WHEN THE PEDIG GUIDELINES DON’T WORK FOR YOUR PATIENT…

WHAT NEXT?

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NO FINANCIAL INTEREST IN ANY TREATMENT DISCUSSED
When PEDIG fails your pt....

Summary

- Possibly poor compliance
- Try atropine
- Try more patching
- Keep the therapeutic environment alive & active
- You may have missed an organic factor
- Fix the strabismus [?torsion too]
- Refractive surgery
We prescribe a treatment and see how effective the *treatment instruction* is.

Calendar diary is only monitor of compliance.

If the doctor prescribes 2h/d or 6h/d, what REALLY happens?
Parent diaries overestimate actual patching time when monitored with electronic Occlusion Dose Monitor.

This may be why PEDIG demonstrates no difference between prescriptions of 2h vs 6h/d or of 6h vs full-time occlusion with calendar-marking parent self-report to measure compliance.
Does compliance matter?

- In 14 newly identified amblyopic children compliance was measured electronically over 1w, 6m after the start of occlusion therapy with a patch with electronic sensor [Occlusion Dose Monitor].

- Compliance : % of electronically registered time c.f. prescribed occlusion time.

Mean age 4y. Anisometropia =5, strabismus =4 and anisometropia and strabismus =5.

Compliance matters

<table>
<thead>
<tr>
<th>n=</th>
<th>Acuity increase</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Satisfactory</td>
<td>80%</td>
</tr>
<tr>
<td>6</td>
<td>Unsatisfactory</td>
<td>34%</td>
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Satisfactory acuity increase following 6m of occlusion therapy was defined on reaching any of the following criteria:

- acuity increase expressed as a ratio between acuity of the amblyopic eye and acuity of the good eye of more than 0.75,
- acuity of the amblyopic eye exceeding 0.5 as measured on the E or Landolt-C,
- or 3 LogMAR lines of increase in acuity.

Some of the O Rxs did well too

Positive relation b/w effective hours patched & improvement in amblyopia

**Figure 6.** Percentage change in amblyopia \[\frac{(VA_{as} - VA_{ae})}{(VA_{as} - VA_{de})} \times 100\%\] versus mean hours effectively patched (measured with ODMs) in the 3 groups showing a significant relation between effective hours patched and improvement in amblyopia. Only one patient achieved 6 hours of effective patching.
Compliance with patching 48%

Increasing dose to >2h/d: faster response, final outcome same.

80% of improvement occurs in first 6w

Treatment results better <4yo c.f. >6yo
Fig 2 Achieved dose rate in children allocated to six or 12 hours of occlusion a day. Vertical lines indicate interquartile range. To enhance clarity, dots have been jittered horizontally.

- **6h/d**: received 4.2 \( \pm 0.5 \) h/d
- **12h/d**: received 6.2 \( \pm 1.1 \) h/d \( p=0.06 \)
Fig 5 Age of children at start of occlusion as a function of age. Fitted lines are default LOWESS (locally weighted smoothed) line of best fit.

< 4yo : faster response

Stewart, C. E et al. BMJ 2007;335:707
Dose-response @ different ages

< 4 years old:
- low dose rates (<3 h/d) are effective, with slight (p=0.54) additional gains for doses >3h/d

> 4 years old:
- significant differences between <3h/d & 3-6h/d
- no difference between 3-6h/d & 6-12h/d

> 6 years old:
- <3h/d had little effect; need >3h/d
MOTAS …several studies

1 line gain:
- needs ~ 120h occlusion

2 line gain:
- 4y: needs 170h
- 6y: needs 236h
Tentative conclusions

- More is better
- Younger is better
Bill Scott: **MUCH more is always better**
Amblyopia Treatment Outcomes  J AAPOS 2005

- All patients: full-time occlusion = **all waking hours**; if result inadequate, **24h/d**.
- Success: 20/30 or better or equal VA by fixation pattern.
- 600 pts followed up after cessation of FT patching [mean 7y]. 89% followed > 1 y.
EXCEPTIONAL RESULTS

- 96% attained “success”. 60%: equal visual acuity.
- 6/12 - 6/30 : 6/9 or ≥ 3 lines improvement:
    PEDIG ~80%, Scott 98%
- Younger: less occlusion time to endpoint & better visual outcome (P = 0.0001).
- Incidence of occlusion amblyopia was 26%. Nearly all treatable.

Problems:
- 19% lost to followup
- PEDIG: n= 419 S 38%, A 37%, A+S 24%.
- Scott’s 600: S 73%, A 9%, A+S 17%
Intensive occlusion therapy for amblyopia. Dorey SE. BJO 2001

39 children who failed prolonged outpatient treatment for amblyopia: admitted for 5 days of supervised intensive inpatient occlusion therapy

- 26 (67%) gained ≥ 1 line
- 5 (13%) gained ≥ 3 lines (mean gain 1.03 lines)

Last recorded visit [median 14 mo after discharge]:
- 13 (33%) ≥ 6/12 in their amblyopic eye.
Maybe more isn’t always better…

- A comparison of various methods of treatment of amblyopia. A block study Watson PG... TOSUK 1985
- Conventional occlusion [opaque patch> 3h /d] &
- Minimal occlusion [20 - 30min/d with near task] &
- CAM gratings [7 - 10 min/w] for treatment of amblyopia ....
- .. investigated in 2 populations: England & Turkey.
- Each of these methods of treatment was equally effective as an initial therapy.
- If one form of therapy was ineffective or only partially successful, further improvement can be obtained by using an alternative method.
- Improvement with glasses alone not controlled
Maybe more isn’t always better…

MOTAS:

- Higher dose rates achieve the best outcome more rapidly but at a risk of accumulating excessive non-therapeutic hours of patching….patching for all waking hours is almost certainly excessive…. 
Tentative conclusions

- More is better
  ..but for many, less is fine

- Younger is better
Strabismic Amblyopia

- Does alignment result in better response to amblyopia therapy? ...or no need for amblyopia therapy?
Timing of amblyopia therapy relative to strabismus surgery Lam GC, Repka MX, Guyton DL. *Ophthalmology.* 1993 Dec

- 47 children < 8 y with both amblyopia and esotropia.
- 26: amblyopia fully treated before surgery
- 21: surgery before completing amblyopia therapy.
- 5/21 did not require amblyopia therapy after surgery even though they were still amblyopic before operation.
When PEDIG doesn’t work for your patient is it organic?

Not just amblyopia -

- recheck for ON Hypoplasia; disc should be > small circle on Welch Allyn
- Abnormal macula [OCT]

Amblyopia treatment failures 6/24 or worse more likely to have thicker maculas on OCT = macular hypoplasia p=0.006

Preliminary data from personal series - unpublished
When it doesn’t work for your patient: is it the Parents?

- Parents dislike parading an obviously defective child

- Parents don’t like inflicting discomfort on their child
Types of parents ……

- Type A:
  on Thursday we only did 5h 20m, so we made up for it on Friday with 6h 40m

- Type B:
  We’re careful to do it all the time.. but we forget sometimes when we’re busy….

- Type C:
  s/he hates it…. we haven’t managed for the last week…. s/he was sick… we were on vacation… we let the nanny look after it…. s/he only does it @ school…
Helping the parents: Therapeutic environment

- Some parents need help to maintain enthusiasm for a task which everyone finds difficult
- Keep the therapeutic environment alive / active e.g. ring daily
When it seems not to be working for your patient: maybe it IS working

It IS working but the 3 yo won’t do vision tests properly.
LE doesn’t get to Allen pix 6/30 BUT:
- Now accommodates for near
- It used to take +6 extra RE to cause fixation switch, now +3 will do it
- Functions normally with patch on

*Sweep VEP* can help doctor and parent anxiety
Is atropine better than patching for some children?

- Q’aire:
  parents who had used both atropine and occlusion at different times for their child
- 2/3 prefer atropine
- Does ↑preference mean better compliance → better effect?
Post- Darwinian treatments

1. Refractive surgery
2. Drugs
3. Unorthodox techniques
Refractive surgery

- Works in a significant minority of anisometropic amblyopes
- Safe in short term, probably in medium term
- Personal experience 0
Drugs: L-Dopa / Citicholine

- Anecdotally helpful in some cases of resistant amblyopia
- LK: Columbus information / consent forms and doses
The Antidepressant Fluoxetine Restores Plasticity in the Adult Visual Cortex

Jose Fernando Maya Vetencourt, et al.

Prozac Makes Old Brain Cells Young

- Research may explain antidepressants' effectiveness By Ed Edelson

Posted 4/17/08  THURSDAY, April 17 (HealthDay News)
The antidepressant Prozac has been shown to restore old brain cells to their more plastic youthful condition in animal experiments... possible new explanation for the antidepressant activity of the medication ..... could be used to treat other conditions caused by malfunction of brain cells...

CONCLUSION:

- Auricular point sticking combined with Tongshiji treatment for child ametropic amblyopia .... convenient manipulation, obvious and rapid therapeutic effect.
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