Chiesi

global rare diseases

LHON Patient Forum

Virtual Meeting November 22nd 2023

Key recommendations

Build from existing materials

Guides and educational resources already exist to build from – promote and adapt what is there

Strengthen advocate-HCP networks

The community has good connections with some HCPs in some countries but needs advice and support in other countries

Leverage LHON day

A key opportunity to promote education and resources to both HCPs and the general community

Jointly engage in activities

Runs and similar patient association activities can be jointly held with the medical community to promote relationships, networking and common understanding

Continue to leverage IMP

IMP provides support and advice to the advocacy community and has experience and skills to share with the LHON community

University education

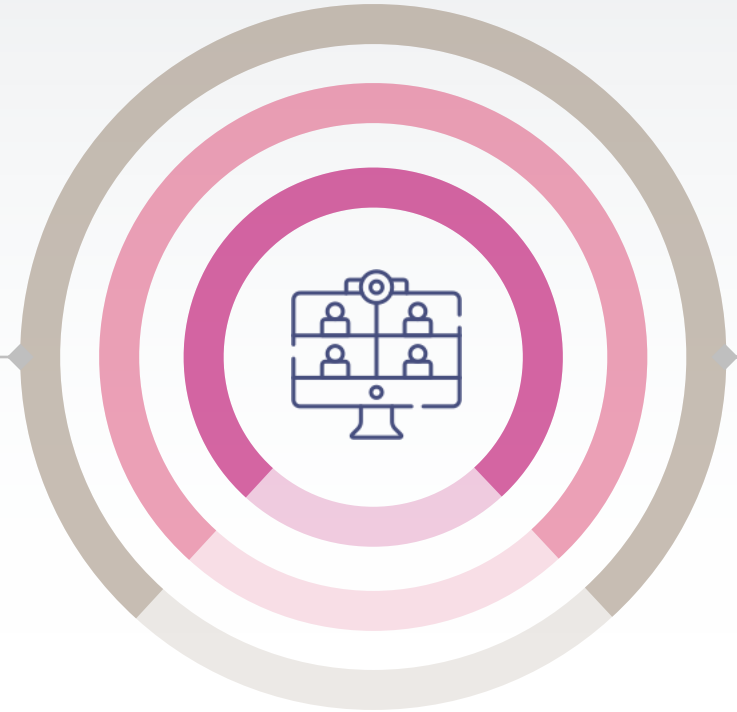
Partnering with medical societies to provide courses for medical students to train the next generation

Key stakeholders to educate and content to include

Target: HCPs, particularly ophthalmologists & neurologists

Content: Symptoms that could point to LHON

Approach: Joint activities with physician community



Target: Blindness and low vision groups have poor awareness of LHON

Content: Mitochondrial disease education

Approach: Engage with willing and motivated HCPs to cascade training out

22nd November 2023, a virtual patient forum with people living with LHON

Target: HCPs, particularly ophthalmologists & neurologists

Start from the LHON-aware
These doctors know their network and medical societies and can help promote education

Target neuro/opthalmologists
These are the doctors that need to be thinking LHON when a person presents

Be clear on trigger symptoms
Clearly outline the symptoms that should trigger suspicion *(e.g., painless loss of vision in one eye)*

Educate on mito-diseases
Many lack basic knowledge of mitochondrial diseases and this needs to be a foundation

Medical student education
With many knowledgeable doctors retiring, it is vital that a new generation is trained at university and beyond

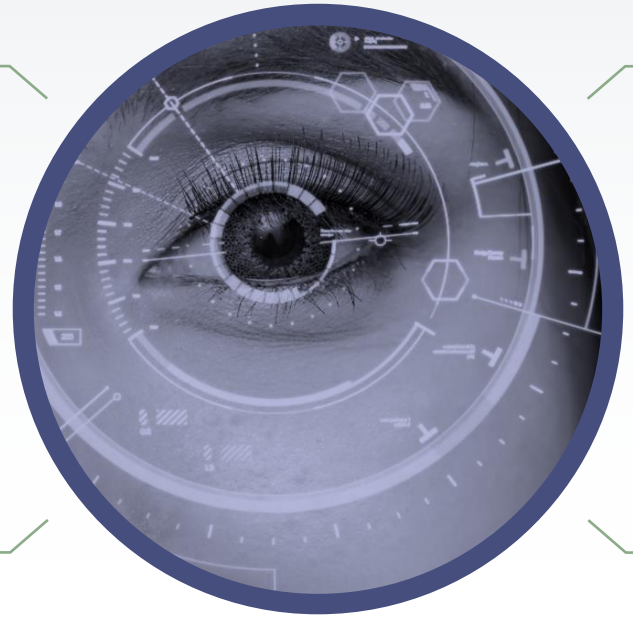
Also target low-vision clinics
These are where people will come for support and yet many lack basic knowledge about LHON

Target: Blindness and low vision groups have poor awareness of LHON

Lack basic information
These groups may be the first stop for many newly diagnosed people, but have no knowledge

Do not understand issues
At events, meetings and symposia, lack understanding of the needs of people with LHON

Could promote HCP education
These groups are bigger and have more resources than the LHON groups and could be a link to HCP education programs



Could promote awareness
These groups could be a conduit to give wider exposure to existing LHON materials

Symptom triggers
These groups could also promote awareness of symptoms that could point to LHON to both HCP and patients

Need mito-training
These groups focus much on glaucoma and AMD, and will need basic training on mitochondrial diseases

Education and experience sharing for LHON advocacy community

The LHON forum members discussed the intense impacts of their diagnosis and vision impairment and loss on their daily lives

They expressed a need to share experiences, tips and motivations through resources

A variety of methods used that take account of…

DAILY LIVING

Practical advice on how to cope with the diagnosis and the resulting loss or impairment of vision

CAREER

Some have had to abandon studies and career plans – and support for these situations will be helpful

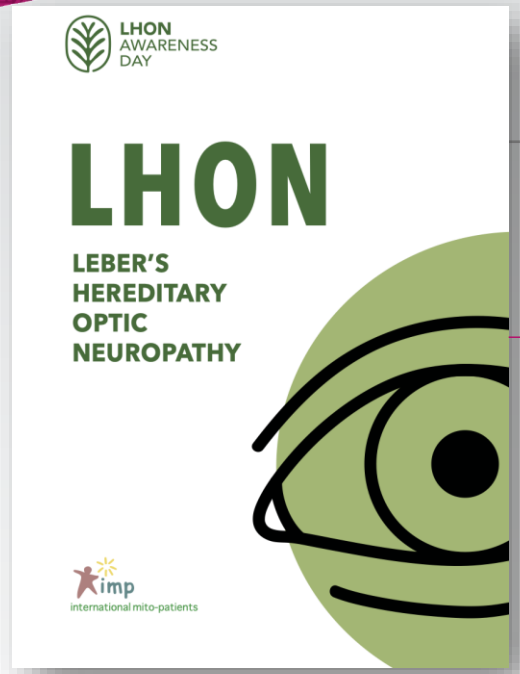
SCIENCE

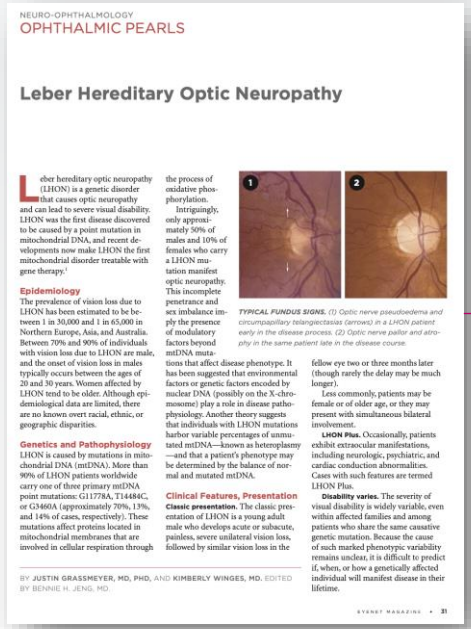
The complexities of mutations that cause LHON leads to the need to explain the science simply to those who are newly diagnosed

ADVOCACY

Tools, advice and best practices on how to build and strengthen networks with patients and HCPs

Build from existing materials




NEURO-OPHTHALMOLOGY
OPHTHALMIC PEARLS

Leber Hereditary Optic Neuropathy

Leber hereditary optic neuropathy (LHON) is a genetic disorder that causes optic neuropathy and can lead to severe visual disability. LHON was the first disease discovered to be caused by a point mutation in mitochondrial DNA, and recent developments now make LHON the first mitochondrial disorder treatable with gene therapy.[1]

Epidemiology

The prevalence of vision loss due to LHON has been estimated to be between 1 in 30,000 and 1 in 65,000 in Northern Europe, Asia, and Australia. Between 70% and 90% of individuals with vision loss due to LHON are male, and the onset of vision loss in males typically occurs between the ages of 20 and 30 years. Women affected by LHON tend to be older. Although epidemiological data are limited, there are no known overt racial, ethnic, or geographic disparities.

Genetics and Pathophysiology

LHON is caused by mutations in mitochondrial DNA (mtDNA). More than 90% of LHON patients worldwide carry one of three primary mtDNA point mutations: G11778A, T14484C, or G3460A (approximately 70%, 15%, and 14% of cases, respectively). These mutations affect proteins located in mitochondrial membranes that are involved in cellular respiration through the process of oxidative phosphorylation.

Intriguingly, only approximately 50% of males and 10% of females who carry a LHON mutation manifest optic neuropathy. This incomplete penetrance and sex imbalance imply the presence of modulatory factors beyond mtDNA mutations that affect disease phenotype. It has been suggested that environmental factors or genetic factors encoded by nuclear DNA (possibly on the X-chromosome) play a role in disease pathophysiology. Another theory suggests that individuals with LHON mutations harbor variable percentages of unmutated mtDNA—known as heteroplasmy—and that a patient's phenotype may be determined by the balance of normal and mutated mtDNA.

Clinical Features, Presentation

Classic presentation. The classic presentation of LHON is a young adult male who develops acute or subacute, painless, severe unilateral vision loss, followed by similar vision loss in the fellow eye two or three months later (though rarely the delay may be much longer).

Less commonly, patients may be female or of older age, or they may present with simultaneous bilateral involvement.

LHON Plus. Occasionally, patients exhibit extraocular manifestations, including neurologic, psychiatric, and cardiac conduction abnormalities. Cases with such features are termed LHON Plus.

Disability varies. The severity of visual disability is widely variable, even within affected families and among patients who share the same causative genetic mutation. Because the cause of such marked phenotypic variability remains unclear, it is difficult to predict if, when, or how a genetically affected individual will manifest disease in their lifetime.

TYPICAL FUNDUS SIGNS. (1) Optic nerve pseudoedema and circumpapillary telangiectasias (arrows) in a LHON patient early in the disease process. (2) Optic nerve pallor and atrophy in the same patient late in the disease course.

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LA STORIA DI GABRIELLA

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La Storia di Gabriella

mio figlio si è ammalato quando aveva vent'anni non ancora compiuti, la diagnosi era neuropatia ottica ereditaria di Leber (LHON), una malattia mitocondriale che colpisce il nervo ottico. In poco tempo, è arrivato a vedere pochissimo. Prima di lui, mia sorella aveva perso la vista a 19 anni.

Io invece ho 59 anni. Fino all'anno scorso esercitavo la mia professione di insegnante nella scuola primaria, ma pochi mesi fa mi sono accorta per caso che all'occhio destro non vedevo bene. Perdo gli occhiali, li vado a rifare e scopro che all'occhio destro la vista era fortemente danneggiata. Poi, piano piano, ho cominciato a non vederci anche al sinistro. All'inizio ho cercato di fare la vita normale, ma, quando anche il secondo occhio mi ha abbandonato, sono cominciate le difficoltà serie. Vedo tutto offuscato, i colori si confondono, non so cosa c'è nel piatto, riconosco solo le sagome delle persone. Ho dovuto smettere di lavorare. È difficile e, soprattutto, è difficile far capire agli altri quanta difficoltà hai a vedere così poco e cosa stai provando.

GUIDES

There are already resources that can be used and adapted for HCPs and general vision impairment groups:

- IMP LHON Resources to support awareness day[1]
- American Academy of Ophthalmology Guide[2]
- Personal experiences[3]

1: https://www.mitopatients.org/mitodisease/lhon
2: https://www.aao.org/eyenet/article/leber-hereditary-optic-neuropathy-6
3: https://www.mitopatients.org/mitodisease/stories/story-of-gabriella

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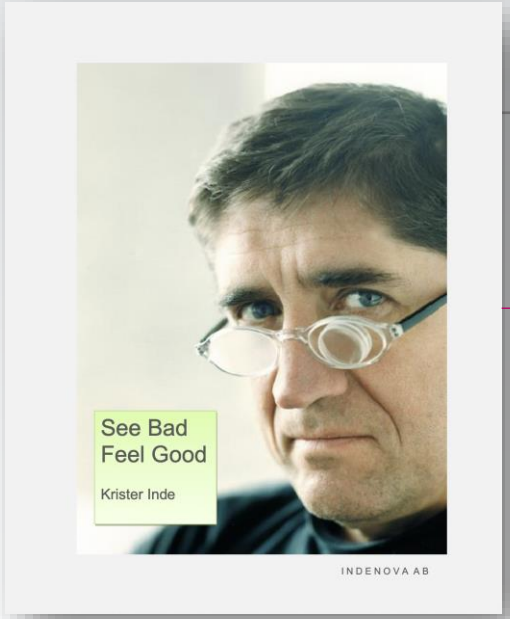
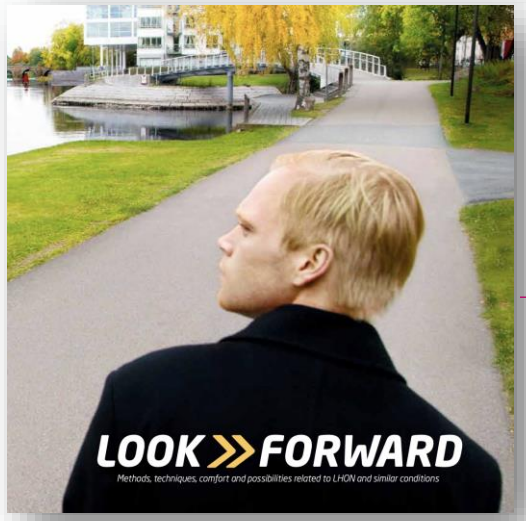
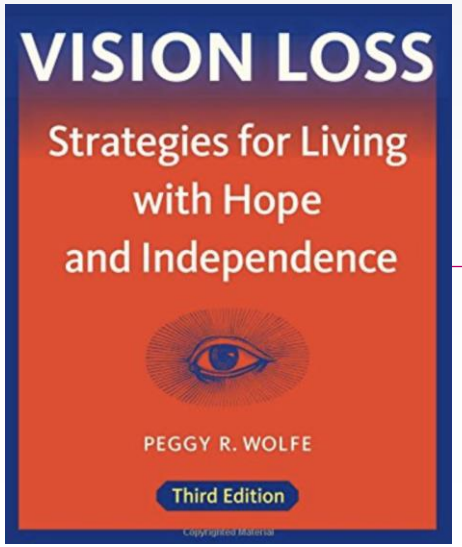
Build from existing materials







Books

There are books written by members of the LHON community to help others as well as general books on adapting to vision loss

- See Bad, Feel Good[1]
- A range of books available on Amazon
- Look Forward[3]

1: https://www.euroblind.org/sites/default/files/media/conference/see_bad_feel_good_revised_version_20130911.pdf
2: https://www.amazon.com/Vision-Loss-Strategies-Living-Independence/dp/0979294533
3: https://lhon.se/wp-content/uploads/2015/03/seframat-en-lr.pdf