How to prescribe prisms for diplopia

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According to AACME guidelines:
I reveal that there are no real or apparent financial conflict of interests in any of the presented material.
Diplopia: When to prescribe Prisms and when to do Surgery?

Small Angle Relatively Comitant strabismus
Left diabetic 6th n palsy, after 9 months

Incomitant ET → NOT indicated for prisms

History of traumatic SO palsy, and did surgery few months ago. Still diplopic

Incomitant HT → will not be happy with prisms
Diplopia after trauma: unclear history

Lesser degree of incomitance. Amenable to prism correction
Zero ΔD RHT  14 ΔD RHT

Diplopia  Diplopia  Diplopia  Diplopia

Rt HT  0  2  4  6  8  10  12  14  18

Diplopia  Diplopia  Single  Diplopia

Rt HT  0  2  4  6  8  10  12  14  18

Diplopia  Diplopia  Single  Diplopia
Comitant deviations → larger fields of binocular vision → Happier patient

Best Candidates for Prisms

1. Relatively **comitant** deviations
2. **Smaller angles** (*Rarely more than 10 ΔD per eye are tolerated when incorporated in spectacles*)
3. Had **previous glasses**.

How to measure..?

Use increasing prism powers to correct diplopia till patient sees single vision. Apex towards deviation.
Disadvantage of this method is that it does not take into consideration “Fusional Vergence”.

Fusional Vergence: Corrective eye movement to overcome diplopia and produce single vision.

Effort placed by the eyes to get rid of diplopia. Succeeds in small degrees of diplopia but produces headache and asthenopic symptoms.
Example

• The real deviation of the eye is 10 ΔD

• If you put a prism of 6 ΔD the diplopia will be relieved in your office.

• The patient will do the remaining 4 ΔD by his fusional vergence.

• *Patient will return complaining of still seeing diplopia sometimes and asthenopic symptoms. He will not be happy with the prism!!*

How to eliminate effect of FUSIONAL VERGENCE..?
Red Lens

E   E

Red Lens

E   E

2 ΔD
Red Lens

4 ΔD

6 ΔD

Red Lens
Another method to eliminate fusional vergence is to create vertical diplopia when measuring horizontal deviation.
Creation of Vertical Diplopia

- Patient with horizontal diplopia
- Add vertical prism of 6 ΔD in front of one eye
- Add horizontal prisms to measure horizontal deviation. End point when two objects are aligned.

6 ΔD vertical
Creation of Vertical Diplopia

- Patient with horizontal diplopia
- Add vertical prism of 6 ΔD in front of one eye
- Add horizontal prisms to measure horizontal deviation. End point when two objects are aligned.

![Diagram of horizontal and vertical prisms](image1.jpg)

![Diagram of horizontal and vertical prisms](image2.jpg)
Creation of Vertical Diplopia

- Patient with horizontal diplopia
- Add vertical prism of 6 ΔD in front of one eye
- Add horizontal prisms to measure horizontal deviation. End point when two objects are aligned.

→ Write down the amount of prism that relieves the diplopia:

8 ΔD Base Out OD
You can divide the prism between the two eyes (important in larger prisms):

$$8 \Delta D \text{ Base Out OS} = 4 \Delta D \text{ Base Out OD} + 4 \Delta D \text{ Base Out OS}$$

Prescription Example:

- **OD:** $-3.00 + 1.00$ $90$
  
  **Prism:** $4 \Delta D$ Base Out

- **OS:** $-2.00 + 0.75$ $90$
  
  **Prism:** $4 \Delta D$ Base Out

**Ground Prism:** $66$ mm
At the optician:

- Average cost: 150-250 EGP
- Takes 2-7 days
- Optician try to choose:
  - Plastic frame (light)
  - Smaller frame (decrease thickness of lens)
  - Tinted or colored.
Thank You