

## Macular Society Key Note Talk Saturday 27 September London

1. Introduction and welcome
2. I Asked My Patients what you would wish to hear.
3. Talk about the types of Age related macular degeneration and then the new treatments and research. Great deal in the newspapers and I encourage my Patients to bring these along as I cannot read all the newspapers!
4. Surprisingly and I am sure you sympathise that many new patients ask what is Macular degeneration
5. 1875 Hutchinson “Symmetrical retinal disease occurring in elderly” It had remained the leading cause of Irreversible Sight loss”
6. Very little we could do prior to 2000 the new treatments that only started in 2000 and the Biologics in 2005.
7. So what is Age Related macular degeneration?
8. If you look at peoples retina you can divide them in to a number of typical groups
9. Like a pair of Jeans
10. Normal – the vast majority of people  
Protect your eyes – No smoking, Sunglasses Crizal Blue filters,  
Diet rich in vegetables, No to vitamins Regular eye checks
11. Drusen – These are white spots at the back of the eye. No one knows why they form, they arrive quickly evolution  
Eculizumab Trial – Negative for Age related macular degeneration, but now looking at drusen progression
12. Dry Age related macular degeneration  
Multifactorial disease Age, Diet, Smoking, Light and genes
13. – Vitamins AREDS II  
Modulating Immune System  
Genetic  
C Reactive Proteins, Activated Macrophages  
Phase III trials – Iluvien, Doxycycline, Sirolimus, Compliment

14. Geographic Atrophy – Several studies MAHLO  
LAMPALIZUMBA study first positive result. 20% decrease but  
44% with particular Gene type CF1  
Divesting slow loss of vision
15. Wet Age related macular degeneration  
Wonder drugs  
Avastin (Bevacizumab), Lucentis (Ranibizumab), Eylea  
NICWGuidance – Avastin (Bevacizumab) out side this.  
Which is best?  
Nurse Injections
16. Anti-VEGF can only stop the progression or improve by a  
few lines. It cannot work miracles to heal very damaged retina. So  
message is tell everyone, tell them to see their Optometrist early if  
anything changes in their vision especially if they are in the high  
risk age of 70+  
So popular that Nurses are now doing this very successfully I have  
to say to my surprise.
17. Catch early keep 6/6 - Avastin
18. When to stop treatment. I had patient who has had 18  
injections and the vision remains less than the top letter of the  
chart ie poor. Are we doing anything really for him for all this  
treatment? The Macular remains wet and drying it with the  
injections does not improve the vision. Often there can be a knee  
jerk reaction in the clinic, with staff seeing the macular is wet and  
re listing for injections. What one needs to do at times is Q is the  
treatment really doing any good? His Other eye has no Age related  
macular degeneration and sees well. He is very happy overall with  
his vision. Thus we decide to stop. It is a brave step,  
counterintuitive to doctors to stop treatment.
19. “RNIB Loose you sight in 3 months campaign”  
Wet Age related macular degeneration develops with in a s I have

seen patients dry one week wet the next – The earlier one treats, the better the starting vision the better the outcome. I have many patients whom we started very early with vision better than that for driving and their vision has never fallen below driving level standard or even improved to the bottom line of the chart.

20. **RAPID ACCESS.**

21. **OPTICIANS OCT** Seek them out

22. How to detect it **EARLY**– Amsler, Opticians, Photos.

23. Forsee Home Monitoring system for Wet Age related macular degeneration

Earlier Detection + Earlier Treatment = Better Visual Outcomes  
Trials shown 94% of patients using Forsee and converted to wet Age related macular degeneration kept their Vision compared to 62% using other methods eg Amsler.

24. **End Stage** Age related macular degeneration

25. Q Which is best ? Dry or wet?

26. Surprising how long patients go on for, keeping their sight

27. New imaging technology – OCT, Swept OCT, OCT angiography.

28. **New Drugs Traditional Medicines eg Aspirin, Steroids  
Biologics – Proteins – Delicate short acting**

29. **Nanoparticles** Next generation to target cells>

30. Several centres developing proof of concept to early safety trials aimed to deliver drugs to the eyes.

Justin Hanes Prof at Centre for Nanomedicine at Wilmer Eye Institute. & Prof Corderio Imperial

Nanoparticle technology promises to topically deliver drugs to the back of the eye. Just as Biologics was the new Drugs of 2000,

Nanoparticles will be the new drugs the next decade...  
Injections are just not sustainable

31. Biologics – proteins – drops – Tear film and corneal barrier

**Big** molecules 100 KDa

Nano-particles at “One Billionth of a meter”

Potential for improved and targeted drug delivery – Why?

You can make the Nano-Particle bind to a certain cell type and then release the Drug also attached – ie **targeted drug delivery** on the cellular level.

Modified Nano-particles can penetrate the eye topically carrying with it the drug enclosed with in.

Like a train – the Nanoparticle is the engine taking the Carriages across the hostile cornea into the eye. The Carriages are released and the drug in this case Anti-VEGF released into the back of the eye to work.

Very clever.

Chen has done this with an anti-VEGF drug Axitinib, which is smaller than Lucentis (Ranibizumab) but lasts less than a day, so needs daily dosing. It has been attached to a nano-particle and trials in Rabbits has shown it reaches the back of the eye in therapeutic levels.

This is know as translocational Science applying the materials science and chemical engineering to drug formulation.

32. **Gene therapy**

Many units are developing this.

Human genome has been cloned

Coding for individual proteins has been done and know.

Take Adeno Virus capsid and can splice in your Gene.

This infects the cell like the common cold

The DNA gets incorporated into the cell and Protein produced

Cell begins to act normally

Condition cured!

Dream or reality ?- It is happening in trials in a number of specific conditions, not Age related macular degeneration though as not a

genetic condition.

33. **Stem Cells** No talk would be Complete without this popular topic. Our Prof Keving Gregory Evans at Imperial The Western Eye Hospital is now leading this field in University of Columbia in Vauncover.

Source material Problems – Umbilical cord cells expensive not popular. Pluripotent Stem Cells

Technical problem of inserting these cells into the eye and getting them working. This is where we are at. We will all be reading the newspapers to hear more on this I am sure.

34. Major surgery like rotating the retina has not caught on. But people are now trying Surgery Autologus retinal pigment epithelial transplants, or transplanting healthy retinal pigment epithelial cells progressing.

35. Retinal Prosthesis from Second Sight trials in AMD

36. Implantable telescopes – Not for end stage Promising developments for some people.

That is where we are at present and where the future is,

A Few Tips my patients suggested passing on:

37. **Advice** when Seeing the doctor Q The doctor did not tell me anything – Do Ask questions, take a piece of paper in with questions, and to make notes. Take a friend or relative., Modern phones have apps to record doctors consultations, ask if you can record then you can listen again later.

Ask for information, handouts, my patients go with many

38. **Be Proactive** with your Appointments My appointment got changed, lost, or I forgot what should I do? If you have wet this is important, phone the co coordinator every hospital has one.

39. They can do nothing for me – True but while we may not be able to cure you, we can make the world bigger – LVA, Magnifiers, binoculars, etc...

The future is incredible exciting for Retinal eye diseases. There will be new Drugs, there will be new treatments. And one thing I have noticed is I am signing for **Fewer blind or Several impaired sight Registration forms.**

**Thank You for listening.**

40.

They say not to have my cataract removed..  
Frankly beneficial

41. Spread the word, Tell your friends, and tell them to tell their friends. One of my favourite phrases is that my 90 Year old patients after cataract operations can see the bottom line of the chart, if you cannot or your friend cannot – there is a reason – and one must never assume this is just your glasses. Most likely it is something, may be a cataract but may be fresh Wet Age related macular degeneration that needs urgent treatment. The Royal National Institute for the Blind slogan that you can loose your vision in 3 months may be dramatic and scary but for some it is a reality, the window of opportunity to treat and keep good vision is quite small.

Joan's Final Cuppa – Local support groups are terribly important. They spread the word, give support, Meet the local consultants in an informal environment. But does require local champions to organise events – I

wonder who will take over from Joan? Please think about organising local events.