



**University
Hospitals Sussex**
NHS Foundation Trust

Colour vision deficiency

Orthoptic Department
St Richard's Hospital
Southlands Hospital

Patient information

This leaflet is intended to answer some of the questions of patients or carers of patients diagnosed with colour vision deficiency under the care of University Hospitals Sussex NHS Foundation Trust.

What is colour vision deficiency?

Colour Vision Deficiency affects approximately 8% of men and 1% of females. The phrase 'colour blind' is not strictly correct as affected people are rarely blind to colour but are less sensitive to particular colours and may have difficulty distinguishing between two different colours or between different shades of one colour. There are 3 main types of colour vision deficiency:

Protanopia

Absence of red sensitivity resulting in confusion between red, green, brown and some purple shades.

Deuteranopia

Absence of green sensitivity resulting in confusion between red, green, blue and purple.

Tritanopia

Absence of blue sensitivity resulting in confusion between blue and green. Yellow may also appear as grey or purple.

Why are there different types?

Colour vision deficiency occurs when the light-sensitive cells in the retina that interpret colour do not function properly. These cells are called cones and there are 3 types which process the three primary colours: red, green and blue. For normal colour vision, all three cone types must work correctly. When one of these types doesn't work properly, then the affected person will have problems with that colour.

Why are men more affected than women?

Faulty colour vision runs in the family and is carried on the X-chromosome. Men are born with one X and one Y chromosome, whereas women are born with two X chromosomes. Therefore, women can sometimes overcome the faulty gene with their second normal X chromosome but men don't have a second X chromosome to help compensate for the faulty gene. The most usual transmission is from maternal grandfather to grandson, through the mum as a carrier with one faulty X chromosome. Women will only have a colour vision deficiency if both X chromosomes carry similar abnormal genes.

Why does it matter?

Many people with a colour vision deficiency go through life with no trouble at all as it doesn't affect vision or general health. However, there are certain careers that require good colour vision:

- Pilots
- Certain jobs in the armed forces
- The Fire Service
- Police
- Train drivers
- Electrical engineers
- Workers in paint, paper and textile manufacturing.

How is colour vision deficiency treated?

Unfortunately, there is no cure but many people develop their own 'system' or learn to identify colours by other means. Specially tinted glasses or contact lenses may help in telling the difference between certain colours but cannot restore normal colour vision.

Contact numbers

Orthoptist:

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