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Improving accessibility of patient information leaflets for visually impaired patients: A review of best practices

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Introduction

Patient leaflets are vital for effective communication and informed consent. Ensuring accessibility for visually impaired patients brings distinct challenges that ophthalmologists must recognise.

UK law obliges NHS and social care services to provide accessible information. However, practical guidance for ophthalmologists is limited and awareness is low. We set out to collate key recommendations to improve visual accessibility of written materials.

This includes considerations for low vision, colour blindness, and readability.

Low vision

Use sans serif fonts (e.g. Arial) in 12–14pt or 16pt+ for large print.

Align text left, use 1.5 line spacing.

Avoid ALL CAPS, underlining, and *italics*.

3, 5, 8, 0 can be hard to distinguish—choose readable fonts and confirm numbers in words if possible.

Use black text on white or yellow background; avoid glossy or thin paper.

If using colour paper, avoid tints over 10–15%.

Consistent layout: align titles, headings, and numbers in the same position on each page.

Use paragraph spacing to aid flow.

UKAAF UK Association for Accessible formats

Macular Society Beating Macular Disease

RNIB

Colour Blindness

Do:

Add textures, labels, or icons alongside colour.

Use high-contrast colour combinations.

Check designs with a colour blindness simulator.

Make key actions recognisable without relying on colour.

Don't:

Rely on colour alone to convey meaning.

Use red–green, blue–purple, or green–brown pairings.

Assume everyone sees colour the same way.

Rely on colour-only coding for important info.



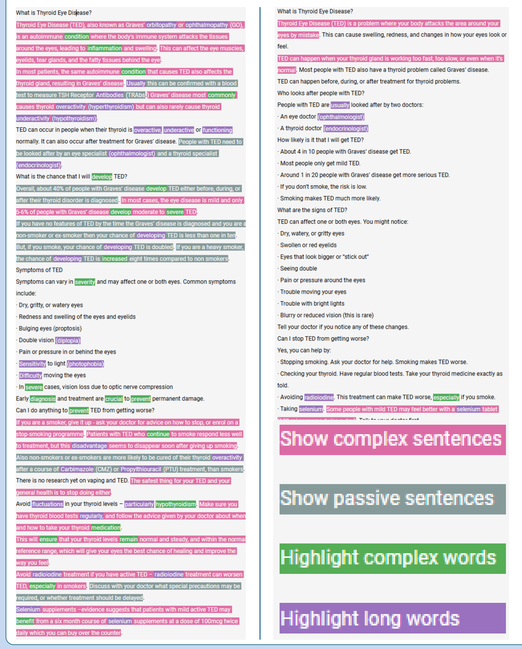
Green, red and brown as seen in achromatopsia, protanopia, deuteranopia and tritanopia.

PILESTONE COLOUR BLIND EXPERTS

Readability

We often assume readers have an adult reading level, but NHS data shows the UK average is 11 years.

The examples below show the same information on thyroid eye disease, written at reading ages of 16 (left) and 11 (right), highlighting how small changes in wording and layout can improve understanding.



What is Thyroid Eye Disease?

Thyroid Eye Disease (TED), also known as Graves' orbitopathy or ophthalmopathy (GO), is an autoimmune condition where the body's immune system attacks the tissues around the eyes, leading to inflammation and swelling. This can affect the eye muscles, eyelids, tear glands, and the fatty tissues behind the eye.

In most patients, the same autoimmune condition that causes TED also affects the thyroid gland, resulting in Graves' disease. Usually this can be confirmed with a blood test to measure TSH Receptor Antibodies (TRAbs). Graves' disease most commonly causes thyroid overactivity (hyperthyroidism) but can also rarely cause thyroid underactivity (hypothyroidism).

TED can occur in people when their thyroid is overactive, underactive or functioning normally. It can also occur after treatment for Graves' disease. Anyone with TED need to be assessed often by an eye specialist (ophthalmologist) and a thyroid specialist (endocrinologist).

What is the chance that I will develop TED?

Overall, about 40% of people with Graves' disease develop TED either before, during, or after their thyroid disorder is diagnosed. In most cases, like you disease is mild and only 3% of people with Graves' disease develop moderate to severe TED.

If you have no features of TED by the time the Graves' disease is diagnosed and you are a non-smoker or ex-smoker then your chance of developing TED is less than one in ten. But, if you smoke, your chance of developing TED is doubled. If you are a heavy smoker, the chance of developing TED is increased eight times compared to non-smokers.

Symptoms of TED

Symptoms can vary in severity and may affect one or both eyes. Common symptoms include:

- Dry, gritty, or watery eyes
- Redness and swelling of the eyes and eyelids
- Bulging eyes (proptosis)
- Double vision (diplopia)
- Pain or pressure in or behind the eyes
- Sensitivity to light (photophobia)
- Difficulty moving the eyes

In severe cases, vision loss due to optic nerve compression

Early diagnosis and treatment are crucial to prevent permanent damage.

Can I do anything to prevent TED from getting worse?

If you are a smoker you must get help from your doctor or clinic on how to stop, or enrol on a stop smoking programme. Patients with TED who continue to smoke respond less well to treatment, but this disadvantage seems to disappear soon after giving up smoking. Also non-smokers or ex-smokers are more likely to be cured of their thyroid overactivity after a course of Carbimazole (CMZ) or Propythiouracil (PTU) treatment than smokers.

There is no research yet on vaping and TED. We asked Ebiny for your TED and your thyroid gland is getting worse or not.

Avoid medications in your thyroid levels – particularly levothyroxine. Make sure you have thyroid blood tests regularly, and follow the advice given by your doctor about when and how to take your thyroid medication.

This will ensure that your thyroid levels remain normal and steady, and within the normal reference range, which will give your eyes the best chance of healing and improve the eye problems.

Intravenous methylprednisolone treatment if you have active TED – radiotherapy treatment can worsen TED, especially in smokers. Discuss with your doctor what special precautions may be required, or whether treatment should be delayed.

Selenium supplements - evidence suggests that patients with mild active TED may benefit from a six month course of selenium supplements at a dose of 100mcg twice daily which you can buy over the counter.

What is Thyroid Eye Disease?

Thyroid Eye Disease (TED) is a problem where your body attacks the area around your eyes by mistake. This can cause swelling, redness, and changes in how your eyes look or feel.

TED can happen when your thyroid gland is working too fast, too slow, or even when it's normal. Most people with TED also have a thyroid problem called Graves' disease.

TED can happen before, during, or after treatment for thyroid problems.

Who looks after people with TED?

People with TED are usually looked after by two doctors:

- An eye doctor (ophthalmologist)
- A thyroid doctor (endocrinologist)

How likely is it that I will get TED?

- About 4 in 10 people with Graves' disease get TED.
- Most people only get mild TED.
- Around 1 in 20 people with Graves' disease get more serious TED.
- If you don't smoke, the risk is low.
- Smoking makes TED much more likely.

What are the signs of TED?

TED can affect one or both eyes. You might notice:

- Dry, watery, or gritty eyes
- Swollen or red eyelids
- Eyes that look bigger or "stick out"
- Seeing double
- Pain or pressure around the eyes
- Trouble moving your eyes
- Trouble with bright lights
- Blurry or reduced vision (this is rare)

Tell your doctor if you notice any of these changes.

Can I stop TED from getting worse?

Yes, you can help by:

- Stopping smoking. Ask your doctor for help. Smoking makes TED worse.
- Checking your thyroid. Have regular blood tests. Take your thyroid medicine exactly as told.
- Avoiding radioiodine. This treatment can make TED worse, especially if you smoke.
- Taking selenium. Some people with mild TED may feel better with a selenium tablet.

Show complex sentences

Show passive sentences

Highlight complex words

Highlight long words

Example on the left uses dense text and complex terms, making it harder to access. The one on the right uses simpler language, shorter sentences, and better spacing, making it easier to read. This shows the importance of matching materials to average reading age for accessibility.