

EXAMINATION METHOD FOR INTUITIVE COLORIMETER

Set up

1. We provide a test plate which is placed into the viewing chamber via the slot on the side of the instrument. This test card contains random letters. We are not asking the patient to read anything at this stage; we are aiming to provoke some visual stress. The text is small, crowded and very stripy so hopefully this will induce some of the visual disturbances seen by the patient. If the disturbances are very severe you can cover half the text.

You can of course use your own test material here.

2. Attenuators pushed in

NB: pulling top attenuator out will reduce the brightness by 50%
pulling bottom attenuator out will reduce the brightness by 75%

3. Switch on A

4. Saturation at 0. This scale is arbitrary

NB: read from the left hand side of the marker

5. HUE at 0

NB: Hue changes the full 360 degrees of colour space

6. Make sure the window is open on the front of the instrument

7. Room lights are dim and patient is looking into instrument at working distance, wearing any reading correction.

Assessment

1. You should have an idea of the patient's symptoms from the sight test and overlay assessment. Whatever terminology the patient has used you can then use this throughout the examination. e.g. the patient may say they see "wiggly worms" on the page.

2. Explain to the patient that you are going to shine coloured light onto the page. The colour may reduce the "wiggly worms", may be worse or may be no difference.

3. The first stage is to find an AVERAGE hue the patient prefers.

With HUE at 0:

- increase sat until it stops (this will be around 30)
- wait 5 secs.
- reduce sat to 0

Ask for patients responses i.e. took “wiggly worms” away, made more “wiggly worms” or made no difference. Avoid asking the patient which liked clearer, use the word comfortable.

4. Note the response on the fan chart on your record form. The response can be put on the 0 HUE arm of the chart. You can use a scale of:

- +2: a lot better
- +1: a little better
- 0: no difference
- 1: a little worse
- 2: a lot worse

5. Move Hue to 30 and repeat step 3.

6. Repeat this step at 30 degree intervals around the colour wheel.

7. Repeat the step at HUE 0, 30 and 60 again to check the repeatability of the patients answers.

8. You will now have a completed fan chart. You now need to decide on the area of the chart which the patient has given the most positive answers. e.g. the patient may have given +2 answers at HUE 120, 150 and 180. The rest of the chart may have been negative responses.

NB: if you get very sporadic results with no real pattern, you may wish to carry out the assessment again or simply colour may not be the answer.

9. We now have an average HUE and need to refine the colour.

10. Move the switch to B (will let you move to full saturation)

11. Set HUE in middle of area of positive results i.e. 150 in above case.

12. Refine saturation first. This can be done in 2 ways:

1. ask the patient to adjust the saturation switch themselves to the most comfortable setting: as if tuning in a radio
2. You can adjust the sat. in a bracketing technique similar to cross cyl.

NB. It is always best to keep the saturation as low as possible.

13. Now refine HUE in the same bracketing technique. Work in 20 degree steps, then 10 degree, then 5 degree.

NB: some patients may be very precise and will want to work in 1 degree steps.

14. Once you have found the optimal HUE you may want to double check the saturation.

15. Finally check brightness using the Attenuators. With optimal Hue and saturation in place pull out the 50% attenuator (top slider) and ask the patient if they prefer this darker.

NB: most people will want full brightness.

Colour Match

You now need to need to match the colour in the colorimeter to a combination of lenses in your lens box.

1. On your disc there will be a colour match software programme. This is run off excel.
2. Double click on the Excel colour match Icon
3. click "don't update"
4. Click "ok"
5. along the bottom of the screen you will see a number of tabs with different headings. Click on DATA ENTRY.
6. At the top left corner there is 2 boxes for you to enter the chosen hue and saturation of each patient. Input these values then hit RETURN.
7. Each hue and sat will give you a new combination of lenses, denoted by a 1 in the relevant box.

e.g. if you impute the HUE 180 and sat 30 and hit return the lens combination will be TURQ D2 and GREEN B4 +A5

8. You can then go to your box of lenses and put this stack of lenses together and this should be the colour in your colorimeter.

9. The only other thing you need to look out for on this page is the box “To obtain lum. as with spectacles”

If the patient has preferred full brightness i.e. no attenuator pulled out and this box says no attenuator, you do not need to do any thing else. **THIS IS THE MOST COMMON SCENARIO.**

If the patient prefers full brightness and the box says 50% attenuator, then the programme is telling you that the saturation of the colour is too dark for a class room situation.

The best way to get round this is to manually reduce the saturation until the box says “ no attenuator”

10. If the patient prefers the 50% attenuator pulled out you can add grey lenses to the stack until the colour matches. You will have to use your eye for this one.

11. You can now place the lenses in the lens holder and show the patient. I like to leave the patient in the waiting room for 10 minutes with some reading material.

12. There are other advantages to the software.

Tabs along the bottom:

- Record/handout: can print off
- signals: will tell you if colour patient has chosen is likely to impair the recognition of traffic signals
- efficiency: Colorimetry is carried out under fluorescent lighting but the efficiency of the chosen colour can drop under daylight and incandescent
- Alternatives: will calculate alternative colours for daylight and incandescent. i.e. in theory you could have a patient with 3 slightly different tinted glasses.
- calibration: this has already been carried out for you