DIABETIC RETINOPATHY TEACHING PROGRAMME

15th- 17th April 2019

MALAWI-FIFE LINK

Background

Screening for diabetic retinopathy prevents blindness. There is no systematic screening programme for diabetic eye disease in Malawi and people are presenting when they have lost vision and it is too late for treatment.

Our aim has been to develop capacity for screening and treatment for diabetic retinopathy. Most recent figures put the population of Malawi at just over 18 million. The number of consultant ophthalmologists working in Malawi is very gradually growing following the development of a training centre in Blantyre, but this number has only risen to 8. This is in contrast to NHS Fife, which has the same number of consultant ophthalmologists for a population of less than 400,000 people.

We therefore identified the need for training of other staff within Malawi to manage the workload. To achieve this we arranged and delivered a teaching programme for health care professionals working across all regions of Malawi. This teaching programme began in 2015 and to date we have taught around 206 ophthalmic clinical officers (OCOs), ophthalmic technicians (OT), nurses and optometrists. This year we had 64 participants that attended the course and provided feedback. There were 18 OCOs, 26 OTs, 15 optometrists, 4 nurses and 1 OCO/Cataract surgeon. 1 OCO who has previously attended the course was also present. Participants were from all regions of Malawi as usual including the far northern border with Tanzania.



Image 1: Map of Malawi. Delegates were asked to demonstrate the locations of their clinics to estimate how far each delegate had travelled for the course.

Teaching team

Fife team:

- Dr Caroline Styles (Consultant Ophthalmologist and Lead Clinician for Diabetic Retinopathy Screening DRS Scotland)
- Dr Anne Sinclair (Associate Specialist, Fife)
- Dr Roxanne Annoh (Specialist Registrar, Edinburgh-Fife)
- Mrs Lynsey Scott (DRS Team Leader/Senior Grader for DRS Fife)
- Dr Martin Anderson (Specialist Registrar, Edinburgh-Fife)

Malawi team

- Dr Joseph Msosa (Consultant Ophthalmologist, Lilongwe)
- Dr Moira Gandiwa (Ophthalmology Registrar, Blantyre)
- Dr Shaffi Mdala (Ophthalmology Registrar, Blantyre)
- Dr Thoko Zungu(Ophthalmology Registrar, Blantyre)
- Dr Esther Misanjo (Ophthalmology Registrar, Blantyre)
- Dr Patty Mopamboli (Consultant Ophthalmologist, Lilongwe)



Image 2: Teaching team of the 2019 Diabetic Retinopathy Screening Workshop in Lilongwe

Learning objectives for the course

- Understand why screening is important
- Know how to screen
- Recognise features of diabetic retinopathy
- Discuss the result and outcome of screening with a patient and provide appropriate advice
- Give advice to patients on healthy lifestyle in diabetes and on other possible complications

- To understand the management options for sight-threatening diabetic retinopathy
- Update of grading skills and referral protocols for diabetic retinopathy using fundus photography (for graders only)
- Plan how can you prevent one person per week going blind from diabetes in Malawi

Programme

The 3-day course consisted of lectures and small group teaching sessions (with all of the teaching team leading groups). All delegates were provided with Arclight ophthalmoscopes to use as a tool for screening. The first two days included a session for examination of patients using the Arclight and slit lamps (see timetable).

Teaching material in a pack for each delegate was provided including handouts from lectures, Arclight instruction page and laminated diabetic retinopathy referral guideline posters for local clinic rooms.

Details of lectures

Diabetic retinopathy screening in Malawi; past, present and future

Dr Moira Gandiwa presented the programmes currently running at both central hospitals in Lilongwe and Blantyre. We discussed the process required to set up screening in the hospitals emphasising that the aim of this teaching course was to commit to setting up screening services at the home institution.

Features of diabetic eye disease

Dr Anne Sinclair introduced the delegates to the retinal features seen in diabetic eye disease and how to identify them. The delegates were taught what grade of retinopathy this represents and therefore the risk of developing sight threatening diabetic eye disease for this person. The adapted grading scheme based on International Council of Ophthalmology guidance was introduced. This has been altered to allow for the available resources in Malawi following feedback from last year's course and discussion with the 2 medical retina specialists in Malawi.



Image 3: Lecture on retinal features of diabetic eye disease by Dr Anne Sinclair.

Diabetes

A local consultant physician (Dr Jonathan Ngoma) informed the group of the pathophysiology and management of diabetes so that they are aware of other complications that can arise from this systemic disease. Delegates felt that they had gained a much better understanding of the condition and the importance of lifestyle management advice to patients.



Image 4: Lecture on pathophysiology of diabetes by Dr Ngoma.

Diabetic maculopathy

Dr Caroline Styles introduced features and classification of diabetic maculopathy. There was emphasis on features and management of sight-threatening maculopathy and the advent of intravitreal injections in centre-involving macular disease.



Image 5: Lecture on diabetic maculopathy by Dr Styles.

Patient education

Olive is a retired nurse who delivers patient health talks before every diabetes clinic. She taught the delegates about diet, hypoglycemia, control of blood sugar and complications of diabetes in an interactive way. Malawi has an active patient association and a patient volunteer Martha spoke passionately to the group about how she manages her diabetes and what it is like to live with a chronic disease. Many of the delegates reported that they feel able to give health talks to their church groups and diabetes clinics as a result of this training, which will raise awareness of diabetes and the eye complications in the community.



Image 6: Diabetic Patient Education by Martha and Olive.



Treatment of diabetic eye disease

Many delegates work vast distances away from the central hospital and therefore it is important that if they identify a person who requires treatment for their diabetic eye disease that they can explain what treatment will involve.

Dr Annoh and Dr Anderson therefore delivered a lecture on treatment of sight-threatening diabetic eye disease, including laser treatment, intravitreal injection therapy and surgery. The talk was followed by a visit to the laser room at Kamuzu Central Hospital so that the delegates are able to counsel their patients about treatment and prevent non-attendance for this important treatment. Delegates also had an opportunity to visit the fundus camera and have photos of their retina to see how the equipment can be used for diabetic retinopathy screening.



Image 7a/7b: Lectures on the treatment of diabetic eye disease by Dr Anderson & Dr Annoh

Small group teaching

(i)Examination of patients/simulated eyes

All delegates had the opportunity to examine patients with diabetic eye disease using the Arclight and/or slit lamp microscope. They were also provided with simulated eyes with different stages of diabetic retinopathy permitting them to classify accordingly and highlight whether they would refer or monitor.

(ii) Group discussions

We split into 8 groups to look at a series of retinal photographs and cards to examine and discuss grade of retinopathy, whether to refer to hospital, and how to discuss the outcome with the person. We presented a series of scenarios to discuss to raise awareness of how diabetes affects different age groups and emphasised pregnancy as a group to be screened. We also explained the legal implications for driving in patients with sight-threatening diabetic retinopathy.



Image 8: Delegates in small group teaching sessions on diabetic retinopathy classification.

Grading diabetic retinopathy with fundus photography

In Malawi, camera screening and grading is available in the three main centres, in Lilongwe, Blantyre and Mzuzu, where laser treatment is also provided. The screener/graders had each undergone training in the past, but a need for updating of knowledge and practice was identified. Lynsey Scott, senior grader with Fife DRS, supported by Dr Anne Sinclair, held small group teaching sessions with 4 OCOs/OTs in using fundus photography for grading diabetic retinopathy over the workshop period.

After assessing the learning needs of the group,

- a) the delegates had a clinical update on grading skills in line with the international classification scheme. Emphasis was made on applying DRS grading standards in line with local agreed standards and the importance of sensitivity and specificity in relation to referrals was backed up with the development of a Standard Operating Procedure. This was jointly developed between Lynsey and the graders, and will be disseminated to those who had been unable to attend in person.
- b) The Malawian graders are now establishing a network so that they can share their knowledge and experience.
- c) Data collection by the camera graders was discussed and, together with Lynsey, they produced a new data set which will enable them to audit their referrals more easily.



Image 9: Lynsey Scott and delegates with the fundus camera

DIABETIC RETINOPATHY TEACHING PROGRAMME April 15th-17th 2019

MON AM	Registration	
9-12.30	Diabetes Retinopathy services in Malawi; the past, present and the future	JM/CS/PK
	Introduction to Arclight	CS/All
	Coffee	
	Features of diabetic eye disease	Anne
MON 2-3.30PM	Examination of patients	All
3.30-4.30	Small group teaching	All tutors
TUES AM 8.30-9.30	Diabetic maculopathy	Caroline
9.30-10.00	Management of diabetes in Malawi	Jonathan Ngoma
10.00-10.30	Coffee	
10.30-11.30	Diabetes - Providing advice for patients	Diabetes Specialist Nurse & Patient representative
11.30-12.30	Clinical scenarios	Small groups- all tutors
TUES 2-3.30PM	Examination of patients	All
3.30-4.00	Features of diabetic eye disease	small groups- all tutors
4-4.30pm	Data collection	All
WED AM 9-9:45	Treatment of patients with diabetic eye disease	Roxanne/Martin
9:45-11.00	See laser machine/camera Feedback forms & Coffee	M
11-11:30	Assessment	
11:30-12.30	Lunch	
12:30-2pm	Assessment Feedback and Prizes Discussion of Feedback in small groups Certificates and group photo	

Assessment

All participants undertook a written assessment to ensure they had absorbed the relevant information from the course. We were pleased to see that everybody passed with the vast majority achieving scores of 85% or higher. 3 delegates achieved full marks (100%) and were awarded prizes for their efforts. 4 delegates achieved scores of \geq 98% and were awarded runner-up prizes.

Feedback

1. How useful for your day-to-day work were the activities and meetings that took place during this VISION 2020 Links visit?

Extremely useful	Useful	Neither not useful / useful	Not useful	Not at all useful
47 - 87%	7 - 13%			

2. How useful for your institution were the activities and meetings that took place during this VISION 2020 Links visit?

Extremely useful	Useful	Neither not useful / useful	Not useful	Not at all useful
44 - 81%	10 - 19%			

3. How much of what you have learned on this visit was new for you?

0-20%	21-40%	41-60%	61-80%	81-100%
	10 - 19%	23 - 43%	15 - 28%	6 - 11%

4. How do you rate the learning through a VISION 2020 link-training visit?

Extremely high	High	Neither high/low	Low	Extremely low
29 - 55%	23 - 43%	1 - 2%		

5. Would you recommend participation in the VISION 2020 Links Programme to other eye institutions?

Extremely likely	Likely	Neither likely / unlikely	Unlikely	Extremely unlikely
44 - 81%	10 - 19%			

- 100% of delegates were confident using the Arclight ophthalmoscope independently for screening, of which 72% were confident enough to teach others how to use the device
- 100% of delegates were confident in recognising the features of diabetic retinopathy, of which 59% were confident enough to teach others.
- 98% were confident in discussing with patients why eye screening is important
- 96% were confident what to do when diabetic retinopathy is detected
- 96% were confident to discuss the results of screening with patients and the treatment they may require
- 93% were confident in understanding the general principles of good diabetes care and would be able to explain this to patients
- 91% understood the importance of diabetic retinopathy screening in Malawi and their role in implementing this in their regions.

Finally within the feedback we asked the participants how they would change their practice in the future. This prompted discussion about how to develop screening services within the local community, how to educate colleagues and how importantly how to educate communities about the potential risk diabetes can have on sight. We provided delegates within each region with a comprehensive logbook, to allow documentation of all patients screened, the diagnosis made and the referrals onto secondary care for data collection.

Change in future practice	Number of delegates	Time Frame
Starting screening for diabetic retinopathy/ continue screening for diabetic retinopathy	42 (6 specified continuing diabetic screening)	7- within amonth4- did not say31- within a week

Start screening women in pregnancy	11	11- immediately
Liaise with NCD/Medical Clinics	10	10- within a week
Education of patients on diabetes and retinopathy screening	14	14 – within a week
Educate colleagues and disseminate learning	8	8 – within a week
Data review, monitoring and evaluation	3	3 - Monthly
Organise equipment and dilating drops	2	2 – within a week
Notify District Health Officer about screening	2	NA
Check visual acuity of patients	3	3 – immediately
Ask all patients to have their blood sugar checked	1	1 – within a week
Engage in public health intervention programme	1	1 – within a week

Feedback comments

16 – positive feedback on training, eg:

- Training was successful, knowledgeable and participatory;
- the presentations were simple and clear to understand, the training has been so great with positive impact, I'm hoping to see diabetic retinopathy screening to be implement in all districts across Malawi, I will take part to support this initiative.
- It was an interesting refresher programme, the presentations were nice. It has been a good experience for we have learned a lot of things and made me confident to screen diabetic patients.
- This has been a better opportunity for me to learn something I did not know. More trainings like these, then we will be able to help diabetic patients from getting blind.
- I am very thankful to the organisers of this meeting because it is the basis for the prevention of vision loss in patients with diabetes.

- 5 issues around equipment and supplies:
 - Need more equipment, eg. 78D lens, also dilating drops at Lilongwe DHO (this hospital has no Slit Lamp)
 - To ensure good screening, I will need a supply of mydriatic drops which have been out of stock for a year at my hospital.
 - We have problems with equipment like 78D to see clearly at Slit Lamp.
 - Would like to know if there may be a possibility of obtaining more artificial eyes to the College of Health Sciences for learning purposes because they were really helpful.
 - I will introduce a screening programme at my church for diabetes because I have all the equipment.
 - To have thorough screening, we will need a 90D lens, which we are lacking. I have enjoyed this training very much (lens provided).

1- Improvements to the teaching:

• Next time, we should have a brief introduction to anatomy, for those who have no basic knowledge in ophthalmology

14 - Refresher courses for the future or electronic learning:

- There should be enforcement laws by Vision 2020 that all member countries should have all working materials so that early diagnosis and preferred treatment is done on time.
- There should be periodic online refresher or other DR related materials sent to our emails.
- This training should be done again in the near future so that we can be given a chance to present the data based on how many diabetes patients are screened and other experiences we have encountered.
- Training was helpful and should be done frequently in order to keep reducing the problems of people who go blind due to diabetic retinopathy.

Certification

All the participants completed the course, passed the assessment and gave feedback were awarded a certificate for their hard work.

Outcomes

Diabetic retinopathy screening has been undertaken in Lilongwe diabetes clinic since late 2014. The graph below shows the numbers of patient screened in 2015-16. The reduction in Jan 2016 is due to losing a key member of staff. The numbers then increased for most of the year again. The key member of staff has returned to work in 2017. The numbers of people having laser treatment has increased over the 2 years.



Graph showing numbers of people with diabetes screened and treated with laser in KCH, Lilongwe

A great achievement is that over the 5 year programme, we have successfully trained every OCO in Malawi in diabetic retinopathy screening. This is an incredible feat and will no doubt help to identify sight-threatening disease that can be treated if detected early. We envision that this will strengthen screening across the country and help with obtaining regional documentation of patients screened and referred using the provided logbooks. This will help with data collection on the number of patients screened within each district and the number of patients referred and/or treated in secondary care.



Image 10: The course participants proudly displaying their certificates alongside the teaching staff