbal and nonverbal pts.

What is a ‘grating’ as the word is used here?

It refers to a grate-like pattern of alternating white and black stripes (see the next slide).

How is the grating acuity test performed?

The pt is shown a series of cards with a grate at one end and a uniform gray area at the other. Crucially, the grate has the same average luminance as the gray area, so if the pt is unable to see the black-and-white gradations, both ends of the card will appear identically and uniformly gray, and thus should be equally (un)interesting to look at. Because of this, if the pt exhibits no preference for the grated end of the card, we infer that her VA is too poor to discern a grate of the tested spatial frequency. Conversely, the better the pt’s VA, the higher the spatial frequency to which she will demonstrate a gaze preference. The frequency at which the pt no longer exhibits a preference marks the limit of their acuity (a Table can be used to convert it to a Snellen equivalent).
The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

- **Grating acuity**
- **Eccentric fixation**

**To what does grating acuity refer in this context?**
A: A preferential looking test used to assess VA in preverbal and nonverbal pts.

**What is a ‘grating’ as the word is used here?**
It refers to a grate-like pattern of alternating white and black stripes (see the next slide).

**How is the grating acuity test performed?**
The pt is shown a series of cards with a grate at one end and a uniform gray area at the other. Crucially, the grate has the same average luminance as the gray area, so if the pt is unable to see the black-and-white gradations, both ends of the card will appear identically and uniformly gray, and thus should be equally (un)interesting to look at. Because of this, if the pt exhibits no preference for the grated end of the card, we infer that her VA is too poor to discern a grate of the tested spatial frequency. Conversely, the better the pt’s VA, the higher the spatial frequency to which she will demonstrate a gaze preference. The frequency at which the pt no longer exhibits a preference marks the limit of their acuity (a Table can be used to convert it to a Snellen equivalent).
The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

- Grating acuity
- Eccentric fixation

To what does grating acuity refer in this context?
A preferential looking test used to assess VA in preverbal and nonverbal pts

A preferential looking test used to assess VA in preverbal and nonverbal pts

A preferential looking test used to assess VA in preverbal and nonverbal pts
Amblyopia

Strabismic

Refractive Deprivational

The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

-- Grating acuity
-- Eccentric fixation

To what does grating acuity refer in this context?
A preferential looking test used to assess VA in preverbal and nonverbal pts

In a nutshell, what is the underlying rationale of a preferential looking test?
The *Peds* book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

- **Grating acuity**
- **Eccentric fixation**

To what does grating acuity refer in this context? A *preferential looking test* used to assess VA in preverbal and nonverbal pts.

In a nutshell, what is the underlying rationale of a preferential looking test? The pt is presented with two visual stimuli. If she demonstrates a preference for looking at one vs the other, it follows that she can distinguish between them. If no such preference manifests, the presumption is that the two stimuli are indistinguishable in her eyes.
The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

- Grating acuity
- Eccentric fixation

**To what does grating acuity refer in this context?**

A preferential looking test used to assess VA in preverbal and nonverbal pts

**What is a 'grating' as the word is used here?**

It refers to a grate-like pattern of alternating white and black stripes (see the next slide).

The pt is shown a series of cards with a grate at one end and a uniform gray area at the other. Crucially, the grate has the same average luminance as the gray area, so if the pt is unable to see the black-and-white gradations, both ends of the card will appear identically and uniformly gray, and thus should be equally (un)interesting to look at.

Because of this, if the pt exhibits no preference for the grated end of the card, we infer that her VA is too poor to discern a grate of the tested spatial frequency. Conversely, the better the pt's VA, the higher the spatial frequency to which she will demonstrate a gaze preference. The frequency at which the pt no longer exhibits a preference marks the limit of their acuity (a Table can be used to convert it to a Snellen equivalent).
The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

- Grating acuity
- Eccentric fixation

To what does grating acuity refer in this context?
A preferential looking test used to assess VA in preverbal and nonverbal pts

What is a ‘grating’ as the word is used here?
It refers to a grate-like pattern of alternating white and black stripes (see the next slide)
Amblyopia

Teller acuity cards
The Peds book identifies two features of amblyopia 2ndry to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

- Grating acuity
- Eccentric fixation

To what does grating acuity refer in this context?
A preferential looking test used to assess VA in preverbal and nonverbal pts

What is a ‘grating’ as the word is used here?
It refers to a grate-like pattern of alternating white and black stripes (see the next slide)

How is the grating acuity test performed?

The pt is shown a series of cards with a grate at one end and a uniform gray area at the other. Crucially, the grate has the same average luminance as the gray area, so if the pt is unable to see the black-and-white gradations, both ends of the card will appear identically and uniformly gray, and thus should be equally (un)interesting to look at. Because of this, if the pt exhibits no preference for the grated end of the card, we infer that her VA is too poor to discern a grate of the tested spatial frequency. Conversely, the better the pt’s VA, the higher the spatial frequency to which she will demonstrate a gaze preference. The frequency at which the pt no longer exhibits a preference marks the limit of their acuity (a Table can be used to convert it to a Snellen equivalent).
Amblyopia

Strabismic

Refractive

Deprivation

The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

- Grating acuity
- Eccentric fixation

To what does grating acuity refer in this context?
A preferential looking test used to assess VA in preverbal and nonverbal pts

What is a ‘grating’ as the word is used here?
It refers to a grate-like pattern of alternating white and black stripes (see the next slide)

How is the grating acuity test performed?
The pt is shown a series of cards with a grate at one end and a uniform gray area at the other. Crucially, the grate has the same average luminance as the gray area, so if the pt is unable to see the black-and-white gradations, both ends of the card will appear identically and uniformly gray, and thus should be equally (un)interesting to look at.
To what does grating acuity refer in this context?
A preferential looking test used to assess VA in preverbal and nonverbal pts

What is a ‘grating’ as the word is used here?
It refers to a grate-like pattern of alternating white and black stripes (see the next slide)

How is the grating acuity test performed?
The pt is shown a series of cards with a grate at one end and a uniform gray area at the other. Crucially, the grate has the same average luminance as the gray area, so if the pt is unable to see the black-and-white gradations, both ends of the card will appear identically and uniformly gray, and thus should be equally (un)interesting to look at. Because of this, if the pt exhibits no preference for the grated end of the card, we infer that her VA is too poor to discern a grate of the tested spatial frequency.*

*Spatial frequency just refers to how many stripes the area contains; the higher the frequency, the finer the stripes—and the harder they are to discern.
Teller acuity cards being used to measure visual acuity in a preverbal child. If the pattern is visible to the child, the eyes gaze toward the grating; otherwise, the stripes blend into the gray background, and the child will exhibit no tendency to look at one or the other end of the card.
The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

- Grating acuity
- Eccentric fixation

To what does grating acuity refer in this context?
A preferential looking test used to assess VA in preverbal and nonverbal pts

What is a ‘grating’ as the word is used here?
It refers to a grate-like pattern of alternating white and black stripes (see the next slide)

How is the grating acuity test performed?
The pt is shown a series of cards with a grate at one end and a uniform gray area at the other. Crucially, the grate has the same average luminance as the gray area, so if the pt is unable to see the black-and-white gradations, both ends of the card will appear identically and uniformly gray, and thus should be equally (un)interesting to look at. Because of this, if the pt exhibits no preference for the grated end of the card, we infer that her VA is too poor to discern a grate of the tested spatial frequency. Conversely, the better the pt’s VA, the higher the spatial frequency to which she will demonstrate a gaze preference. The frequency at which the pt no longer exhibits a preference marks the limit of their acuity (a Table can be used to convert it to a Snellen equivalent).
The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

- Grating acuity
- Eccentric fixation

To what does eccentric fixation refer?
The Peds book identifies two features of amblyopia 2ndry to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

- Grating acuity
- Eccentric fixation

To what does eccentric fixation refer?
To the use of a nonfoveal retinal location in an amblyopic eye to fixate under binocular vs monocular viewing conditions.
The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

- Grating acuity
- Eccentric fixation

To what does eccentric fixation refer?
To the use of a nonfoveal retinal location in an amblyopic eye to fixate under monocular viewing conditions.
The Peds book identifies two features of amblyopia 2ndry to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?
--Grating acuity
--Eccentric fixation

To what does eccentric fixation refer?
To the use of a nonfoveal retinal location in an amblyopic eye to fixate under monocular viewing conditions; ie, the amblyopic eye won’t foveate even when given the opportunity (via occlusion of the sound eye, say) to do so.
The Peds book identifies two features of amblyopia 2ndry to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

--- Grating acuity

--- Eccentric fixation

**To what does eccentric fixation refer?**
To the use of a nonfoveal retinal location in an amblyopic eye to fixate under monocular viewing conditions; ie, the amblyopic eye won’t foveate even when given the opportunity (via occlusion of the sound eye, say) to do so.

**What does eccentric fixation imply about the Snellen acuity in an eye?**
The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

--Grating acuity

--Eccentric fixation

To what does eccentric fixation refer?
To the use of a nonfoveal retinal location in an amblyopic eye to fixate under monocular viewing conditions; ie, the amblyopic eye won’t foveate even when given the opportunity (via occlusion of the sound eye, say) to do so

What does eccentric fixation imply about the Snellen acuity in an eye?
That it’s bad—usually 20/200 or worse
The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features?

---Grating acuity

---Eccentric fixation

To what does eccentric fixation refer?
To the use of a nonfoveal retinal location in an amblyopic eye to fixate under monocular viewing conditions; ie, the amblyopic eye won’t foveate even when given the opportunity (via occlusion of the sound eye, say) to do so.

What does eccentric fixation imply about the Snellen acuity in an eye?
That it’s bad—usually 20/200 or worse.
The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features? What is it about each that is unique to strabismic amblyopia?
--Grating acuity: ?
--Eccentric fixation

Now that we know what they are…
The Peds book identifies two features of amblyopia 2ndry to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features? What is it about each that is unique to strabismic amblyopia?

--- Grating acuity: is affected **less** vs more than it is in other forms of amblyopia
--- Eccentric fixation
The Peds book identifies two features of amblyopia 2ndry to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features? What is it about each that is unique to strabismic amblyopia?

--Grating acuity: Is affected less than it is in other forms of amblyopia

--Eccentric fixation: ?
The Peds book identifies two features of amblyopia secondary to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features? What is it about each that is unique to strabismic amblyopia?

--Grating acuity: Is affected less than it is in other forms of amblyopia

--Eccentric fixation: Strabismic amblyopes often engage in eccentric fixation, whereas refractive and deprivalional amblyopes never do
The Peds book identifies two features of amblyopia 2ndry to strabismus that distinguish it from that due to refraction and/or deprivation. What are these two features? What is it about each that is unique to strabismic amblyopia?

--Grating acuity: Is affected less than it is in other forms of amblyopia

--Eccentric fixation: Strabismic amblyopes often engage in eccentric fixation, whereas refractive and deprivational amblyopes do not
In general terms, what is the underlying issue causing refractive amblyopia?
In general terms, what is the underlying issue causing refractive amblyopia? The retinal image in one eye (or both) is chronically defocused.
In general terms, what is the underlying issue causing refractive amblyopia? The retinal image in one eye (or both) is chronically defocused.
In general terms, what is the underlying issue causing refractive amblyopia? The retinal image in one eye (or both) is chronically defocused.

There are two subtypes of refractive amblyopia—what are they?
In general terms, what is the underlying issue causing refractive amblyopia? The retinal image in one eye (or both) is chronically defocused.

There are two subtypes of refractive amblyopia—what are they?
Amblyopia

- Strabismic
- Refractive
  - Anisometropic
  - Isoametropic
- Deprivational
Amblyopia

Strabismic

Refractive

Anisometropic

Dissimilar refractive states b/t the eyes \( \rightarrow \) one retinal image chronically defocused

how many eyes?

Isoametropic

Similar high refractive error in both eyes \( \rightarrow \) both retinal images chronically defocused

how many eyes?
Amblyopia

Strabismic

Refractive

Anisometropic

Dissimilar refractive states b/t the eyes → one retinal image chronically defocused

Isoametropic

Similar high refractive error in both eyes → both retinal images chronically defocused

Deprivational
Amblyopia

Strabismic

Refractive

Anisometropic

Dissimilar refractive states b/t the eyes → one retinal image chronically defocused → unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes → both retinal images chronically defocused → bilateral amblyopia
Amblyopia

Strabismic

Refractive

Anisometropic
Dissimilar refractive states b/t the eyes→
one retinal image chronically defocused→
unilateral amblyopia

Isoametropic
Similar high refractive error in both eyes→
both retinal images chronically defocused→
bilateral amblyopia

Deprivational
Q

**Amblyopia**

- **Strabismic**
- **Refractive**
- **Deprivational**

**Anisometropic**

Dissimilar refractive states b/t the eyes →
- **one** retinal image chronically defocused →
- **unilateral** amblyopia

**Isoametropic**

Similar high refractive error in both eyes →
- **both** retinal images chronically defocused →
- **bilateral** amblyopia

*How big a difference in refractive error must be present for anisometropic amblyopia to become a concern?*

Depends on whether we’re talking about…

--?

--?

(or)

--?
Amblyopia

Strabismic

Refractive

Anisometropic

Dissimilar refractive states b/t the eyes → one retinal image chronically defocused → unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes → both retinal images chronically defocused → bilateral amblyopia

How big a difference in refractive error must be present for anisometropic amblyopia to become a concern?
Depends on whether we’re talking about…
-- Hyperopia
-- Myopia
(or)
-- Astigmatic error
How big a difference in refractive error must be present for anisometropic amblyopia to become a concern? Depends on whether we’re talking about…For each, the difference must be at least…

--Hyperopia: ?

--Myopia
(or)

--Astigmatic error
How big a difference in refractive error must be present for anisometropic amblyopia to become a concern? Depends on whether we’re talking about… For each, the difference must be at least…

--Hyperopia: ~1.5D
--Myopia
(or)
--Astigmatic error
How big a difference in refractive error must be present for anisometropic amblyopia to become a concern? Depends on whether we're talking about... For each, the difference must be at least...

--Hyperopia: ~1.5D
--Myopia: ?
(or)
--Astigmatic error
Amblyopia

Strabismic

Refractive

Anisometropic

Dissimilar refractive states b/t the eyes → one retinal image chronically defocused → unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes → both retinal images chronically defocused → bilateral amblyopia

How big a difference in refractive error must be present for anisometropic amblyopia to become a concern?

Depends on whether we’re talking about… For each, the difference must be at least…

--Hyperopia: ~1.5D
--Myopia: ~3D
(or)
--Astigmatic error
Amblyopia

Strabismic

Refractive

Deprivational

Anisometropic

Dissimilar refractive states b/t the eyes → one retinal image chronically defocused → unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes → both retinal images chronically defocused → bilateral amblyopia

How big a difference in refractive error must be present for anisometropic amblyopia to become a concern?

 Depends on whether we’re talking about… For each, the difference must be at least…

--Hyperopia: ~1.5D
--Myopia: ~3D
(or)
--Astigmatic error: ?
How big a difference in refractive error must be present for anisometropic amblyopia to become a concern?
Depends on whether we’re talking about…For each, the difference must be at least…
--Hyperopia: ~1.5D
--Myopia: ~3D
(or)
--Astigmatic error: ~2D
Amblyopia

Strabismic

Refractive

Anisometropic

Dissimilar refractive states b/t the eyes → one retinal image chronically defocused → **unilateral** amblyopia

Isoametropic

Similar high refractive error in both eyes → both retinal images chronically defocused → **bilateral** amblyopia

How big a difference in refractive error must be present for anisometropic amblyopia to become a concern? Depends on whether we’re talking about… For each, the difference must be at least…

--Hyperopia: ~1.5D
--Myopia: ~3D
(or)
--Astigmatic error: ~2D

Does the risk of amblyopia scale with the degree of anisometropia?
Amblyopia

Strabismic

Refractive

Anisometropic

Dissimilar refractive states b/t the eyes \(\rightarrow\) one retinal image chronically defocused \(\rightarrow\) unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes \(\rightarrow\) both retinal images chronically defocused \(\rightarrow\) bilateral amblyopia

How big a difference in refractive error must be present for anisometropic amblyopia to become a concern?

Depends on whether we’re talking about…For each, the difference must be at least…

--Hyperopia: \(\sim 1.5D\)
--Myopia: \(\sim 3D\)
(or)
--Astigmatic error: \(\sim 2D\)

Does the risk of amblyopia scale with the degree of anisometropia?

It does indeed—the greater the anisometropia, the greater the risk of amblyopia
How large a refractive error must be present for isoametropic amblyopia to become a concern?
Amblyopia

Strabismic

Refractive

Deprivational

Anisometropic

Dissimilar refractive states b/t the eyes →
one retinal image chronically defocused →
unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes →
both retinal images chronically defocused →
bilateral amblyopia

How large a refractive error must be present for isoametropic amblyopia to become a concern?
Again, it depends on whether we’re talking about…
--?
--?
Amblyopia

Strabismic

Refractive

Anisometropic

Dissimilar refractive states b/t the eyes →

one retinal image chronically defocused →

unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes →

both retinal images chronically defocused →

bilateral amblyopia

How large a refractive error must be present for isoametropic amblyopia to become a concern?

Again, it depends on whether we're talking about…

-- Hyperopia
-- Myopia
Amblyopia

Strabismic

Refractive

Deprivational

Anisometropic

Dissimilar refractive states b/t the eyes → one retinal image chronically defocused → unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes → both retinal images chronically defocused → bilateral amblyopia

How large a refractive error must be present for isoametropic amblyopia to become a concern?
Again, it depends on whether we’re talking about…For each…
--Hyperopia: ?
--Myopia
Amblyopia

Strabismic

Refractive

Anisometropic

Dissimilar refractive states b/t the eyes → one retinal image chronically defocused → unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes → both retinal images chronically defocused → bilateral amblyopia

How large a refractive error must be present for isoametropic amblyopia to become a concern?
Again, it depends on whether we’re talking about…For each…
--Hyperopia: 4-5D*
--Myopia

*After age 1 yr, that is
Amblyopia

Strabismic

Refractive

Deprivational

Anisometropic

Dissimilar refractive states b/t the eyes → one retinal image chronically defocused → unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes → both retinal images chronically defocused → bilateral amblyopia

How large a refractive error must be present for isoametropic amblyopia to become a concern?
Again, it depends on whether we’re talking about…For each…
--Hyperopia: 4-5D*
--Myopia

*After age 1 yr, that is
Dissimilar refractive states b/t the eyes → one retinal image chronically defocused → unilateral amblyopia

Similar high refractive error in both eyes → both retinal images chronically defocused → bilateral amblyopia

**How large a refractive error must be present for isoametropic amblyopia to become a concern?**

Again, it depends on whether we’re talking about…For each…

--Hyperopia: 4-5D
--Myopia: ?
Amblyopia

Strabismic

Refractive

Deprivational

Anisometropic

Dissimilar refractive states b/t the eyes $\rightarrow$

one retinal image chronically defocused $\rightarrow$

unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes $\rightarrow$

both retinal images chronically defocused $\rightarrow$

bilateral amblyopia

How large a refractive error must be present for isoametropic amblyopia to become a concern?
Again, it depends on whether we’re talking about… For each…

--Hyperopia: 4-5D
--Myopia: 5-6D (any age)
Amblyopia

Strabismic

Refractive

Anisometropic

Dissimilar refractive states b/t the eyes→
one retinal image chronically defocused→
unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes→
both retinal images chronically defocused→
bilateral amblyopia

How large a refractive error must be present for isoametropic amblyopia to become a concern?
Again, it depends on whether we’re talking about…For each…
--Hyperopia: 4-5D
--Myopia: 5-6D (any age)

What about high astigmatic error—can that produce isoametropic amblyopia?
How large a refractive error must be present for isoametropic amblyopia to become a concern?
Again, it depends on whether we’re talking about…For each…
--Hyperopia: 4-5D
--Myopia: 5-6D (any age)

What about high astigmatic error—can that produce isoametropic amblyopia?
Sort of? What happens is, the brain can fail to develop the ability to focus in the chronically blurred meridian—so-called **unilateral** amblyopia
Amblyopia

Strabismic

Refractive

Deprivational

Anisometropic

Dissimilar refractive states b/t the eyes $\rightarrow$ one retinal image chronically defocused $\rightarrow$ unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes $\rightarrow$ both retinal images chronically defocused $\rightarrow$ bilateral amblyopia

How large a refractive error must be present for isoametropic amblyopia to become a concern?
Again, it depends on whether we’re talking about... For each...
--Hyperopia: 4-5D
--Myopia: 5-6D (any age)

What about high astigmatic error—can that produce isoametropic amblyopia?
Sort of? What happens is, the brain can fail to develop the ability to focus in the chronically blurred meridian—so-called meridional amblyopia
Amblyopia

Strabismic

Refractive

Anisometropic
Dissimilar refractive states b/t the eyes → one retinal image chronically defocused → unilateral amblyopia

Isoametropic
Similar high refractive error in both eyes → both retinal images chronically defocused → bilateral amblyopia

How large a refractive error must be present for isoametropic amblyopia to become a concern?
Again, it depends on whether we’re talking about…For each…
--Hyperopia: 4-5D
--Myopia: 5-6D (any age)

What about high astigmatic error—can that produce isoametropic amblyopia? Sort of? What happens is, the brain can fail to develop the ability to focus in the chronically blurred meridian—so-called meridional amblyopia

At what level of astigmatism should you be concerned about the possibility of meridional amblyopia developing?
Amblyopia

Strabismic

Refractive

Deprivational

Anisometropic

Dissimilar refractive states b/t the eyes→
one retinal image chronically defocused→
unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes→
both retinal images chronically defocused→
bilateral amblyopia

How large a refractive error must be present for isoametropic amblyopia to become a concern?
Again, it depends on whether we’re talking about…For each…
--Hyperopia: 4-5D
--Myopia: 5-6D (any age)

What about high astigmatic error—can that produce isoametropic amblyopia?
Sort of? What happens is, the brain can fail to develop the ability to focus in the chronically blurred meridian—so-called meridional amblyopia

At what level of astigmatism should you be concerned about the possibility of meridional amblyopia developing?
Most ophthos recommend correcting astigmatism of ** or more
Amblyopia

Strabismic

Refractive

Anisometropic

Undesirable refractive states between the eyes → unilateral amblyopia

Isoametropic

Similar high refractive error in both eyes → bilateral amblyopia

How large a refractive error must be present for isoametropic amblyopia to become a concern?
Again, it depends on whether we’re talking about…For each…
-- Hyperopia: 4-5D
-- Myopia: 5-6D (any age)

What about high astigmatic error—can that produce isoametropic amblyopia?
Sort of? What happens is, the brain can fail to develop the ability to focus in the chronically blurred meridian—so-called **meridional amblyopia**

At what level of astigmatism should you be concerned about the possibility of meridional amblyopia developing?
Most ophthalmos recommend correcting astigmatism of 2D or more
(This is a good point in the set to take a break)
What is the most common cause of deprivational amblyopia?
What is the most common cause of deprivational amblyopia?
Congenital (or very early-acquired)
Amblyopia

Strabismic

Refractive

Deprivational

What is the most common cause of deprivational amblyopia?
Congenital (or very early-acquired) cataract
What is the most common cause of deprivational amblyopia?
Congenital (or very early-acquired) cataract

The Peds book lists several other sources of deprivation—what are they?
?
What is the most common cause of deprivational amblyopia?
Congenital (or very early-acquired) cataract

The Peds book lists several other sources of deprivation—what are they?
Ptosis--
Periocular lesions covering the visual axis--
Corneal opacities--
Vitreous hemorrhage--
What is the most common cause of deprivational amblyopia?

Congenital (or very early-acquired) cataract

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm
Amblyopia

Strabismic

Refractive

Deprivalional

What is the most common cause of deprivational amblyopia?

Congenital (or very early-acquired) cataract

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm
Amblyopia

Strabismic

Refractive

Deprivalional

What is the most common cause of deprivalional amblyopia?

Congenital (or very early-acquired) cataract

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivalional amblyopia?

About 3 mm

*The book notes an important caveat to this related to pt age, race, sex, sign?
What is the most common cause of deprivational amblyopia?

Congenital (or very early-acquired) cataract

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm

*The book notes an important caveat to this related to patient age.*
What is the most common cause of deprivational amblyopia? 

**Congenital (or very early-acquired) cataract**

The Peds book lists several other sources of deprivation—what are they?

- Ptosis--
- Periocular lesions covering the visual axis--
- Corneal opacities--
- Vitreous hemorrhage--

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age ; those acquired at a later age are generally less impactful.
What is the most common cause of deprivational amblyopia?

**Congenital (or very early-acquired) cataract**

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.*
What is the most common cause of deprivational amblyopia?

Congenital (or very early-acquired) cataract

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.
What is the most common cause of deprivational amblyopia?

Congenital (or very early-acquired) cataract

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get these gnarly cataracts out. What is the window of opportunity for this; ie, by what age should this be accomplished?

It depends on whether the cataracts are unilateral or bilateral.

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.
What is the most common cause of deprivational amblyopia?

**Congenital (or very early-acquired) cataract**

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get these gnarly cataracts out. What is the window of opportunity for this; ie, by what age should this be accomplished?

It depends on whether the cataracts are unilateral or bilateral.

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.*
What is the most common cause of deprivational amblyopia?

**Congenital (or very early-acquired) cataract**

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get these gnarly cataracts out. What is the window of opportunity for this; ie, by what age should this be accomplished?

It depends on whether the cataracts are unilateral or bilateral. If unilateral, CE should be undertaken by age # weeks; if bilateral, they should be removed no later than age # weeks.

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.
What is the most common cause of deprivational amblyopia?

**Congenital (or very early-acquired) cataract**

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get these gnarly cataracts out. What is the window of opportunity for this; ie, by what age should this be accomplished?

It depends on whether the cataracts are unilateral or bilateral. If unilateral, CE should be undertaken by age 6 weeks; if bilateral, they should be removed no later than age 10 weeks.

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.*
What is the most common cause of deprivational amblyopia?

Congenital (or very early-acquired) cataract

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get those gnarly cataracts out. What is the window of opportunity for this; ie, by what age should this be accomplished?

It depends on whether the cataracts are unilateral or bilateral. If unilateral, CE should be undertaken by age 6 weeks; if bilateral, they should be removed no later than age 10 weeks.

What about less-dense cataracts; eg, a small anterior polar, or lamellar cataract?

Rule of thumb: If you can perform retinoscopy and get a good view on DFE, the cataract in question is unlikely to be severely amblyogenic.

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.
What is the most common cause of deprivational amblyopia?

**Congenital (or very early-acquired) cataract**

The Peds book lists several other sources of deprivation—what are they?

- Ptosis
- Periocular lesions covering the visual axis
- Corneal opacities
- Vitreous hemorrhage

Amblyopia

**Strabismic Refractive Deprivational**

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia? About 3 mm.

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get those gnarly cataracts out. What is the window of opportunity for this; ie, by what age should you get them out? It depends on whether the cataracts are unilateral or bilateral. If unilateral, CE should be undertaken by age 6 weeks; if bilateral, they should be removed no later than age 10 weeks.

What about less-dense cataracts; eg, a small anterior polar, or lamellar cataract? Such cataracts will be much less amblyogenic (if they’re amblyogenic at all).

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.
What is the most common cause of deprivational amblyopia?

Congenital (or very early-acquired) cataract

The Peds book lists several other sources of deprivation—what are they?

- Ptosis--
- Periocular lesions covering the visual axis--
- Corneal opacities--
- Vitreous hemorrhage--

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

- About 3 mm

*The book notes an important caveat to this related to patient age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up there and get those gnarly cataracts out. What is the window of opportunity for this; ie, by what age should this be accomplished?

- It depends on whether the cataracts are unilateral or bilateral.
- If unilateral, CE should be undertaken by age 6 weeks;
- If bilateral, they should be removed no later than age 10 weeks.

What about less-dense cataracts; eg, a small anterior polar, or lamellar cataract? Such cataracts will be much less amblyogenic (if they're amblyogenic at all).

Rule of thumb: If you can perform an exam maneuver, and get a good view on DFE, the cataract in question is unlikely to be severely amblyogenic.
What is the most common cause of deprivational amblyopia?

**Congenital (or very early-acquired) cataract**

The Peds book lists several other sources of deprivation—what are they?

- Ptosis--
- Periocular lesions covering the visual axis--
- Corneal opacities--
- Vitreous hemorrhage--

**Amblyopia**

Strabismic Refractive Deprivational

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur **if** such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get those gnarly cataracts out. What is the window of opportunity for this; ie, by what age should they be removed?

It depends on whether they are unilateral or bilateral. If unilateral, CE should be undertaken by age 6 weeks; if bilateral, they should be removed no later than age 10 weeks.

What about less-dense cataracts; eg, a small anterior polar, or lamellar cataract? Such cataracts will be much less amblyogenic (if they’re amblyogenic at all).

**Rule of thumb:** If you can perform retinoscopy, and get a good view on DFE, the cataract in question is unlikely to be severely amblyogenic.
Amblyopia

Anterior polar cataract

(Note: This is a bad one, and might be amblyogenic)
What is the most common cause of deprivational amblyopia? Congenital (or very early-acquired) cataract.

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get these gnarly cataracts out. What is the window of opportunity for this, ie, by what age should this be accomplished?

It depends on whether the cataracts are unilateral or bilateral. If unilateral, CE should be undertaken by age 6 weeks; if bilateral, they should be removed no later than age 10 weeks.

What about less-dense cataracts; eg, a small anterior polar, or lamellar cataract? Such cataracts will be much less amblyogenic (if they’re amblyogenic at all). Rule of thumb: If you can perform retinoscopy and get a good view on DFE, the cataract in question is unlikely to be severely amblyogenic.

What can be done to increase the odds that a child can ‘see around’ a dense-but-small central cataract, thus precluding amblyopia?

Keeping the child pharmacologically dilated is a reasonable option for nonsurgical management of certain cataracts.
What is the most common cause of deprivational amblyopia?

Congenital (or very early-acquired) cataract

The Peds book lists several other sources of deprivation—what are they?
- Ptosis
- Periocular lesions covering the visual axis
- Corneal opacities
- Vitreous hemorrhage

How much (in mm) of the central lens must be involved in a dense cataracts in order to produce severe deprivational amblyopia?
- About 3 mm

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get those gnarly cataracts out. What is the window of opportunity for this; ie, by what age should this be accomplished?

It depends on whether the cataracts are unilateral or bilateral. If unilateral, CE should be undertaken by age 6 weeks; if bilateral, they should be removed no later than age 10 weeks.

What about less-dense cataracts; eg, a small anterior polar, or lamellar cataract? Such cataracts will be much less amblyogenic (if they’re amblyogenic at all).

Rule of thumb: If you can perform retinoscopy and get a good view on DFE, the cataract in question is unlikely to be severely amblyogenic.

What can be done to increase the odds that a child can ‘see around’ a dense-but-small central cataract, thus precluding amblyopia?
Keep the child pharmacologically dilated. This is a reasonable option for nonsurgical management of certain cataracts.

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.*
What is the most common cause of deprivational amblyopia?

**Congenital (or very early-acquired) cataract**

The Peds book lists several other sources of deprivation—what are they?

- Ptosis--
- Periocular lesions covering the visual axis--
- Corneal opacities--
- Vitreous hemorrhage--

How much (in mm) of the central lens must be involved in a dense cataracts in order to produce severe deprivational amblyopia?

About 3 mm

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get those gnarly cataracts out. What is the window of opportunity for this; ie, by what age should this be accomplished?

It depends on whether the cataracts are unilateral or bilateral. If unilateral, CE should be undertaken by age 6 weeks; if bilateral, they should be removed no later than age 10 weeks.

**Amblyopia**

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.

What about less-dense cataracts; eg, a small anterior polar or lamellar cataract?

Such cataracts will be much less amblyogenic (if they’re amblyogenic at all). Rule of thumb: If you can perform retinoscopy and get a good view on DFE, the cataract in question is unlikely to be severely amblyogenic.

What can be done to increase the odds that a child can ‘see around’ a dense-but-small central cataract, thus precluding amblyopia?

Keep the child pharmacologically dilated. This is a reasonable option for nonsurgical management of certain cataracts.

Speaking of anterior polar cataracts…Just because one may not induce deprivational amblyopia doesn’t mean the eye is home-free. By what other mechanism(s) might an anterior polar cataract induce amblyopia?

Even optically mild ones can produce significant refractive error; thus, unilateral anterior polars are associated with anisometropic amblyopia.
What is the most common cause of deprivational amblyopia?

Congenital (or very early-acquired) cataract

How much (in mm) of the central lens must be involved in a dense cataracts in order to produce severe deprivational amblyopia?

About 3 mm

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get those gnarly cataracts out. What is the window of opportunity for this; ie, by what age should this be accomplished?

It depends on whether the cataracts are unilateral or bilateral. If unilateral, CE should be undertaken by age 6 weeks; if bilateral, they should be removed no later than age 10 weeks.

What about less-dense cataracts; eg, a small anterior polar or lamellar cataract?

Such cataracts will be much less amblyogenic (if they're amblyogenic at all). Rule of thumb: If you can perform retinoscopy and get a good view on DFE, the cataract in question is unlikely to be severely amblyogenic.

Speaking of anterior polar cataracts... Just because one may not induce deprivational amblyopia doesn't mean the eye is home-free. By what other mechanism(s) might an anterior polar cataract induce amblyopia?

Even optically mild ones can produce significant refractive error; thus, unilateral anterior polars are associated with anisometropic amblyopia.

What can be done to increase the odds that a child can 'see around' a dense-but-small central cataract, thus precluding amblyopia?

Keep the child pharmacologically dilated. This is a reasonable option for nonsurgical management of certain cataracts.
What is the most common cause of deprivational amblyopia?

**Congenital (or very early-acquired) cataract**

The Pediatric Eye Disease Investigator Group lists several other sources of deprivation—what are they?

- Ptosis--
- Periocular lesions covering the visual axis--
- Corneal opacities--
- Vitreous hemorrhage--

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get those gnarly cataracts out. What is the window of opportunity for this? IE, by what age should this be accomplished? It depends on whether the cataracts are unilateral or bilateral. If unilateral, CE should be undertaken by age 6 weeks; if bilateral, they should be removed no later than age 10 weeks.

Amblyopia

- Strabismic
- Refractive
- Deprivational

---

*The book notes an important caveat to this related to the age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.*

What about less-dense cataracts; eg, a small anterior polar or lamellar cataract? Such cataracts will be much less amblyogenic (if they’re amblyogenic at all).

Rule of thumb: If you can perform retinoscopy and get a good view on DFE, the cataract in question is unlikely to be severely amblyogenic.

---

Speaking of anterior polar cataracts... Just because one may not induce deprivational amblyopia doesn’t mean the eye is home-free. By what other mechanism(s) might an anterior polar cataract induce amblyopia? Even optically mild ones can produce significant refractive error.
What is the most common cause of deprivational amblyopia?

- Congenital (or very early-acquired) cataract

The Peds book lists several other sources of deprivation—what are they?

- Ptosis--
- Periocular lesions covering the visual axis--
- Corneal opacities--
- Vitreous hemorrhage--

How much (in mm) of the central lens must be involved in a dense cataracts in order to produce severe deprivational amblyopia?

- About 3 mm

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get those gnarly cataracts out. What is the window of opportunity for this?

- It depends on whether the cataracts are unilateral or bilateral. If unilateral, CE should be undertaken by age 6 weeks; if bilateral, they should be removed no later than age 10 weeks.

What about less-dense cataracts; eg, a small anterior polar or lamellar cataract?

- Such cataracts will be much less amblyogenic (if they’re amblyogenic at all). Rule of thumb: If you can perform retinoscopy and get a good view on DFE, the cataract in question is unlikely to be severely amblyogenic.

What can be done to increase the odds that a child can ‘see around’ a dense-but-small central cataract, thus precluding amblyopia?

- Keep the child pharmacologically dilated. This is a reasonable option for nonsurgical management of certain cataracts.

Speaking of anterior polar cataracts…Just because one may not induce deprivational amblyopia doesn’t mean the eye is home-free. By what other mechanism(s) might an anterior polar cataract induce amblyopia?

- Even optically mild ones can produce significant refractive error; thus, unilateral anterior polars are associated with amblyopia.
What is the most common cause of deprivational amblyopia?

**Congenital (or very early-acquired) cataract**

The Pediatric Ophthalmology book lists several other sources of deprivation—what are they?

- Ptosis
- Periocular lesions covering the visual axis
- Corneal opacities
- Vitreous hemorrhage

How much (in mm) of the central lens must be involved in a dense cataract in order to produce severe deprivational amblyopia?

About 3 mm

In order to reduce the risk of dense, irreversible amblyopia, you gotta bust up in there and get those early cataracts out. What is the window of opportunity in this situation? It depends on whether the cataracts are unilateral or bilateral. If unilateral, CE should be undertaken by age 6 weeks; if bilateral, they should be removed no later than age 10 weeks.

Amblyopia

**Strabismic**

**Refractive**

**Deprivational**

*The book notes an important caveat to this related to pt age. Specifically, it notes that severe amblyopia is likely to occur if such a cataract is acquired before age 6 years; those acquired at a later age are generally less impactful.

What about less-dense cataracts; eg, a small anterior polar or lamellar cataract? Such cataracts will be much less amblyogenic (if they're amblyogenic at all). Rule of thumb: If you can perform retinoscopy and get a good view on DFE, the cataract in question is unlikely to be severely amblyogenic.

What can be done to increase the odds that a child can 'see around' a dense-but-small central cataract, thus precluding amblyopia? Keep the child pharmacologically dilated. This is a reasonable option for nonsurgical management of certain cataracts.

Speaking of anterior polar cataracts... Just because one may not induce deprivational amblyopia doesn't mean the eye is home-free. By what other mechanism(s) might an anterior polar cataract induce amblyopia? Even optically mild ones can produce significant refractive error; thus, unilateral anterior polars are associated with anisometropic amblyopia.
What is the most common cause of deprivational amblyopia? Congenital (or very early-acquired) cataract.

Ptosis -- occlusion of the visual axis -- needs no unpacking. Instead, let's take a minute to review the (highly OKAPable) topic of congenital ptosis in general...
Ptosis etiology can be classified into six categories. What are they? (Note: These categories are not unique to congenital ptosis—they apply to **acquired** ptosis as well.)
Ptosis etiology can be classified into six categories. What are they? (Note: These categories are not unique to congenital ptosis—they apply to **acquired** ptosis as well.)
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myogenic</td>
<td>?</td>
</tr>
<tr>
<td>Neurogenic</td>
<td></td>
</tr>
<tr>
<td>Aponeurotic</td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
</tr>
<tr>
<td>Syndromic</td>
<td></td>
</tr>
<tr>
<td>Traumatic</td>
<td></td>
</tr>
</tbody>
</table>

For each category, identify one or more specific causes of **congenital ptosis**
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td>Neurogenic</td>
<td></td>
</tr>
<tr>
<td>Aponeurotic</td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
</tr>
<tr>
<td>Syndromic</td>
<td></td>
</tr>
<tr>
<td>Traumatic</td>
<td></td>
</tr>
</tbody>
</table>

*For each category, identify one or more specific causes of congenital ptosis*
For each category, identify one or more specific causes of *congenital ptosis*
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myogenic</td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td>Neurogenic</td>
<td>CN3 palsy</td>
</tr>
<tr>
<td></td>
<td>Horner’s</td>
</tr>
<tr>
<td></td>
<td>Marcus Gunn jaw wink</td>
</tr>
<tr>
<td>Aponeurotic</td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
</tr>
<tr>
<td>Syndromic</td>
<td></td>
</tr>
<tr>
<td>Traumatic</td>
<td></td>
</tr>
</tbody>
</table>

For each category, identify one or more specific causes of **congenital ptosis**
<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myogenic</td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td>Neurogenic</td>
<td>CN3 palsy, Horner’s, Marcus Gunn jaw wink</td>
</tr>
<tr>
<td>Aponeurotic</td>
<td>?</td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
</tr>
<tr>
<td>Syndromic</td>
<td></td>
</tr>
<tr>
<td>Traumatic</td>
<td></td>
</tr>
</tbody>
</table>

For each category, identify one or more specific causes of **congenital ptosis**
<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myogenic</td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td>Neurogenic</td>
<td>CN3 palsy</td>
</tr>
<tr>
<td></td>
<td>Horner’s</td>
</tr>
<tr>
<td></td>
<td>Marcus Gunn jaw wink</td>
</tr>
<tr>
<td>Aponeurotic</td>
<td>Rare; associated with forceps injury</td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
</tr>
<tr>
<td>Syndromic</td>
<td></td>
</tr>
<tr>
<td>Traumatic</td>
<td></td>
</tr>
</tbody>
</table>

For each category, identify one or more specific causes of *congenital ptosis*
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td><strong>Neurogenic</strong></td>
<td>CN3 palsy, Horner’s, Marcus Gunn jaw wink</td>
</tr>
<tr>
<td><strong>Aponeurotic</strong></td>
<td>Rare; associated with forceps injury</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Syndromic</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Traumatic</strong></td>
<td>(So an argument could be made that it actually belongs here)</td>
</tr>
</tbody>
</table>

For each category, identify one or more specific causes of congenital ptosis.
<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td><strong>Neurogenic</strong></td>
<td>CN3 palsy, Horner’s, Marcus Gunn jaw wink</td>
</tr>
<tr>
<td><strong>Aponeurotic</strong></td>
<td>Rare; associated with forceps injury</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>?</td>
</tr>
<tr>
<td><strong>Syndromic</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Traumatic</strong></td>
<td></td>
</tr>
</tbody>
</table>

For each category, identify one or more specific causes of *congenital ptosis*
General categories of ptosis etiology | Specific causes of congenital ptosis within each category
--- | ---
Myogenic | Congenital myogenic ptosis
Neurogenic | CN3 palsy
 | Horner’s
 | Marcus Gunn jaw wink
Aponeurotic | Rare; associated with forceps injury
Mechanical | Plexiform neurofibroma
 | Capillary hemangioma
Syndromic | 
Traumatic | 

For each category, identify one or more specific causes of *congenital ptosis*
General categories of ptosis etiology | Specific causes of congenital ptosis within each category
--- | ---
**Myogenic** | Congenital myogenic ptosis
**Neurogenic** | CN3 palsy, Horner’s, Marcus Gunn jaw wink
**Aponeurotic** | Rare; associated with forceps injury
**Mechanical** | Plexiform neurofibroma, Capillary hemangioma
**Syndromic** | ?
**Traumatic** | 

For each category, identify one or more specific causes of congenital ptosis.
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td><strong>Neurogenic</strong></td>
<td>CN3 palsy Horner’s Marcus Gunn jaw wink</td>
</tr>
<tr>
<td><strong>Aponeurotic</strong></td>
<td>Rare; associated with forceps injury</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>Plexiform neurofibroma Capillary hemangioma</td>
</tr>
<tr>
<td>** Syndromic**</td>
<td>Blepharophimosis syndrome</td>
</tr>
<tr>
<td><strong>Traumatic</strong></td>
<td></td>
</tr>
</tbody>
</table>

For each category, identify one or more specific causes of *congenital ptosis*
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td><strong>Neurogenic</strong></td>
<td>CN3 palsy, Horner’s, Marcus Gunn jaw wink</td>
</tr>
<tr>
<td><strong>Aponeurotic</strong></td>
<td>Rare; associated with forceps injury</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>Plexiform neurofibroma, Capillary hemangioma</td>
</tr>
<tr>
<td><strong>Syndromic</strong></td>
<td>Blepharophimosis syndrome</td>
</tr>
<tr>
<td><strong>Traumatic</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Which is the most common cause of congenital ptosis?**
# General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td><strong>Neurogenic</strong></td>
<td>CN3 palsy, Horner’s, Marcus Gunn jaw wink</td>
</tr>
<tr>
<td><strong>Aponeurotic</strong></td>
<td>Rare; associated with forceps injury</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>Plexiform neurofibroma, Capillary hemangioma</td>
</tr>
<tr>
<td><strong>Syndromic</strong></td>
<td>Blepharophimosis syndrome</td>
</tr>
<tr>
<td><strong>Traumatic</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Q/A**

Which is the most common cause of congenital ptosis?
Congenital myogenic ptosis (aka *congenital*), by a mile.
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td><strong>Neurogenic</strong></td>
<td>CN3 palsy</td>
</tr>
<tr>
<td></td>
<td>Horner’s</td>
</tr>
<tr>
<td></td>
<td>Marcus Gunn jaw wink</td>
</tr>
<tr>
<td><strong>Aponeurotic</strong></td>
<td>Rare; associated with forceps injury</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>Plexiform neurofibroma</td>
</tr>
<tr>
<td></td>
<td>Capillary hemangioma</td>
</tr>
<tr>
<td>** Syndromic**</td>
<td>Blepharophimosis syndrome</td>
</tr>
<tr>
<td><strong>Traumatic</strong></td>
<td></td>
</tr>
</tbody>
</table>

Which is the most common cause of congenital ptosis?
Congenital myogenic ptosis (aka congenital fibrosis of the levator), by a mile
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td><strong>Traumatic</strong></td>
<td></td>
</tr>
</tbody>
</table>

In three words, what is the etiology of congenital myogenic ptosis?

Levator muscle dysgenesis

The levator fails to develop properly, with some or all of its muscle fibers replaced by fibrous and adipose tissue.

How is it inherited?

This is not addressed in either the *Peds* or *Plastics* book, but both mention that it can be familial (so be sure to inquire re family hx).
<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myogenic</td>
<td>Congenital myogenic ptosis</td>
</tr>
</tbody>
</table>

In three words, what is the etiology of congenital myogenic ptosis?
Levator muscle dysgenesis

Traumatic
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
</tbody>
</table>

**In three words, what is the etiology of congenital myogenic ptosis?**

Levator muscle dysgenesis

**What does that mean?**

The levator fails to develop properly, with some or all of its muscle fibers replaced by fibrous and adipose tissue.

**How is it inherited?**

This is not addressed in either the Peds or Plastics book, but both mention that it can be familial (so be sure to inquire re family hx).
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
</tbody>
</table>
|                                      | *In three words, what is the etiology of congenital myogenic ptosis?*  
Levator muscle dysgenesis            |
|                                      | *What does that mean?*  
The levator fails to develop properly, with some or all of its muscle fibers replaced by fibrous and adipose tissue |
| **Traumatic**                        |                                                          |

### Amblyopia

- Amblyopia
- [A]
<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myogenic</td>
<td>Congenital myogenic ptosis</td>
</tr>
</tbody>
</table>

**In three words, what is the etiology of congenital myogenic ptosis?**

Levator muscle dysgenesis

**What does that mean?**

The levator fails to develop properly, with some or all of its muscle fibers replaced by fibrous and adipose tissue

**How is it inherited?**

This is not addressed in either the *Peds* or *Plastics* book, but both mention that it can be familial (so be sure to inquire re family hx).
## General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myogenic</td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td>Neurogenic</td>
<td>CN3 palsy, Horner’s, Marcus Gunn jaw wink</td>
</tr>
<tr>
<td>Aponeurotic</td>
<td>Rare; associated with forceps injury</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Plexiform neurofibroma, Capillary hemangioma</td>
</tr>
<tr>
<td>Syndromic</td>
<td>Blepharophimosis syndrome</td>
</tr>
<tr>
<td>Traumatic</td>
<td></td>
</tr>
</tbody>
</table>

**In three words, what is the etiology of congenital myogenic ptosis?**

Levator muscle dysgenesis

**What does that mean?**

The levator fails to develop properly, with some or all of its muscle fibers replaced by fibrous and adipose tissue

**How is it inherited?**

This is not addressed in either the *Peds* or *Plastics* book, but both mention that it can be familial (so be sure to inquire re family hx)
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th></th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td><strong>Neurogenic</strong></td>
<td>CN3 palsy, Horner's, Marcus Gunn jaw wink</td>
</tr>
<tr>
<td><strong>Aponeurotic</strong></td>
<td>Rare; associated with forceps injury</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>Plexiform neurofibroma, Capillary hemangioma</td>
</tr>
<tr>
<td><strong>Syndromic</strong></td>
<td>Blepharophimosis syndrome</td>
</tr>
<tr>
<td><strong>Traumatic</strong></td>
<td></td>
</tr>
</tbody>
</table>

**In three words, what is the etiology of congenital myogenic ptosis?**

In congenital myogenic ptosis, what important finding manifests in downgaze?

- **Lid lag**

What does that mean?

The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze.

What causes lid lag in congenital myogenic ptosis?

Some or all of the levator muscle has been replaced by fibrofatty tissue. This tissue can neither contract (causing ptosis) nor relax (causing lid lag).
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>Myogenic</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Congenital myogenic ptosis</strong></td>
<td></td>
</tr>
</tbody>
</table>

**In three words, what is the etiology of congenital myogenic ptosis?**

*In congenital myogenic ptosis, what important finding manifests in downgaze?*

**Lid lag**

**What is lid lag?**

The phenomenon in which the upper lid does not 'follow' the globe in downgaze.

**What causes lid lag in congenital myogenic ptosis?**

Some or all of the levator muscle has been replaced by fibrofatty tissue. This tissue can neither contract (causing ptosis) nor relax (causing lid lag).

---

**Amblyopia**

**In congenital myogenic ptosis, what important finding manifests in downgaze?**

**Lid lag**

**What does that mean?**

The levator fails to develop properly, with some or all of its muscle fibers replaced by fibrous and adipose tissue.

**How is it inherited?**

This is not addressed in either the *Peds* or *Plastics* book, but both mention that it can be familial (so be sure to inquire re family hx).
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>Myogenic</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Congenital myogenic ptosis</strong></td>
<td></td>
</tr>
</tbody>
</table>

In three words, what is the etiology of congenital myogenic ptosis?

In congenital myogenic ptosis, what important finding manifests in downgaze?

Lid lag

What is lid lag?

Some or all of the levator muscle has been replaced by fibrofatty tissue. This tissue can neither contract (causing ptosis) nor relax (causing lid lag).

In congenital myogenic ptosis, what important finding manifests in downgaze?

Lid lag

What is lid lag?

The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze.

What causes lid lag in congenital myogenic ptosis?

Some or all of the levator muscle has been replaced by fibrofatty tissue. This tissue can neither contract (causing ptosis) nor relax (causing lid lag).

In congenital myogenic ptosis, what important finding manifests in downgaze?

Lid lag

What is lid lag?

The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze.

What causes lid lag in congenital myogenic ptosis?

Some or all of the levator muscle has been replaced by fibrofatty tissue. This tissue can neither contract (causing ptosis) nor relax (causing lid lag).

In congenital myogenic ptosis, what important finding manifests in downgaze?

Lid lag

What is lid lag?

The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze.

What causes lid lag in congenital myogenic ptosis?

Some or all of the levator muscle has been replaced by fibrofatty tissue. This tissue can neither contract (causing ptosis) nor relax (causing lid lag).

In congenital myogenic ptosis, what important finding manifests in downgaze?

Lid lag

What is lid lag?

The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze.

What causes lid lag in congenital myogenic ptosis?

Some or all of the levator muscle has been replaced by fibrofatty tissue. This tissue can neither contract (causing ptosis) nor relax (causing lid lag).

In congenital myogenic ptosis, what important finding manifests in downgaze?

Lid lag

What is lid lag?

The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze.

What causes lid lag in congenital myogenic ptosis?

Some or all of the levator muscle has been replaced by fibrofatty tissue. This tissue can neither contract (causing ptosis) nor relax (causing lid lag).

In congenital myogenic ptosis, what important finding manifests in downgaze?

Lid lag

What is lid lag?

The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze.

What causes lid lag in congenital myogenic ptosis?

Some or all of the levator muscle has been replaced by fibrofatty tissue. This tissue can neither contract (causing ptosis) nor relax (causing lid lag).

In congenital myogenic ptosis, what important finding manifests in downgaze?

Lid lag

What is lid lag?
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
</tr>
<tr>
<td>Congenital myogenic ptosis</td>
</tr>
</tbody>
</table>

**In three words, what is the etiology of congenital myogenic ptosis?**

In congenital myogenic ptosis, what important finding manifests in downgaze? Lid lag

**What is lid lag?**
The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze

*Amblyopia*

**In congenital myogenic ptosis, what important finding manifests in downgaze?**

Lid lag

**What is lid lag?**
The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze

*Amblyopia*

**In congenital myogenic ptosis, what important finding manifests in downgaze?**

Lid lag

**What is lid lag?**
The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze

*Amblyopia*

**In congenital myogenic ptosis, what important finding manifests in downgaze?**

Lid lag

**What is lid lag?**
The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze

*Amblyopia*

**In congenital myogenic ptosis, what important finding manifests in downgaze?**

Lid lag

**What is lid lag?**
The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze

*Amblyopia*

**In congenital myogenic ptosis, what important finding manifests in downgaze?**

Lid lag

**What is lid lag?**
The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze

*Amblyopia*

**In congenital myogenic ptosis, what important finding manifests in downgaze?**

Lid lag

**What is lid lag?**
The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze

*Amblyopia*

**In congenital myogenic ptosis, what important finding manifests in downgaze?**

Lid lag

**What is lid lag?**
The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze

*Amblyopia*
Congenital myogenic ptosis: Lid lag. Not only does the ptotic lid not elevate in upgaze, neither does it depress in downgaze.
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td><strong>Neurogenic</strong></td>
<td>CN3 palsy, Horner’s, Marcus Gunn jaw wink</td>
</tr>
<tr>
<td><strong>Aponeurotic</strong></td>
<td>Rare; associated with forceps injury</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>Plexiform neurofibroma, Capillary hemangioma</td>
</tr>
<tr>
<td><strong>Syndromic</strong></td>
<td>Blepharophimosis syndrome</td>
</tr>
<tr>
<td><strong>Traumatic</strong></td>
<td></td>
</tr>
</tbody>
</table>

---

**In three words, what is the etiology of congenital myogenic ptosis?**

In congenital myogenic ptosis, what important finding manifests in downgaze?

**Lid lag**

**What is lid lag?**

The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze

**What causes lid lag in congenital myogenic ptosis?**

Some or all of the levator muscle has been replaced by fibrofatty tissue. This tissue can neither contract (causing ptosis) nor relax (causing lid lag).
### General categories of ptosis etiology

<table>
<thead>
<tr>
<th></th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myogenic</strong></td>
<td>Congenital myogenic ptosis</td>
</tr>
<tr>
<td><strong>Neurogenic</strong></td>
<td>CN3 palsy, Horner’s, Marcus Gunn jaw wink</td>
</tr>
<tr>
<td><strong>Aponeurotic</strong></td>
<td>Rare; associated with forceps injury</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>Plexiform neurofibroma, Capillary hemangioma</td>
</tr>
<tr>
<td><strong>Syndromic</strong></td>
<td>Blepharophimosis syndrome</td>
</tr>
<tr>
<td><strong>Traumatic</strong></td>
<td></td>
</tr>
</tbody>
</table>

**In three words, what is the etiology of congenital myogenic ptosis?**

*Levator muscle dysgenesis*

**What does that mean?**

The levator fails to develop properly, with some or all of its muscle fibers replaced by fibrous and adipose tissue.

**How is it inherited?**

This is not addressed in either the *Peds* or *Plastics* book, but both mention that it can be familial (so be sure to inquire re family hx).

**In congenital myogenic ptosis, what important finding manifests in downgaze?**

**Lid lag**

**What is lid lag?**

The phenomenon in which the upper lid does not ‘follow’ the globe in downgaze.

**What causes lid lag in congenital myogenic ptosis?**

Some or all of the levator muscle has been replaced by fibrofatty tissue. This tissue can neither contract (causing ptosis) *nor* relax (causing lid lag).
<table>
<thead>
<tr>
<th>General categories of ptosis etiology</th>
<th>Specific causes of congenital ptosis within each category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myogenic</td>
<td>Congenital myogenic ptosis</td>
</tr>
</tbody>
</table>

In three words, what is the etiology of congenital myogenic ptosis? Levator muscle dysgenesis.

What does that mean? The levator fails to develop properly, with some or all of its muscle fibers replaced by fibrous and adipose tissue.

How is it inherited? This is not addressed in either the *Peds* or *Plastics* book, but both mention that it can be familial (so be sure to inquire re family hx).

In congenital myogenic ptosis, what important finding manifests in downgaze? Lid lag.

What causes lid lag in congenital myogenic ptosis? Some or all of the levator muscle has been replaced by fibrofatty tissue. This tissue can neither contract (causing ptosis) nor relax (causing lid lag).

For more on congenital ptosis, see slide-set O2.
What is the most common cause of deprivational amblyopia? Congenital (or very early-acquired) cataract

The Peds book lists several other sources of deprivation—what are they?
- Ptosis--
- Periocular lesions covering the visual axis--
- Corneal opacities--
- Vitreous hemorrhage--

Ditto for the means by which corneal opacities induce deprivational amblyopia. Again, let’s take a minute to review this (also) highly OKAPable topic.
What is the mnemonic for remembering the DDx for corneal opacities in an infant?
What is the mnemonic for remembering the DDx for corneal opacities in an infant? STUMPED
Amblyopia

Start here
Q/A

- Sclerocornea
- T
- U
- M
- P
- E
- D

Amblyopia
- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- (Tears in Descemet’s membrane works too)
- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- UMDPED
Q/A

- **S**clerocornea
- **T**rauma (endothelial; ie, from forceps)
- **U**lcer

Amblyopia
Q/A

Amblyopia

- Sclerocornea
- Trauma (endothelial: i.e., from forceps)
- Ulcer
- Metabolic disorders
Q/A

- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- Ulcer
- Metabolic disorders
- Peters anomaly

Amblyopia

E
D
- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- Ulcer
- Metabolic disorders
- Peters anomaly
- Endothelial dystrophy (CHED)

(CHED = congenital hereditary endothelial dystrophy)

(Edema works too, as does Elevated IOP)
- **Sclerocornea**
- **Trauma** (endothelial; ie, from forceps)
- **Ulcer**
- **Metabolic disorders**
- **Peters anomaly**
- **Endothelial dystrophy** (CHED)
- **Amblyopia**
- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- Ulcer
- Metabolic disorders
- Peters anomaly
- Endothelial dystrophy (CHED)
- Dermoid of the cornea
How does sclerocornea present?

- Sclerocornea
- Trauma (endothelial; from forceps, etc)
- Ulcer
- Metabolic disorders
- Peters anomaly
- Endothelial dystrophy (CHED)
- Dermoid of the cornea
How does sclerocornea present?
The name says it all—the cornea looks like sclera
Sclerocornea

**Amblyopia**
How does sclerocornea present?
The name says it all—the cornea looks like sclera

Does it present unilaterally, or bilaterally?

- **Sclerocornea**
- **Trauma (endothelial)**
- **Ulcer**
- **Metabolic disorders**
- **Peters anomaly**
- **Endothelial dystrophy (CHED)**
- **Dermoid of the cornea**
Sclerocornea

Trauma (endothelial; from forceps, etc)

Ulcer

Metabolic disorders

Peters anomaly

Endothelial dystrophy (CHED)

Dermoid of the cornea

How does sclerocornea present?
The name says it all—the cornea looks like sclera

Does it present unilaterally, or bilaterally?
It is in the vast majority of cases (>90%)
Sclerocornea

Trauma (endothelial; from forceps, etc)

Ulcer

Metabolic disorders

Peters anomaly

Endothelial dystrophy (CHED)

Dermoid of the cornea

How does sclerocornea present?
The name says it all—the cornea looks like sclera

Does it present unilaterally, or bilaterally?
It is bilateral in the vast majority of cases (>90%)
- **Sclerocornea**
- **Trauma** (endothelial; from forceps, etc)
- **Ulcer**
- **Metabolic disorders**
- **Peters anomaly**
- **Endothelial dystrophy (CHED)**
- **Dermoid of the cornea**

---

**Amblyopia**

*How does sclerocornea present?*

The name says it all—the cornea looks like sclera.

*Does it present unilaterally, or bilaterally?*

It is bilateral in the vast majority of cases (>90%).

*Another congenital corneal abnormality is strongly associated with sclerocornea. What is it?*


Sclerocornea

Trauma (endothelial; from forceps, etc)

Ulcer

Metabolic disorders

Peters anomaly

Endothelial dystrophy (CHED)

Dermoid of the cornea

How does sclerocornea present?
The name says it all—the cornea looks like sclera

Does it present unilaterally, or bilaterally?
It is bilateral in the vast majority of cases (>90%)

Another congenital corneal abnormality is strongly associated with sclerocornea. What is it?
Cornea plana
Does this sort of birth trauma tend to be unilateral, or bilateral?

It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously).

At what point post-partum does the traumatized cornea become cloudy?

Usually within a day or two.

How does endothelial damage lead to a cloudy cornea?

Breaks in Descemet's/endothelium allow the cornea to become edematous, and thus hazy.

- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- Does this sort of birth trauma tend to be unilateral, or bilateral?
- Dermoid of the cornea
Does this sort of birth trauma tend to be unilateral, or bilateral? It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)

Trauma (endothelial; ie, from forceps)

* Does this sort of birth trauma tend to be unilateral, or bilateral? It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)
Corneal haze 2ndry to birth trauma
Does this sort of birth trauma tend to be unilateral, or bilateral?

It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)

At what point post-partum does the traumatized cornea become cloudy?

- Sclerocornea
- Trauma (endothelial; ie, from forceps)

Does this sort of birth trauma tend to be unilateral, or bilateral?

It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)

At what point post-partum does the traumatized cornea become cloudy?

- Dermoid of the cornea
Does this sort of birth trauma tend to be unilateral, or bilateral? It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously).

At what point post-partum does the traumatized cornea become cloudy?

 Usually within a day or two.

Sclerocornea

Trauma (endothelial; ie, from forceps)

*Does this sort of birth trauma tend to be unilateral, or bilateral?*

It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously).

*At what point post-partum does the traumatized cornea become cloudy?*

Usually within a day or two.

Dermoid of the cornea
Does this sort of birth trauma tend to be unilateral, or bilateral?

It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously).

At what point post-partum does the traumatized cornea become cloudy?

Usually within a day or two.

How does endothelial damage lead to a cloudy cornea?

Breaks in Descemet's/endothelium allow the cornea to become edematous, and thus hazy.

- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- Dermoid of the cornea
Does this sort of birth trauma tend to be unilateral, or bilateral?
It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)

At what point post-partum does the traumatized cornea become cloudy?
Usually within a day or two

How does endothelial damage lead to a cloudy cornea?
Breaks in Descemet’s/endothelium allow the cornea to become edematous, and thus hazy

Sclerocornea

Trauma (endothelial; ie, from forceps)
Sclerocornea

Trauma (endothelial; ie, from forceps)

- Does this sort of birth trauma tend to be unilateral, or bilateral?
  It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)

- At what point post-partum does the traumatized cornea become cloudy?
  Usually within a day or two

- How does endothelial damage lead to a cloudy cornea?
  Breaks in Descemet’s/endothelium allow the cornea to become edematous, and thus hazy

- Do these traumatic Descemet breaks tend to run vertically, or horizontally?
Sclerocornea

Trauma (endothelial; ie, from forceps)

Does this sort of birth trauma tend to be unilateral, or bilateral?
It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)

At what point post-partum does the traumatized cornea become cloudy?
Usually within a day or two

How does endothelial damage lead to a cloudy cornea?
Breaks in Descemet's/endothelium allow the cornea to become edematous, and thus hazy

Do these traumatic Descemet breaks tend to run vertically, or horizontally?
Vertically

Amblyopia
Amblyopia

Vertical Descemet’s breaks after birth trauma
Sclerocornea

Trauma (endothelial; ie, from forceps)

Does this sort of birth trauma tend to be unilateral, or bilateral?
It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)

At what point post-partum does the traumatized cornea become cloudy?
Usually within a day or two

How does endothelial damage lead to a cloudy cornea?
Breaks in Descemet’s/endothelium allow the cornea to become edematous, and thus hazy

Do these traumatic Descemet breaks tend to run vertically, or horizontally?
Vertically

Relevant sidebar: Vertical lines in the posterior stroma are a common finding in keratoconus. What is the eponymous name for this?
Vogt striae
Sclerocornea

Trauma (endothelial; ie, from forceps)

Does this sort of birth trauma tend to be unilateral, or bilateral?
It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)

At what point post-partum does the traumatised cornea become cloudy?
Usually within a day or two

How does endothelial damage lead to a cloudy cornea?
Breaks in Descemet’s/endothelium allow the cornea to become edematous, and thus hazy

Do these traumatic Descemet breaks tend to run vertically, or horizontally?
Vertically

Relevant sidebar: Vertical lines in the posterior stroma are a common finding in keratoconus. What is the eponymous name for this? Vogt striae
Amblyopia

Vogt striae (aka Vogt lines)
One characteristic of Vogt striae is that, with a simple maneuver, they can be made to disappear (temporarily). What is the maneuver?
One characteristic of Vogt striae is that, with a simple maneuver, they can be made to disappear (temporarily). What is the maneuver? Press gently upon the cornea.

Vogt striae (aka Vogt lines)
Sclerocornea

Trauma (endothelial; ie, from forceps)

Does this sort of birth trauma tend to be unilateral, or bilateral?
It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)

Another congenital condition is associated with Descemet’s breaks—what is it?

Congenital glaucoma

How does endothelial damage lead to a cloudy cornea?
Breaks in Descemet’s/endothelial allow the cornea to become edematous, and thus hazy

Do these traumatic Descemet breaks tend to run vertically, or horizontally?
Vertically
Sclerocornea

Trauma (endothelial; ie, from forceps)

Does this sort of birth trauma tend to be unilateral, or bilateral?
It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)

Another congenital condition is associated with Descemet's breaks—what is it?
Congenital glaucoma

How does endothelial damage lead to a cloudy cornea?
Breaks in Descemet's/endothelium allow the cornea to become edematous, and thus hazy

Do these traumatic Descemet breaks tend to run vertically, or horizontally?
Vertically
- **Sclerocornea**
- **Trauma** (endothelial injury from forceps)

Does this sort of birth trauma tend to be unilateral, or bilateral?
- It is almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)
- Another congenital condition is associated with Descemet’s breaks—what is it?
  - **Congenital glaucoma**

At what point post-partum does the traumatized cornea become cloudy?
- Usually within a day or two

How does endothelial damage lead to a cloudy cornea?
- Breaks in Descemet’s/endothelium allow the cornea to become edematous, and thus hazy

Do these traumatic Descemet breaks tend to run vertically, or horizontally?
- Vertically

Do these traumatic Descemet breaks tend to run vertically, or horizontally?
- Horizontally
Sclerocornea

Trauma (endothelial injury from forceps)

- Does this sort of birth trauma tend to be unilateral, or bilateral?
  - Almost always unilateral (would take seriously bad luck to injure both corneas simultaneously)

- At what point post-partum does the traumatized cornea become cloudy?
  - Usually within a day or two

- How does endothelial damage lead to a cloudy cornea?
  - Breaks in Descemet's/endothelium allow the cornea to become edematous, and thus hazy

- Do these traumatic Descemet breaks tend to run vertically, or horizontally?
  - Horizontally

Another congenital condition is associated with Descemet's breaks—what is it?
- Congenital glaucoma

Breaks in Descemet's/endothelium
Horizontal Descemet’s breaks in congenital glaucoma
Sclerocornea

Trauma (e.g., the delivery from forceps)

Ulcer

M Peters anomaly

Endothelial dystrophy (CHED)

Dermoid of the cornea

What is the eponymous name for the Descemet’s breaks associated with congenital glaucoma?

Amblyopia

Do these traumatic Descemet breaks tend to run vertically, or horizontally?

Horizontally

Another congenital condition is associated with Descemet’s breaks—what is it?

Congenital glaucoma

Breaks in Descemet’s/endothelium

Do these traumatic Descemet breaks tend to run vertically, or horizontally?

Vertically
Scleodermornea

Trauma (forceps, from forceps)

- Ulcer
- Peters anomaly
- Endothelial dystrophy (CHED)
- Dermoid of the cornea

Does this sort of birth trauma tend to be unilateral, or bilateral?

- Unilateral (would take seriously bad luck to injure both corneas simultaneously)

At what point post-partum does the traumatized cornea become cloudy?

- Usually within a day or two

How does endothelial damage lead to a cloudy cornea?

- Breaks in Descemet’s/endothelium allow the cornea to become edematous, and thus hazy

Do these traumatic Descemet breaks tend to run vertically, or horizontally?

- Horizontally

Another congenital condition is associated with Descemet’s breaks—what is it?

- Congenital glaucoma

What is the eponymous name for the Descemet’s breaks associated with congenital glaucoma?

- Haab’s striae

Do these traumatic Descemet breaks tend to run vertically, or horizontally?

- Vertically

High IOP

Amblyopia
The Peds book mentions one specific class of metabolic disorder—what is it?

Mucopolysaccharidosis (MPS)

An inherited condition in which mucopolysaccharides cannot be metabolized, and subsequently accumulate to toxic levels.

Hurler, Scheie, and Morquio syndromes
Amblyopia

- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- Ulcer
- Metabolic disorders

The Peds book mentions one specific class of metabolic disorder—what is it? Mucopolysaccharidosis (MPS)
- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- Ulcer
- Metabolic disorders

*The Peds book mentions one specific class of metabolic disorder—what is it?*  
Mucopolysaccharidosis (MPS)

*In a nutshell, what is a mucopolysaccharidosis?*
- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- Ulcer
- **Metabolic disorders**

*The Peds book mentions one specific class of metabolic disorder—what is it?* Mucopolysaccharidosis (MPS)

*In a nutshell, what is a mucopolysaccharidosis?* An inherited condition in which mucopolysaccharides cannot be metabolized, and subsequently accumulate to toxic levels.
Amblyopia

- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- Ulcer
- Metabolic disorders

The Peds book mentions one specific class of metabolic disorder—what is it?
Mucopolysaccharidosis (MPS)

In a nutshell, what is a mucopolysaccharidosis?
An inherited condition in which mucopolysaccharides cannot be metabolized, and subsequently accumulate to toxic levels

The Peds book mentions three MPSs by (eponymous) name—which ones?
Amblyopia

- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- Ulcer
- Metabolic disorders

*The Peds book mentions one specific class of metabolic disorder—what is it?*  
Mucopolysaccharidosis (MPS)

*In a nutshell, what is a mucopolysaccharidosis?*  
An inherited condition in which mucopolysaccharides cannot be metabolized, and subsequently accumulate to toxic levels

*The Peds book mentions three MPSs by (eponymous) name—which ones?*  
Hurler, Scheie, and Morquio syndromes
Amblyopia

MPS (Hurler syndrome)
In three words, what sort of condition is Peters anomaly?

- Peters anomaly
- Endothelial dystrophy (CHED)
- Dermoid of the cornea
In three words, what sort of condition is Peters anomaly?
It is a classic exemplar of an anterior segment dysgenesis.

Peters anomaly
Endothelial dystrophy (CHED)
Dermoid of the cornea
In three words, what sort of condition is Peters anomaly?
It is a classic exemplar of an anterior segment dysgenesis.

- **Peters anomaly**
- **Endothelial dystrophy (CHED)**
- **Dermoid of the cornea**
In three words, what sort of condition is Peters anomaly? It is a classic exemplar of an anterior segment dysgenesis.

How does it present?

- Peters anomaly
- Endothelial dystrophy (CHED)
- Dermoid of the cornea
In three words, what sort of condition is Peters anomaly? It is a classic exemplar of an anterior segment dysgenesis.

How does it present?
As a corneal opacity at birth (duh, it’s in the STUMPED mnemonic). The opacity ranges in severity from a faint haze to an opaque, elevated and vascularized mess.

- **Peters anomaly**
- **Endothelial dystrophy (CHED)**
- **Dermoid of the cornea**
In three words, what sort of condition is Peters anomaly?  
It is a classic exemplar of an anterior segment dysgenesis.

How does it present?  
As a corneal opacity at birth (duh, it’s in the STUMPED mnemonic). The opacity ranges in severity from a faint haze to an opaque, elevated and vascularized mess.

What specific abnormalities are commonly present?

- Peters anomaly
- Endothelial dystrophy (CHED)
- Dermoid of the cornea

Amblyopia
In three words, what sort of condition is Peters anomaly? It is a classic exemplar of an anterior segment dysgenesis.

How does it present?
As a corneal opacity at birth (duh, it’s in the STUMPED mnemonic). The opacity ranges in severity from a faint haze to an opaque, elevated and vascularized mess.

What specific abnormalities are commonly present?
There is a defect in the posterior central cornea, including the absence of Descemet’s and subjacent endothelium. Adhesions extending from the iris to the posterior corneal defect are often present.

- Peters anomaly
- Endothelial dystrophy (CHED)
- Dermoid of the cornea
1. Defect of the posterior central cornea, including the absence of Descemet’s and subjacent endothelium

2. Adhesions extending from the iris to the posterior corneal defect

Peters anomaly
In three words, what sort of condition is Peters anomaly?
It is a classic exemplar of an anterior segment dysgenesis.

How does it present?
As a corneal opacity at birth (duh, it’s in the STUMPED mnemonic). The opacity ranges in severity from a faint haze to an opaque, elevated and vascularized mess.

What specific abnormalities are commonly present?
There is a defect in the posterior central cornea, including the absence of Descemet’s and subjacent endothelium. Adhesions extending from the iris to the posterior corneal defect are often present. The lens may be small, cataractous and misshapen, and may be adherent to the defect in the posterior cornea.

- **Peters anomaly**
- **Endothelial dystrophy (CHED)**
- **Dermoid of the cornea**
Peters anomaly: Small, cataractous, misshapen lens
With what condition are corneal dermoids strongly associated?

- Sclerocornea
- Trauma (endothelial; i.e., from forceps)
- Ulcer
- Metabolic disorders
- Peters anomaly
- Endothelial dystrophy (CHED)
- **Dermoid of the cornea**
With what condition are corneal dermoids strongly associated?
Goldenhar syndrome
With what condition are corneal dermoids strongly associated?
Goldenhar syndrome

Briefly, what is Goldenhar syndrome?
A congenital condition characterized by hemifacial microsomia along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)

In Goldenhar, where on the cornea are dermoids typically located?
At the limbus (they are often called limbal dermoids)

In two words, what sort of condition is Goldenhar?
A craniofacial malformation

Dermoid of the cornea
Amblyopia

With what condition are corneal dermoids strongly associated?
Goldenhar syndrome

Briefly, what is Goldenhar syndrome?
A congenital condition characterized by hemifacial microsomia along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)

- Sclerocornea
- Trauma
- Ulcer
- Metabolic disorders
- Peters anomaly
- Endothelial dystrophy (CHED)
- Dermoid of the cornea
With what condition are corneal dermoids strongly associated? Goldenhar syndrome

Briefly, what is Goldenhar syndrome? A congenital condition characterized by hemifacial microsomia along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)
Amblyopia

Goldenhar syndrome: Hemifacial microsomia; ear abnormalities
With what condition are corneal dermoids strongly associated? Goldenhar syndrome

Briefly, what is Goldenhar syndrome? A congenital condition characterized by hemifacial microsomia along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)

In Goldenhar, where on the cornea are dermoids typically located? At the limbus (they are often called limbal dermoids)

In two words, what sort of condition is Goldenhar? A craniofacial malformation

Amblyopia

- Sclerocornea
- Trauma
- Ulcer
- Metabolic disorders
- Peters anomaly
- Endothelial dystrophy (CHED)
- Dermoid of the cornea
With what condition are corneal dermoids strongly associated? Goldenhar syndrome

Briefly, what is Goldenhar syndrome? A congenital condition characterized by hemifacial microsomia along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)

In Goldenhar, where on the cornea are dermoids typically located? At the limbus (they are often called limbal dermoids)
Goldenhar syndrome: Limbal (epibulbar) dermoids OU
Goldenhar syndrome: Limbal (epibulbar) dermoids OU. The arrow is pointing out a lid coloboma, another common manifestation of the condition.
Goldenhar syndrome: Limbal (epibulbar) dermoids OU. The arrow is pointing out a lid coloboma, another common manifestation of the condition.
Goldenhar syndrome: Limbal dermoid threatening the visual axis
Q

With what condition are corneal dermoids strongly associated?
Goldenhar syndrome

Briefly, what is Goldenhar syndrome?
A congenital condition characterized by hemifacial microsomia along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)

In Goldenhar, where on the cornea are dermoids typically located?
At the limbus (they are often called limbal dermoids)

In two words, what sort of condition is Goldenhar?
A craniofacial malformation
With what condition are corneal dermoids strongly associated? Goldenhar syndrome

Briefly, what is Goldenhar syndrome? A congenital condition characterized by hemifacial microsomia along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)

In Goldenhar, where on the cornea are dermoids typically located? At the limbus (they are often called limbal dermoids)

In two words, what sort of condition is Goldenhar? A craniofacial malformation

Sclerocornea

Trauma

Ulcer

Metabolic disorders

Peters anomaly

Endothelial dystrophy (CHED)

Dermoid of the cornea
- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- Ulcer
- Metabolic disorders
- Peters anomaly
- Endothelial dystrophy (CHED)
- Dermoid of the cornea

**Amblyopia**

With what condition are corneal dermoids strongly associated?
Goldenhar syndrome

Briefly, what is Goldenhar syndrome?
A congenital condition characterized by hemifacial microsomia along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)

In Goldenhar, where on the cornea are dermoids typically located?
At the limbus (they are often called limbal dermoids)

In two words, what sort of condition is Goldenhar?
A craniofacial malformation

What are the two categories of craniofacial malformation?
Amblyopia

With what condition are corneal dermoids strongly associated? Goldenhar syndrome

Briefly, what is Goldenhar syndrome?
A congenital condition characterized by hemifacial microsomia along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)

In Goldenhar, where on the cornea are dermoids typically located? At the limbus (they are often called limbal dermoids)

In two words, what sort of condition is Goldenhar? A craniofacial malformation

Two categories of craniofacial m'formation
Craniosynostoses Not craniosynostoses

What are the two categories of craniofacial malformation?
Amblyopia

With what condition are corneal dermoids strongly associated?
Goldenhar syndrome

Briefly, what is Goldenhar syndrome?
A congenital condition characterized by hemifacial microsomia along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)

In Goldenhar, where on the cornea are dermoids typically located?
At the limbus (they are often called limbal dermoids)

In two words, what sort of condition is Goldenhar?
A craniofacial malformation

Craniosynostoses

Not craniosynostoses

Which craniosynostosis syndromes are addressed in the Peds book?

Dermoid of the cornea
With what condition are corneal dermoids strongly associated? Goldenhar syndrome

Briefly, what is Goldenhar syndrome? A congenital condition characterized by hemifacial microsomia along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)

In Goldenhar, where on the cornea are dermoids typically located? At the limbus (they are often called limbal dermoids)

In two words, what sort of condition is Goldenhar? A craniofacial malformation

Two categories of craniofacial malformation

Craniosynostoses
--Crouzon
--Apert
--Pfeiffer
--Saethre-Chotzen

Not craniosynostoses

Which craniosynostosis syndromes are addressed in the Peds book?
With what condition are corneal dermoids strongly associated? Goldenhar syndrome

Briefly, what is Goldenhar syndrome? A congenital condition characterized by hemifacial microsoma along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)

In Goldenhar, where on the cornea are dermoids typically located? At the limbus (they are often called limbal dermoids)

In two words, what sort of condition is Goldenhar? A craniofacial malformation

Two categories of craniofacial m'formation

<table>
<thead>
<tr>
<th>Craniosynostoses</th>
<th>Not craniosynostoses</th>
</tr>
</thead>
<tbody>
<tr>
<td>--Crouzon</td>
<td>--?</td>
</tr>
<tr>
<td>--Apert</td>
<td>--?</td>
</tr>
<tr>
<td>--Pfeiffer</td>
<td>--?</td>
</tr>
<tr>
<td>--Saethre-Chotzen</td>
<td>--?</td>
</tr>
</tbody>
</table>

Which nonsynostotic conditions are addressed in the Peds book?
With what condition are corneal dermoids strongly associated? Goldenhar syndrome

Briefly, what is Goldenhar syndrome? A congenital condition characterized by hemifacial microsomia along with various ear, vertebral, and ophthalmic manifestations (including corneal dermoids, obv)

In Goldenhar, where on the cornea are dermoids typically located? At the limbus (they are often called limbal dermoids)

In two words, what sort of condition is Goldenhar? A craniofacial malformation

Two categories of craniofacial m’formation

Craniosynostoses
--Crouzon
--Apert
--Pfeiffer
--Saethre-Chotzen

Not craniosynostoses
--Goldenhar syndrome
--Treacher Collins
--Pierre Robin sequence
--Fetal alcohol syndrome

Which nonsynostotic conditions are addressed in the Peds book?
Goldenhar syndrome
Treacher-Collins syndrome
Pierre-Robin sequence
Nonsynostotic craniofacial malformations
Fetal alcohol syndrome
- Sclerocornea
- Trauma (endothelial; ie, from forceps)
- Ulcer
- Metabolic disorders
- Peters anomaly
- Endothelial dystrophy (CHED)
- Dermoid of the cornea

*Amblyopia*

For more on the conditions in the STUMPED mnemonic, see slide-set K9*

*Some are covered elsewhere as well; see the ToC*
(This is a good point in the set to take a break)
Screening for amblyopia involves performing one or more of several exam maneuvers— which ones?
--?
--?
--?
Screening for amblyopia involves performing one or more of several exam maneuvers— which ones?
--Checking BCVA
--Assessing for strabismus
--Brückner testing
Screening for amblyopia involves performing one or more of several exam maneuvers—
which ones?
--Checking BCVA
--Assessing for strabismus
--Brückner testing
Screening for amblyopia involves performing one or more of several exam maneuvers— which ones?
--Checking BCVA
--Assessing for strabismus via assessment and/or two words
--Brückner testing
Screening for amblyopia involves performing one or more of several exam maneuvers— which ones?
-- Checking BCVA
-- Assessing for strabismus via corneal light reflex assessment and/or cover testing
-- Brückner testing
Screening for amblyopia involves performing one or more of several exam maneuvers—what ones?
--Checking BCVA
--Assessing for strabismus via corneal light reflex assessment and/or cover testing
--Brückner testing

In a nutshell, how does the Brückner test work?
Screening for amblyopia involves performing one or more of several exam maneuvers—
which ones?
--Checking BCVA
--Assessing for strabismus via corneal light reflex assessment and/or cover testing
--Brückner testing

In a nutshell, how does the Brückner test work?
It uses the relative brightness of the red reflexes of the two eyes (evaluated simultaneously)
Screening for amblyopia involves performing one or more of several exam maneuvers— which ones?
--Checking BCVA
--Assessing for strabismus via corneal light reflex assessment and/or cover testing
--Brückner testing

In a nutshell, how does the Brückner test work?
It uses the relative brightness of the red reflexes of the two eyes (evaluated simultaneously)
Screening for amblyopia involves performing one or more of several exam maneuvers— which ones?
--Checking BCVA
--Assessing for strabismus via corneal light reflex assessment and/or cover testing
--Brückner testing

In a nutshell, how does the Brückner test work?
It uses the relative brightness of the red reflexes of the two eyes (evaluated simultaneously) to reveal the presence of media opacities, strabismus, and significant refractive error (both anisometropia and high isoametropia).
Screening for amblyopia involves performing one or more of several exam maneuvers— which ones?
--Checking BCVA
--Assessing for strabismus via corneal light reflex assessment and/or cover testing
--Brückner testing

*In a nutshell, how does the Brückner test work?*
It uses the relative brightness of the red reflexes of the two eyes (evaluated simultaneously) to reveal the presence of media opacities, strabismus, and significant refractive error (both anisometropia and high isoametropia)
Treatment of amblyopia involves three general steps—what are they?
In order:
1) ?
2) ?
3) ?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) ?
3) ?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) ?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye
Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What are the two hoped-for therapeutic endpoints when treating unilateral amblyopia?

--?
--?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What are the two hoped-for therapeutic endpoints when treating unilateral amblyopia?
--No **two words**, ie, free
--?
Amblyopia

Strabismic  Refractive  Deprivational

Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What are the two hoped-for therapeutic endpoints when treating unilateral amblyopia?
--No gaze preference, ie, free alternation of fixation
--?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What are the two hoped-for therapeutic endpoints when treating unilateral amblyopia?
--No gaze preference, ie, free alternation of fixation
--BCVA in the amblyopic eye no more than # Snellen line worse than that of the sound eye
Amblyopia

Strabismic  Refractive  Deprivational

Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What are the two hoped-for therapeutic endpoints when treating unilateral amblyopia?
--No gaze preference, ie, free alternation of fixation
--BCVA in the amblyopic eye no more than 1 Snellen line worse than that of the sound eye
Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What are the two hoped-for therapeutic endpoints when treating unilateral amblyopia?
--No gaze preference, ie, free alternation of fixation
--BCVA in the amblyopic eye no more than 1 Snellen line worse than that of the sound eye

How long does it take to get there?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What are the two hoped-for therapeutic endpoints when treating unilateral amblyopia?
--No gaze preference, ie, free alternation of fixation
--BCVA in the amblyopic eye no more than 1 Snellen line worse than that of the sound eye

How long does it take to get there?
That depends upon two factors: The severity of the amblyopia (more = longer tx)
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What are the two hoped-for therapeutic endpoints when treating unilateral amblyopia?
--No gaze preference, ie, free alternation of fixation
--BCVA in the amblyopic eye no more than 1 Snellen line worse than that of the sound eye

How long does it take to get there?
That depends upon two factors: The severity of the amblyopia (more severe = longer tx)
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What are the two hoped-for therapeutic endpoints when treating unilateral amblyopia?
--No gaze preference, ie, free alternation of fixation
--BCVA in the amblyopic eye no more than 1 Snellen line worse than that of the sound eye

How long does it take to get there?
That depends upon two factors: The severity of the amblyopia (more severe = longer tx), and the age of the pt
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What are the two hoped-for therapeutic endpoints when treating unilateral amblyopia?
--No gaze preference, ie, free alternation of fixation
--BCVA in the amblyopic eye no more than 1 Snellen line worse than that of the sound eye

How long does it take to get there?
That depends upon two factors: The severity of the amblyopia (more severe = longer tx), and the age of the pt
Treatment of amblyopia involves three general steps—what are they?

In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What are the two hoped-for therapeutic endpoints when treating unilateral amblyopia?

--No gaze preference, ie, free alternation of fixation
--BCVA in the amblyopic eye no more than 1 Snellen line worse than that of the sound eye

How long does it take to get there?
That depends upon two factors: The severity of the amblyopia (more severe = longer tx), and the age of the pt (younger age at start of tx = longer course of tx needed)
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What are the two hoped-for therapeutic endpoints when treating unilateral amblyopia?
-- No gaze preference, ie, free alternation of fixation
-- BCVA in the amblyopic eye no more than 1 Snellen line worse than that of the sound eye

How long does it take to get there?
That depends upon two factors: The severity of the amblyopia (more severe = longer tx), and the age of the pt (older age at start of tx = longer course of tx needed)
Treatment of amblyopia involves three general steps—what are they?

In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (read: force; require) the child to use the amblyopic eye

You mean, correct refractive error if the amblyopia is refractive in nature, yes?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (read: force; require) the child to use the amblyopic eye

You mean, correct refractive error if the amblyopia is refractive in nature, yes?
You’d think so, but no—correction of refractive error “plays a key role in the treatment of all types of amblyopia,” as the Peds book puts it. [Emphasis mine]
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (read: force; require) the child to use the amblyopic eye

You mean, correct refractive error if the amblyopia is refractive in nature, yes?
You’d think so, but no—correction of refractive error “plays a key role in the treatment of all types of amblyopia,” as the Peds book puts it. [Emphasis mine] In fact, refractive correction is so effective, many ophthos will hold off on Step 3 above, opting instead to see how far refractive correction alone can go in reversing amblyopia.
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (read: force; require) the child to use the amblyopic eye

You mean, correct refractive error if the amblyopia is refractive in nature, yes?
You’d think so, but no—correction of refractive error “plays a key role in the treatment of all types of amblyopia,” as the Peds book puts it. [Emphasis mine] In fact, refractive correction is so effective, many ophthos will hold off on Step 3 above, opting instead to see how far refractive correction alone can go in reversing amblyopia.

Should correction be based on the manifest, or cycloplegic refraction?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (read: force; require) the child to use the amblyopic eye

You mean, correct refractive error if the amblyopia is refractive in nature, yes?
You’d think so, but no—correction of refractive error “plays a key role in the treatment of all types of amblyopia,” as the Peds book puts it. [Emphasis mine] In fact, refractive correction is so effective, many ophthos will hold off on Step 3 above, opting instead to see how far refractive correction alone can go in reversing amblyopia.

Should correction be based on the manifest, or cycloplegic refraction?
The cycloplegic (albeit recognizing there are clinical scenarios in which Rxing less than the full cycloplegic amount is indicated)
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (read: force; require) the child to use the amblyopic eye

You mean, correct refractive error if the amblyopia is refractive in nature, yes?
You’d think so, but no—correction of refractive error “plays a key role in the treatment of all types of amblyopia,” as the Peds book puts it. [Emphasis mine] In fact, refractive correction is so effective, many ophthalmos will hold off on Step 3 above, opting instead to see how far refractive correction alone can go in reversing amblyopia.

Should correction be based on the manifest, or cycloplegic refraction?
The cycloplegic (albeit recognizing there are clinical scenarios in which Rxing less than the full cycloplegic amount is indicated)

Which method of correction is preferable—contacts, or glasses?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (read: force; require) the child to use the amblyopic eye

You mean, correct refractive error if the amblyopia is refractive in nature, yes?
You’d think so, but no—correction of refractive error “plays a key role in the treatment of all types of amblyopia,” as the Peds book puts it. [Emphasis mine] In fact, refractive correction is so effective, many ophthos will hold off on Step 3 above, opting instead to see how far refractive correction alone can go in reversing amblyopia.

Should correction be based on the manifest, or cycloplegic refraction?
The cycloplegic (albeit recognizing there are clinical scenarios in which Rxing less than the full cycloplegic amount is indicated)

Which method of correction is preferable—contacts, or glasses?
Contacts (but many kids are intolerant, in which case glasses are used)
Treatment of amblyopia involves three general steps—what are they? In order:

1) Clear the visual axis if occluded
2) **Correct any significant refractive error present**
3) Encourage (read: force; require) the child to use the amblyopic eye

You mean, correct refractive error if the amblyopia is refractive in nature, yes? You’d think so, but no—correction of refractive error “plays a key role in the treatment of all types of amblyopia,” as the Peds book puts it. [Emphasis mine] In fact, refractive correction is so effective, many ophthos will hold off on Step 3 above, opting instead to see how far refractive correction alone can go in reversing amblyopia.

Should correction be based on the manifest, or cycloplegic refraction? The cycloplegic (albeit recognizing there are clinical scenarios in which Rxing less than the full cycloplegic amount is indicated)

Which method of correction is preferable—contacts, or glasses? Contacts (but many kids are intolerant, in which case glasses are used)

Is refractive surgery an option?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (read: force; require) the child to use the amblyopic eye

*You mean, correct refractive error if the amblyopia is refractive in nature, yes?*
You’d think so, but no—correction of refractive error “plays a key role in the treatment of all types of amblyopia,” as the Peds book puts it. [Emphasis mine] In fact, refractive correction is so effective, many ophthos will hold off on Step 3 above, opting instead to see how far refractive correction alone can go in reversing amblyopia.

*Should correction be based on the manifest, or cycloplegic refraction?*
The cycloplegic (albeit recognizing there are clinical scenarios in which Rxing less than the full cycloplegic amount is indicated)

*Which method of correction is preferable—contacts, or glasses?*
Contacts (but many kids are intolerant, in which case glasses are used)

*Is refractive surgery an option?*
Yes, but is generally reserved for kids who won’t tolerate either CLs or glasses
In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye
In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye
In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye? You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

-?
-?
In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

- Occluding its visual axis, ie, patch it
- ??

Treatment of amblyopia involves three general steps—what are they?

In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye
In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
--Occluding its visual axis, ie, patch it
--?
In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
-- Occluding its visual axis, ie, patch it
--- Degraded the quality of its visual signal

Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye
In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
--Occluding its visual axis, ie, patch it
--Degrading the quality of its visual signal

Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
-- Occluding its visual axis, ie, patch it
-- Degrading the quality of its visual signal either or
In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye? You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

-- Occluding its visual axis, ie, patch it
-- Degrading the quality of its visual signal either pharmacologically or optically

Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye.
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
--Occluding its visual axis, i.e., patch it
--Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
--?
--?
--?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
--Occluding its visual axis, ie, patch it
--Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
--Occluding its visual axis, ie, patch it
--Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it?

The adhesive can be irritating, or inadequate
The sound eye may peek around them, negating the occlusion
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
-- Occluding its visual axis, ie, patch it
-- Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
-- Adhesive patches
-- Spectacle-mounted occluders
-- Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate.
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
-- Occluding its visual axis, ie, patch it
-- Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
-- Adhesive patches
-- Spectacle-mounted occluders
-- Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate.

Spectacle-mounted occluders have a common drawback—what is it?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
--Occluding its visual axis, ie, patch it
--Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the occlusion
Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (i.e., force; require) the child to use the amblyopic eye

In very general terms (i.e., not specific techniques), how do you get a child to use their amblyopic eye?

Occlusion therapy can be conducted in one of two ways. What are they?
--? 
--?

--Occluding its visual axis, i.e., patch it
--Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it? The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it? The sound eye may peek around them, negating the desired effect
Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

**Occlusion therapy can be conducted in one of two ways.**

**What are they?**
-- Full-time
-- Part-time

**What techniques are commonly used to occlude the eye?**
-- Adhesive patches
-- Spectacle-mounted occluders
-- Opaque CLs

---

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

Occlusion therapy can be conducted in one of two ways.
What are they?
--Full-time, which means ____________
--Part-time

--Occluding its visual axis, ie, patch it
--Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

Occlusion therapy can be conducted in one of two ways. What are they?
--Full-time, which means ‘during all waking hours’
--Part-time

What techniques are commonly used to occlude the eye?
--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect
Treatment of amblyopia involves three general steps—what are they?

1. Clear the visual axis if occluded
2. Correct any significant refractive error present
3. Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

-- Occluding its visual axis, ie, patch it
-- Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?

-- Adhesive patches
-- Spectacle-mounted occluders
-- Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect.

What’s the major drawback of full-time patching?

-- Occlusion therapy can be conducted in one of two ways. What are they?
  -- Full-time, which means ‘during all waking hours’
  -- Part-time

What's the major advantage of full-time patching?

There is none really—studies indicate part-time occlusion of 6 hrs/d is just as effective, and is far less likely to result in reverse amblyopia or strabismus.

So what role does full-time patching play these days in amblyopia tx?

Not much—few if any US ophthos use it anymore.
Amblyopia

Strabismic Refractive Deprivational

Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

You make it their better-seeing eye by disrupting the vision in the sound eye

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

--Occluding its visual axis, ie, patch it
--Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?

--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect

What's the major drawback of full-time patching?

It has been known to lead to amblyopia and/or strabismus

Occlusion therapy can be conducted in one of two ways.

What are they?

--Full-time, which means ‘during all waking hours’
--Part-time

What's the major advantage of full-time patching?

There is none really—studies indicate part-time occlusion of 6 hrs/d is just as effective, and is far less likely to result in reverse amblyopia or strabismus

So what role does full-time patching play these days in amblyopia tx?

Not much—few if any US ophthos use it anymore
Amblyopia

Strabismic

Refractive

Deprivalional

Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in the sound eye

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
-- Occluding its visual axis, ie, patch it
-- Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
-- Adhesive patches
-- Spectacle-mounted occluders
-- Opaque CLs

What's the major drawback of full-time patching? It has been known to lead to reverse amblyopia and/or strabismus

What's the major advantage of full-time patching? There is none really—studies indicate part-time occlusion of 6 hrs/d is just as effective, and is far less likely to result in reverse amblyopia or strabismus

So what role does full-time patching play these days in amblyopia tx? Not much—few if any US ophthos use it anymore
Amblyopia

Strabismic Refractive Deprivational

Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

You make it their better-seeing eye by disrupting the vision in their sound eye

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

--Occluding its visual axis, ie, "patch it"
--Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?

--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect

What is reverse amblyopia?

Loss of BCVA in the formerly sound eye secondary to amblyopia tx

If it develops, is reverse amblyopia reversible?

Yes, thankfully. Some cases require patching the other (ie, the original amblyopic) eye; others can be fixed simply by stopping therapy altogether.
Amblyopia

Strabismic

Refractive

Deprivational

What is reverse amblyopia?
Loss of BCVA in the formerly sound eye secondary to amblyopia tx

What are they?
- Strabismic Refractive Deprivational

What are the three general steps in the treatment of amblyopia in order?
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye

What techniques are commonly used to disrupt vision in the sound eye?
-- Occluding its visual axis, ie, patch it
-- Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
-- Adhesive patches
-- Spectacle-mounted occluders
-- Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect

What's the major drawback of full-time patching?
It has been known to lead to reverse amblyopia and/or strabismus

What's the major advantage of full-time patching?
There is none really—studies indicate part-time occlusion of 6 hrs/d is just as effective, and is far less likely to result in reverse amblyopia or strabismus

So what role does full-time patching play these days in amblyopia tx?
Not much—few if any US ophthos use it anymore

What is reverse amblyopia?
Loss of BCVA in the formerly sound eye secondary to amblyopia tx

If it develops, is reverse amblyopia reversible?
Yes, thankfully. Some cases require patching the other (ie, the original amblyopic) eye; others can be fixed simply by stopping therapy altogether.
Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

You make it their better-seeing eye by disrupting the vision in their sound eye

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

--- Occluding its visual axis, ie, patch it
--- Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?

-- Adhesive patches
-- Spectacle-mounted occluders
-- Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect

What is reverse amblyopia?
Loss of BCVA in the formerly sound eye 2ndry to amblyopia tx

If it develops, is reverse amblyopia reversible?

Full-time, which means ‘during all waking hours’

--- Part-time

What's the major drawback of full-time patching?
It has been known to lead to reverse amblyopia and/or strabismus

--- Part-time

--- Full-time

What's the major advantage of full-time patching?
There is none really—studies indicate part-time occlusion of 6 hrs/d is just as effective, and is far less likely to result in reverse amblyopia or strabismus

So what role does full-time patching play these days in amblyopia tx?
Not much—few if any US ophthos use it anymore

What is reverse amblyopia?
Loss of BCVA in the formerly sound eye 2ndry to amblyopia tx

If it develops, is reverse amblyopia reversible?
Treatment of amblyopia involves three general steps—what are they?
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
--Occluding its visual axis, ie, patch it
--Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect

What's the major drawback of full-time patching?
It has been known to lead to **reverse amblyopia** and/or **strabismus**

What is reverse amblyopia?
Loss of BCVA in the formerly sound eye 2ndry to amblyopia tx

If it develops, is reverse amblyopia reversible?
Yes, thankfully. Some cases require patching the other (ie, the original amblyopic) eye; others can be fixed simply by stopping therapy altogether.

What's the major advantage of full-time patching?
There is none really—studies indicate part-time occlusion of 6 hrs/d is just as effective, and is far less likely to result in reverse amblyopia or strabismus

So what role does full-time patching play these days in amblyopia tx?
Not much—few if any US ophthos use it anymore

What is reverse amblyopia?
Loss of BCVA in the formerly sound eye 2ndry to amblyopia tx

If it develops, is reverse amblyopia reversible?
Yes, thankfully. Some cases require patching the other (ie, the original amblyopic) eye; others can be fixed simply by stopping therapy altogether.
Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

You make it their better-seeing eye by disrupting the vision in their sound eye

What techniques are commonly used to occlude the eye?

--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect

What are they?

--Occluding its visual axis, ie, "patch it"
--Degrading the quality of its visual signal either pharmaceutically or optically

What's the major drawback of full-time patching?

It has been known to lead to reverse amblyopia and/or strabismus

What's the major advantage of full-time patching?

There is none really—studies indicate part-time occlusion of 6 hrs/d is just as effective, and is far less likely to result in reverse amblyopia or strabismus

So what role does full-time patching play these days in amblyopia tx?

Not much—few if any US ophthos use it anymore
What's the major drawback of full-time patching? It has been known to lead to reverse amblyopia and/or strabismus.

What’s the major advantage of full-time patching? There is none really—studies indicate part-time occlusion of just as effective, and is far less likely to result in reverse amblyopia or strabismus.

Strabismic Amblyopia

Strabismic Amblyopia

- Occluding its visual axis, i.e., patch it
- Deggrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?

- Adhesive patches
- Spectacle-mounted occluders
- Opaque CLs

Patches have a common drawback—what is it? The adhesive can be irritating, or inadequate.

Spectacle-mounted occluders have a common drawback—what is it? The sound eye may peek around them, negating the desired effect.

In very general terms (i.e., not specific techniques), how do you get a child to use their amblyopic eye? You make it their better-seeing eye by disrupting the vision in the sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—

- Occluding its visual axis, i.e., patch it
- Deggrading the quality of its visual signal either pharmacologically or optically

Occlusion therapy can be conducted in one of two ways. What are they?

- Full-time, which means ‘during all waking hours’
- Part-time

What's the major drawback of full-time patching? It has been known to lead to reverse amblyopia and/or strabismus.

What's the major advantage of full-time patching? There is none really—studies indicate part-time occlusion of is just as effective, and is far less likely to result in reverse amblyopia or strabismus.

In order:

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (i.e., force; require) the child to use the amblyopic eye

In very general terms (i.e., not specific techniques), how do you get a child to use their amblyopic eye? You make it their better-seeing eye by disrupting the vision in the sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—

- Occluding its visual axis, i.e., patch it
- Deggrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?

- Adhesive patches
- Spectacle-mounted occluders
- Opaque CLs

Patches have a common drawback—what is it? The adhesive can be irritating, or inadequate.

Spectacle-mounted occluders have a common drawback—what is it? The sound eye may peek around them, negating the desired effect.
Amblyopia

Strabismic

Refractive

Deprivational

What's the major drawback of full-time patching?
It has been known to lead to reverse amblyopia and/or strabismus.

What's the major advantage of full-time patching?
There is none really—studies indicate part-time occlusion of 6 hrs/d is just as effective, and is far less likely to result in reverse amblyopia or strabismus.

What are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in the sound eye.

What are they?

--- Occluding its visual axis, ie, patch it
--- Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?

-- Adhesive patches
-- Spectacle-mounted occluders
-- Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate.

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect.

So what role does full-time patching play these days in amblyopia tx?
Not much—few if any US ophtos use it anymore.
Amblyopia

Strabismic

Refractive

Deprivational

What's the major drawback of full-time patching?
It has been known to lead to reverse amblyopia and/or strabismus.

What's the major advantage of full-time patching?
There is none really—studies indicate part-time occlusion of 6 hrs/d is just as effective, and is far less likely to result in reverse amblyopia or strabismus.

So what role does full-time patching play these days in amblyopia tx?

Full-time, which means 'during all waking hours'

Patch it

What are they?

- Occluding its visual axis, i.e., patch it
- Degrading the quality of its visual signal either pharmaceutically or optically

What techniques are commonly used to occlude the eye?

- Adhesive patches
- Spectacle-mounted occluders
- Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect

What are they?

- Occluding its visual axis, i.e., patch it
- Degrading the quality of its visual signal either pharmaceutically or optically

What techniques are commonly used to occlude the eye?

- Adhesive patches
- Spectacle-mounted occluders
- Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect
**Amblyopia**

Strabismic  
Refractive  
Deprivational

1. Clear the visual axis if occluded
2. Correct any significant refractive error present
3. Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

**Occluding** its visual axis, ie, **patch it**

There are two broad categories of technique for disrupting vision in the sound eye—

--- Occluding its visual axis, ie, **patch it**
--- Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?

--- Adhesive patches
--- Spectacle-mounted occluders
--- Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect

What's the major drawback of full-time patching?

It has been known to lead to reverse amblyopia and/or strabismus

What's the major advantage of full-time patching?

There is none really—studies indicate part-time occlusion of 6 hrs/d is just as effective, and is far less likely to result in reverse amblyopia or strabismus

So what role does full-time patching play these days in amblyopia tx?

Not much—few if any US ophthos use it anymore
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye

What techniques are commonly used to occlude the eye?
--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect

How long (ie, hrs/day) should part-time patching be employed?
That depends upon the severity of the amblyopia. If it’s severe (VA equal to or worse than about 20/125), 6 hrs/d is indicated. If more moderate (VA 20/100 or better), 2 hrs/d may be enough.

What sort of followup schedule should be used when part-time patching is employed?
As there is essentially no risk of inducing reverse amblyopia or strabismus, re-eval in 2-3 months is reasonable
Treatment of amblyopia involves three general steps—what are they?

In order:

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—

-- Occluding its visual axis, ie, patch it
-- Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?

-- Adhesive patches
-- Spectacle-mounted occluders
-- Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect

How long (ie, hrs/day) should part-time patching be employed?
That depends upon the severity of the amblyopia.

If it's severe (VA equal to or worse than about 20/125), 6 hrs/d is indicated.
If more moderate (VA 20/100 or better), 2 hrs/d may be enough.

What sort of followup schedule should be used when part-time patching is employed?

As there is essentially no risk of inducing reverse amblyopia or strabismus, re-eval in 2-3 months is reasonable.
Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
-- Occluding its visual axis, ie, patch it
-- Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
-- Adhesive patches
-- Spectacle-mounted occluders
-- Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect

How long (ie, hrs/day) should part-time patching be employed? That depends upon the severity of the amblyopia.

Occlusion therapy can be conducted in one of two ways. What are they?
-- Full-time
-- Part-time

How long (ie, hrs/day) should part-time patching be employed?
That depends upon the severity of the amblyopia. If it's severe (VA equal to or worse than about 20/125), 6 hrs/d is indicated. If more moderate (VA 20/100 or better), 2 hrs/d may be enough.

What sort of followup schedule should be used when part-time patching is employed?
As there is essentially no risk of inducing reverse amblyopia or strabismus, re-eval in 2-3 months is reasonable.
Treatment of amblyopia involves three general steps—what are they?

In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

You make it their better-seeing eye by disrupting the vision in their sound eye

There are two broad categories of technique for disrupting vision in the sound eye—are they?

--Occluding its visual axis, ie, patch it
--Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?

--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect

How long (ie, hrs/day) should part-time patching be employed?
That depends upon the severity of the amblyopia. If it’s severe (VA equal to or worse than about 20/125), # hrs/d is indicated.
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

How long (ie, hrs/day) should part-time patching be employed?
That depends upon the severity of the amblyopia. If it’s severe (VA equal to or worse than about 20/125), 6 hrs/d is indicated.

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye

Occlusion therapy can be conducted in one of two ways.
What are they?
--Full-time
--Part-time

What techniques are commonly used to occlude the eye?
--Occluding its visual axis, ie, patch it
--Degradating the quality of its visual signal either pharmacologically or optically

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

How long (ie, hrs/day) should part-time patching be employed?
That depends upon the severity of the amblyopia. If it’s severe (VA equal to or worse than about 20/125), 6 hrs/d is indicated. If more moderate (VA 20/100 or better), # hrs/d may be enough.

What techniques are commonly used to occlude the eye?
--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it?
The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it?
The sound eye may peek around them, negating the desired effect
Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

How long (ie, hrs/day) should part-time patching be employed? That depends upon the severity of the amblyopia. If it’s severe (VA equal to or worse than about 20/125), 6 hrs/d is indicated. If more moderate (VA 20/100 or better), 2 hrs/d may be enough.

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

What techniques are commonly used to occlude the eye?
--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it? The adhesive can be irritating, or inadequate.

Spectacle-mounted occluders have a common drawback—what is it? The sound eye may peek around them, negating the desired effect.
Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
-- Occluding its visual axis, ie, patch it
-- Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
-- Adhesive patches
-- Spectacle-mounted occluders
-- Opaque CLs

Patches have a common drawback—what is it? The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it? The sound eye may peek around them, negating the desired effect

How long (ie, hrs/day) should part-time patching be employed? That depends upon the severity of the amblyopia. If it’s severe (VA equal to or worse than about 20/125), 6 hrs/d is indicated. If more moderate (VA 20/100 or better), 2 hrs/d may be enough.

What sort of followup schedule should be used when part-time patching is employed? As there is essentially no risk of inducing reverse amblyopia or strabismus, re-eval in 2-3 months is reasonable
Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye? You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
--Occluding its visual axis, ie, patch it
--Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye?
--Adhesive patches
--Spectacle-mounted occluders
--Opaque CLs

Patches have a common drawback—what is it? The adhesive can be irritating, or inadequate.

Spectacle-mounted occluders have a common drawback—what is it? The sound eye may peek around them, negating the desired effect.

How long (ie, hrs/day) should part-time patching be employed? That depends upon the severity of the amblyopia. If it’s severe (VA equal to or worse than about 20/125), 6 hrs/d is indicated. If more moderate (VA 20/100 or better), 2 hrs/d may be enough.

What sort of followup schedule should be used when part-time patching is employed? As there is essentially no risk of inducing reverse amblyopia or strabismus, re-eval in 2-3 months is reasonable.

Part-time
---Occluding its visual axis, ie, patch it
---Removing occluders

---Full-time, which means ‘during all waking hours’

---Occluding its visual axis, ie, patch it
---Removing occluders

amount of time
Treatment of amblyopia involves three general steps—what are they? In order:
1. Clear the visual axis if occluded
2. Correct any significant refractive error present
3. Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye? You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
- Occluding its visual axis, ie, patch it
- Degrading the quality of its visual signal either pharmacologically or optically

What techniques are commonly used to occlude the eye? Adhesive patches, spectacle-mounted occluders, opaque CLs

Patches have a common drawback—what is it? The adhesive can be irritating, or inadequate

Spectacle-mounted occluders have a common drawback—what is it? The sound eye may peek around them, negating the desired effect

How long (ie, hrs/day) should part-time patching be employed? That depends upon the severity of the amblyopia. If it’s severe (VA equal to or worse than about 20/125), 6 hrs/d is indicated. If more moderate (VA 20/100 or better), 2 hrs/d may be enough.

What sort of followup schedule should be used when part-time patching is employed? As there is essentially no risk of inducing reverse amblyopia or strabismus, re-eval in 2-3 months is reasonable
Treatment of amblyopia involves three general steps—what are they?

What’s the basic idea underlying the pharmacologic tx of amblyopia?

--- Occluding its visual axis, ie, “patch it.”
--- Degrading the quality of its visual signal either pharmacologically or optically.
Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

You make it their better-seeing eye by disrupting the vision in their sound eye

There are two broad categories of technique for disrupting vision in the sound eye—

-- Occluding its visual axis, ie, "patch it"
-- Degrading the quality of its visual signal either pharmacologically or optically

What's the basic idea underlying the pharmacologic tx of amblyopia?

The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating

How often is atropine administered?

As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild)

How well does pharmacologic therapy work?

In moderate amblyopia, it's as effective as patching

Can it work too well, ie, is reverse amblyopia a possibility?

Indeed it is, and it's for this reason that regular followup is critical
Treatment of amblyopia involves three general steps—what are they?

What’s the basic idea underlying the pharmacologic tx of amblyopia?
The sound eye is cyclopledged (usually with atropine 1%), thereby preventing it from accommodating.
Treatment of amblyopia involves three general steps—what are they?

What’s the basic idea underlying the pharmacologic tx of amblyopia? The sound eye is cyclopleged (usually with **atropine 1%**), thereby preventing it from accommodating.

**Atropine is not a benign drug. What are signs of systemic toxicity?**

--?
--?
--?
--?

--Occluding its visual axis, ie, “patch it”
--Degrading the quality of its visual signal either **pharmacologically** or optically
Treatment of amblyopia involves three general steps—what are they?

In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye? You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

--Occluding its visual axis, ie, “patch it”
--Degrading the quality of its visual signal either pharmacologically or optically

What’s the basic idea underlying the pharmacologic tx of amblyopia?
The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating.

Atropine is not a benign drug. What are signs of systemic toxicity?
--Fever
--Tachycardia
--Dry mouth
--Delirium
Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
--Occluding its visual axis, ie, “patch it”
--Degrading the quality of its visual signal either pharmacologically or optically

What’s the basic idea underlying the pharmacologic tx of amblyopia?
The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating

How often is atropine administered?
As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild)

How well does pharmacologic therapy work?
In moderate amblyopia, it’s as effective as patching

Can it work too well, ie, is reverse amblyopia a possibility?
Indeed it is, and it’s for this reason that regular followup is critical
Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

- Occluding its visual axis, ie, “patch it”
- Degrading the quality of its visual signal either pharmacologically or optically

What’s the basic idea underlying the pharmacologic tx of amblyopia?
The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating.

How often is atropine administered?
As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild).
Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

-- Occluding its visual axis, ie, "patch it"
-- Degrading the quality of its visual signal either pharmacologically or optically

What's the basic idea underlying the pharmacologic tx of amblyopia?

The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating.

How often is atropine administered?

As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild).
Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

-- Occluding its visual axis, ie, "patch it"
-- Degradating the quality of its visual signal either pharmacologically or optically

What’s the basic idea underlying the pharmacologic tx of amblyopia?
The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating.

How often is atropine administered?
As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild).

How well does pharmacologic therapy work?

Indeed it is; for this reason, regular follow-up is critical.
Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

How do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

-- Occluding its visual axis, ie, "patch it"
-- Degrading the quality of its visual signal either pharmacologically or optically

What’s the basic idea underlying the pharmacologic tx of amblyopia?
The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating.

How often is atropine administered?
As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild).

How well does pharmacologic therapy work?
In moderate amblyopia, it’s as effective as patching.
Treatment of amblyopia involves three general steps—what are they? 

In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye? 

You make it their better-seeing eye by disrupting the vision in their sound eye

There are two broad categories of technique for disrupting vision in the sound eye—what are they? 

--Occluding its visual axis, ie, patch it
--Degrading the quality of its visual signal either pharmacologically or optically

What's the basic idea underlying the pharmacologic tx of amblyopia? 

The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating

How often is atropine administered? 

As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild)

How well does pharmacologic therapy work? 

In moderate amblyopia, it's as effective as patching

Can it work too well, ie, is reverse amblyopia a possibility? 

Indeed it is, and it's for this reason that regular followup is critical

The effectiveness of pharm tx can be affected by the refractive state of the cyclopleged eye. Which refractive state may reduce tx effectiveness? 

Myopia

Why? 

Because a cyclopleged myopic eye can still see clearly at near, in which case it is likely to remain the better-seeing eye (and thus preferred) during near work

What can be done to offset this untoward effect? 

Make the kid wear her myopic distance correction*
Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye? You make it their better-seeing eye by disrupting the vision in their sound eye. There are two broad categories of technique for disrupting vision in the sound eye—what are they?

--Occluding its visual axis, ie, “patch it”
--Degrading the quality of its visual signal either pharmacologically or optically

What's the basic idea underlying the pharmacologic tx of amblyopia? The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating.

How often is atropine administered? As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild).

How well does pharmacologic therapy work? In moderate amblyopia, it’s as effective as patching.

Can it work too well, ie, is reverse amblyopia a possibility? Indeed it is, and it’s for this reason that regular followup is critical.

The effectiveness of pharm tx can be affected by the refractive state of the cyclopleged eye. Which refractive state may reduce tx effectiveness? Myopia. Why? Because a cyclopleged myopic eye can still see clearly at near, in which case it is likely to remain the better-seeing eye (and thus preferred) during near work.

What can be done to offset this untoward effect? Make the kid wear her myopic distance correction.
Amblyopia

The effectiveness of pharm tx can be affected by the refractive state of the cyclopleged eye. Which refractive state may reduce tx effectiveness? Myopia

Why?

In moderate amblyopia, it’s as effective as patching

--Occluding its visual axis, ie, “patch it”

--Degrading the quality of its visual signal either pharmacologically or optically

How often is atropine administered?

As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild)

How well does pharmacologic therapy work?

In moderate amblyopia, it’s as effective as patching

Can it work too well, ie, is reverse amblyopia a possibility?

Indeed it is, and it’s for this reason that regular followup is critical

The effectiveness of pharm tx can be affected by the refractive state of the cyclopleged eye. Which refractive state may reduce tx effectiveness? Myopia
Treatment of amblyopia involves three general steps—in order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye.

There are two broad categories of technique for disrupting vision in the sound eye—
--Occluding its visual axis, ie, patch it
--Degrading the quality of its visual signal either pharmacologically or optically

What's the basic idea underlying the pharmacologic tx of amblyopia?
The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating.

How often is atropine administered?
As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild).

How well does pharmacologic therapy work?
In moderate amblyopia, it's as effective as patching.

Can it work too well, ie, is reverse amblyopia a possibility?
Indeed it is, and it's for this reason that regular followup is critical.

The effectiveness of pharm tx can be affected by the refractive state of the cyclopleged eye. Which refractive state may reduce tx effectiveness? Myopia.

Why?
Because a cyclopleged myopic eye can still see clearly at near, in which case it is likely to remain the better-seeing eye (and thus preferred) during near work.

What can be done to offset this untoward effect?
Make the kid wear her myopic distance correction.
Amblyopia

The effectiveness of pharm tx can be affected by the refractive state of the cyclopleged eye. Which refractive state may reduce tx effectiveness? Myopia

Why?
Because a cyclopleged myopic eye can still see clearly at near, in which case it is likely to remain the better-seeing eye (and thus preferred) during near work

What can be done to offset this untoward effect?

In moderate amblyopia, it’s as effective as patching

---Occluding its visual axis, ie, patch it
---Degrading the quality of its visual signal either pharmacologically or optically

Deprivational
Amblyopia

Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

You make it their better-seeing eye by disrupting the vision in their sound eye

There are two broad categories of technique for disrupting vision in the sound eye—what are they?

--Occluding its visual axis, ie, "patch it"
--Degrading the quality of its visual signal either pharmacologically or optically

What's the basic idea underlying the pharmacologic tx of amblyopia?

The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating

How often is atropine administered?

As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild)

How well does pharmacologic therapy work?

In moderate amblyopia, it's as effective as patching

Can it work too well, ie, is reverse amblyopia a possibility?

Indeed it is, and it's for this reason that regular followup is critical

The effectiveness of pharm tx can be affected by the refractive state of the cyclopleged eye. Which refractive state may reduce tx effectiveness?

Myopia

Why?

Because a cyclopleged myopic eye can still see clearly at near, in which case it is likely to remain the better-seeing eye (and thus preferred) during near work

What can be done to offset this untoward effect?

Make the kid wear her myopic distance correction*

*Easier said than done, perhaps
Treatment of amblyopia involves three general steps—what are they?

What's the basic idea underlying the pharmacologic tx of amblyopia?
The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating.

How often is atropine administered?
As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild).

How well does pharmacologic therapy work?
In moderate amblyopia, it's as effective as patching.

Can pharmacologic tx work too well, ie, is reverse amblyopia a possibility?

- Occluding its visual axis, ie, patch it
- Degrading the quality of its visual signal either pharmacologically or optically
Treatment of amblyopia involves three general steps—what are they?

1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?
You make it their better-seeing eye by disrupting the vision in their sound eye

There are two broad categories of technique for disrupting vision in the sound eye—
--Occluding its visual axis, ie, “patch it”
--Degrading the quality of its visual signal either
  pharmacologically
  or optically

What’s the basic idea underlying the pharmacologic tx of amblyopia?
The sound eye is cyclopleged (usually with atropine 1%), thereby preventing it from accommodating

How often is atropine administered?
As often as daily (for moderate amblyopia), and as infrequently as weekends only (for mild)

How well does pharmacologic therapy work?
In moderate amblyopia, it’s as effective as patching

Can pharmacologic tx work too well, ie, is reverse amblyopia a possibility?
Indeed it is, and it’s for this reason that regular followup is critical
Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (i.e., force; require) the child to use the amblyopic eye

In very general terms (i.e., not specific techniques) how do you get a child to use their amblyopic eye? You make it their better-seeing eye by disrupting the vision in their sound eye.

What's the basic idea underlying the optical tx of amblyopia?

- Occluding its visual axis, i.e., patching it
- Degrading the quality of its visual signal either pharmacologically or optically

The main drawback to optical tx is similar to that of patching—what is it?

Peeking around the plus lens/filter
Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques) how do you get a child to use their amblyopic eye? You make it their better-seeing eye by disrupting the vision in their sound eye. There are two broad categories of technique for disrupting vision in the sound eye—what are they?

--- Occluding its visual axis, ie, patch it
--- Degrading the quality of its visual signal either pharmacologically or optically

What's the basic idea underlying the optical tx of amblyopia? The image in the sound eye is degraded via fogging (with excess power), or via

**two words**

-- Optically
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

What’s the basic idea underlying the optical tx of amblyopia?
The image in the sound eye is degraded via fogging (with excess plus power), or via diffusing filters.

There are two broad categories of technique for disrupting vision in the sound eye—what are they?
--Occluding its visual axis, ie, patching
--Degrading the quality of its visual signal either pharmacologically or optically
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What's the basic idea underlying the optical tx of amblyopia?
The image in the sound eye is degraded via fogging (with excess plus power), or via diffusing filters.

The main drawback to optical tx is similar to that of patching—what is it?

Optically
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

In very general terms (ie, not specific techniques), how do you get a child to use their amblyopic eye?

What's the basic idea underlying the optical tx of amblyopia?
The image in the sound eye is degraded via fogging (with excess plus power), or via diffusing filters

The main drawback to optical tx is similar to that of patching—what is it?
Peeking around the plus lens/filter
A Randomized Trial Comparing Bangerter Filters and Patching for the Treatment of Moderate Amblyopia

Objective: To determine whether binocular vision improvement with Bangerter filters is similar to improvement with patching as initial therapy for children with moderate amblyopia.

Design: Randomized, double-masked, placebo-controlled trial.

Participants: 88 children aged 6-10 years old, with moderate amblyopia (20/40-20/100) and functional vision in both eyes.

Methods: Children were randomly assigned to receive either daily patching or to use a Bangerter filter a few times per day. Spectacle lenses were prescribed for the fellow eye. Study visits were scheduled at 6, 12, 18, and 24 weeks.

Main Outcome Measure: Change in amblyopic eye scores at 24 weeks.

Results: At 24 weeks, amblyopic eye improvement averaged 1.9 lines in the Bangerter group and 3.7 lines in the patching group. A significant difference in mean visual acuity between groups was noted (p < 0.05).

Diffusion filter
Treatment of amblyopia involves three general steps—what are they?

In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What is the most common cause of tx failure in amblyopia?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What is the most common cause of tx failure in amblyopia?
Poor compliance/adherence
Treatment of amblyopia involves three general steps—what are they?

In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What is the most common cause of tx failure in amblyopia?

Poor compliance/adherence. For this reason, the clinician must be 1) vigilant regarding evidence of noncompliance; 2) meticulous in identifying tx barriers; and 3) nimble with respect to modifying/jettisoning unsuccessful tx approaches and/or implementing alternatives that circumvent the identified barriers.
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What is the most common cause of tx failure in amblyopia?

Poor compliance/adherence. For this reason, the clinician must be 1) vigilant regarding evidence of noncompliance; 2) meticulous in identifying tx barriers; and 3) nimble with respect to modifying/jettisoning unsuccessful tx approaches and/or implementing alternatives that circumvent the identified barriers.

If noncompliance has been ruled out, what is the most likely explanation for a failed tx response?
Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What is the most common cause of tx failure in amblyopia? Poor compliance/adherence. For this reason, the clinician must be 1) vigilant regarding evidence of noncompliance; 2) meticulous in identifying tx barriers; and 3) nimble with respect to modifying/jettisoning unsuccessful tx approaches and/or implementing alternatives that circumvent the identified barriers.

If noncompliance has been ruled out, what is the most likely explanation for a failed tx response? You missed something (usually either optic nerve and/or retinal dz) on exam.
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What is the most common cause of tx failure in amblyopia?

Poor compliance/adherence. For this reason, the clinician must be 1) vigilant regarding evidence of noncompliance; 2) meticulous in identifying tx barriers; and 3) nimble with respect to modifying/jettisoning unsuccessful tx approaches and/or implementing alternatives that circumvent the identified barriers.

If noncompliance has been ruled out, what is the most likely explanation for a failed tx response?
You missed something (usually either optic nerve and/or retinal dz) on exam
Amblyopia

Strabismic

Refractive

Deprivational

Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What is the most common cause of tx failure in amblyopia?
Poor compliance/adherence. For this reason, the clinician must be 1) vigilant regarding evidence of noncompliance; 2) meticulous in identifying tx barriers; and 3) nimble with respect to modifying/jettisoning unsuccessful tx approaches and/or implementing alternatives that circumvent the identified barriers.

Is amblyopia recurrence (ie, post-tx) a thing?
Treatment of amblyopia involves three general steps—what are they?
In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What is the most common cause of tx failure in amblyopia?
Poor compliance/adherence. For this reason, the clinician must be 1) vigilant regarding evidence of noncompliance; 2) meticulous in identifying tx barriers; and 3) nimble with respect to modifying/jettisoning unsuccessful tx approaches and/or implementing alternatives that circumvent the identified barriers.

Is amblyopia recurrence (ie, post-tx) a thing?
Mos def—estimates are that as many as a 33% of ‘tx successes’ will backslide to some degree once tx is stopped
Treatment of amblyopia involves three general steps—what are they? In order:
1) Clear the visual axis if occluded
2) Correct any significant refractive error present
3) Encourage (ie, force; require) the child to use the amblyopic eye

What is the most common cause of tx failure in amblyopia?
Poor compliance/adherence. For this reason, the clinician must be 1) vigilant regarding evidence of noncompliance; 2) meticulous in identifying tx barriers; and 3) nimble with respect to modifying/jettisoning unsuccessful tx approaches and/or implementing alternatives that circumvent the identified barriers.

Is amblyopia recurrence (ie, post-tx) a thing?
Mos def—estimates are that as many as a third of ‘tx successes’ will backslide to some degree once tx is stopped