

# Diabetic Retinopathy Network laser training programme

BY NICK ASTBURY, DENISE MABEY, JOACHIM KILEMILE, WILLIAM MAKUPA, MARCIA ZONDERVAN

The VISION 2020 Diabetic Retinopathy Network (DR-NET) was established in 2014 to tackle the increasing burden of diabetes and diabetic retinopathy (DR) in developing countries [1]. By forming a network of long-term LINK capacity-building partnerships, learning and best practice can be shared and integrated into national health systems. The DR-NET has grown in the last five years into 17 DR-NET LINKS between centres in sub-Saharan Africa (SSA) and the UK, five Caribbean-UK LINKS, four Pacific Island partnerships and new LINKS with China and India. The key initial aim of the DR-NET was for every participating centre to treat one more patient per week as an achievable starting point to address the need for expansion of DR screening and treatment services in low- and middle-income countries.

## Laser treatment

A mainstay of treatment has been and still is (despite the advent of anti-VEGF intravitreal injections), focal or panretinal laser treatment (PRP) to treat diabetic maculopathy or proliferative retinopathy. Laser training has been identified as an area requiring urgent attention in the DR-NET centres. In SSA there is a shortage of trained ophthalmologists and relatively few have been sufficiently trained in laser treatment. The quality of treatment may therefore vary and often there is no process of evaluation or audit in place.

A laser training course was therefore developed and rolled out to all the DR-NET partners to help ophthalmologists and trainees to acquire competency in safe laser treatment for their patients.

## Laser training manual

The first step was to compile a manual for trainers in order to standardise training in laser treatment across all the centres and countries of the DR-NET. Medical retina specialists came together to share their learning and resources. The manual is primarily

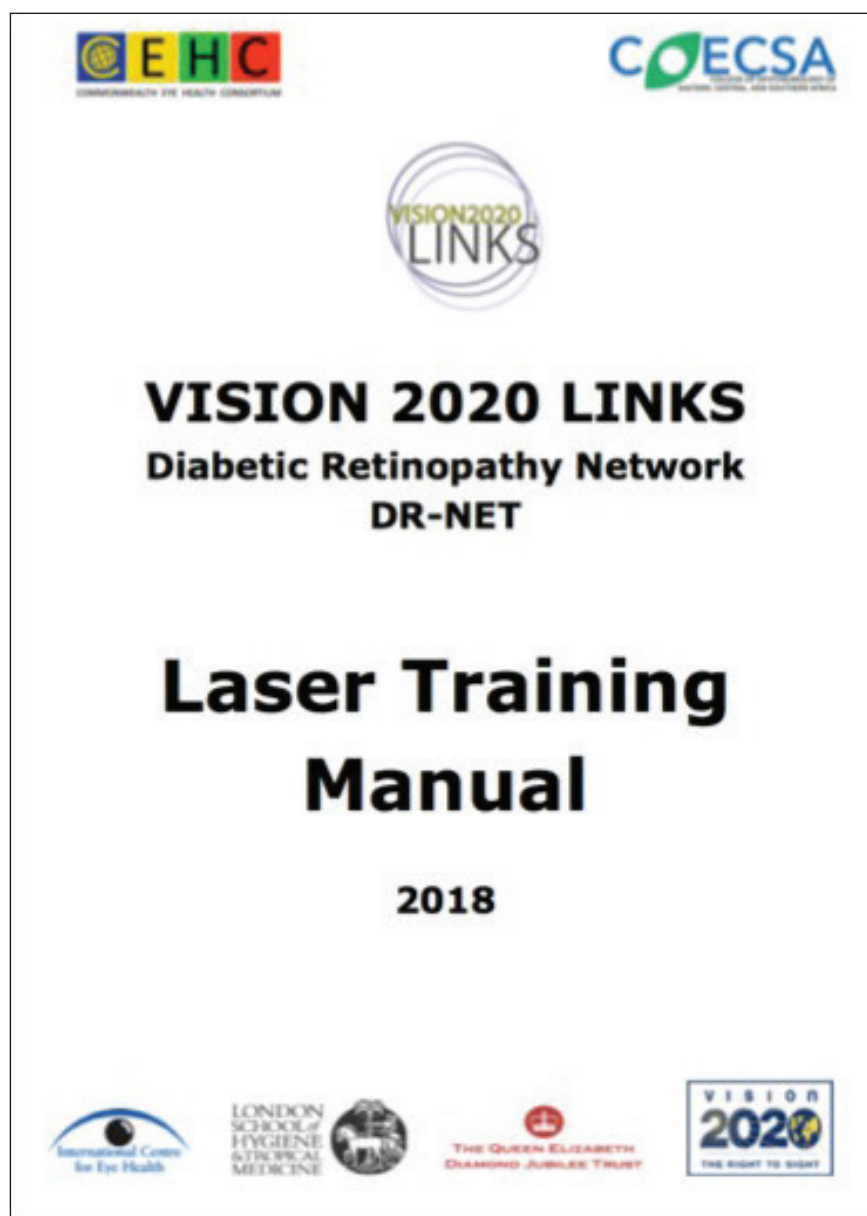


Figure 1: Laser Training Manual.

intended as a guide for trainers to aid delivery of the laser-training course.

## Laser training course

The 17 DR-NET LINKS from SSA and the five from the Caribbean were invited to take part in the training course. From each of the participating LINKS, a UK

consultant ophthalmologist travelled to their LINK partner to deliver the two-day course jointly with their counterpart. The course is aimed primarily at individuals with existing responsibility for laser treatment, whether they are trainees or established practitioners who want to refresh their skills. In many cases the

course formed part of a broader training visit from the UK partner including nurses and screener / graders.

Course participants were sent pre-course learning materials covering the management of DR and the indications for PRP or focal laser. These topics are covered in the International Council of Ophthalmology (ICO) guidelines for diabetic eye care [2], which formed part of the pre-course learning materials. Participants' knowledge was assessed at the start of the course and at the end.

## Course programme

### Overview

Days 1 and 2 were a mixture of didactic lectures and practical sessions, with the emphasis on lectures on the first day and practical training with pre-booked and consented patients on the second day.

### Pre-course assessment

Assessment images were made available on a data stick to accompany the manual. The purpose was to assess participants' confidence to identify, classify and treat patients with DR. Clinical slides and photographs with questions were used in conjunction with a scorecard. The exercise was repeated at the end of the course.

### Didactic lectures

PowerPoint presentations covered topics including laser safety, how to do PRP, how to do macular laser and how to manage patients with DR who need cataract surgery. Practical aspects were also discussed, including the care and maintenance of equipment, what to do if the laser breaks down, the availability of technical help and the importance of having a maintenance contract.

### Practical sessions

These covered:

- Laser orientation
- Patient preparation and counselling (using competency assessment framework as a guide)
- Simulation training
- Practical training with pre-booked patients (supervised one-to-one training).

### Post-course assessment

Time at the end of Day 2 was set aside for assessment and feedback. Participants must satisfy the trainer that they have achieved an adequate level of competence (i.e. a satisfactory score using the competency assessment framework).

### Award of certificates

Attendance at all sessions on both days of the course was mandatory for course completion and award of a certificate. There were two types of certificate:

1. Certificate of Completion of the Laser Training Course. This certificate was awarded to candidates who completed the course and satisfied the trainers that they had reached an acceptable level of competence.
2. Certificate of Delivery of Laser Training Course. This certificate was for course trainers.

If a candidate did not achieve the required level of competence at the end of the course, a certificate was not issued. The local trainer would then arrange further training on the simulator and / or with a patient and re-assess the candidate at a later date. The certificate was then issued.

### Resources

Resources were made available in the form of a laser training pack including a hard copy of the Laser Training Manual, a memory stick containing a wide range of DR laser training resources and

a simulation device, for example, that manufactured by Aurolab. Treatment lenses (panretinal and macular) were also on hand.

## Results

During 2019 the laser training course was delivered jointly by ophthalmologists from the UK and their partner LINK institution in 11 centres. These were in Kenya (Nairobi, Mombasa), Zambia (Kitwe), Nigeria (Calabar), Tanzania (Moshi, Dar es Salaam, Mbeya), Uganda (Kampala, Mbarara), Belize and St Lucia. In addition, there was intra-country assistance from Lilongwe to Mzuzu in Malawi.

In all, 93 participants attended the course. The main cadres were qualified ophthalmologists and MMed – trainee ophthalmologists. In some centres ophthalmic clinical officers (OCO) and nurses attended to extend their knowledge of what is involved in laser treatment in order that they could counsel patients in more detail. Trainee ophthalmologists attending the course came from many different countries and will return to these centres following training, taking their laser training experience with them.

## Feedback

Reports were received from all the course organisers, including tabulated and free text feedback from the participants. The training was extremely well received and useful themes emerged for future training. Representative selections from the reports are shown below.

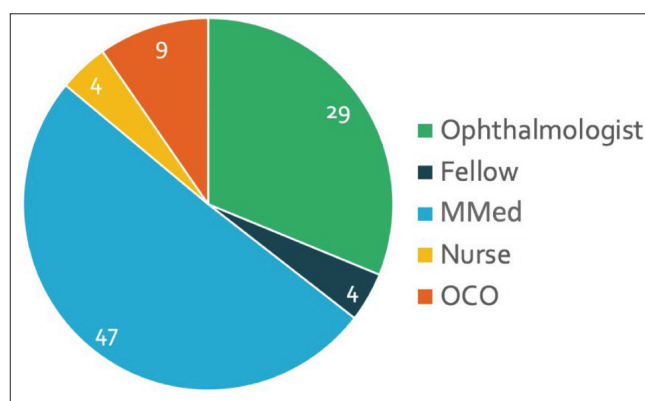


Figure 2: Numbers of people from each cadre trained (total 93).

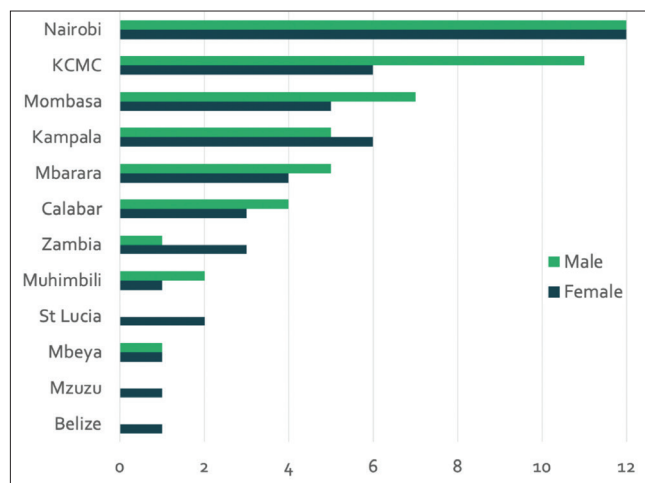
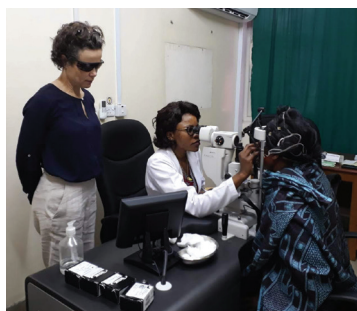


Figure 3: Chart to show the locations where training was held, number and gender of participants from each centre.

## Feedback on the laser training course in Tanzania



### Mbeya-Altnagelvin VISION 2020 LINK

Mbeya Ophthalmologists Jacqueline Ngalula and Barnabas Mshangila received laser training from Rosie Brennan, Ophthalmologist from their LINK partner, WHSCT in N Ireland. By the end, both felt that they had "confidence to do on my own and to teach others" for all parameters: laser safety, patient consent, laser settings, use of laser lenses, laser treatment, post-op advice.



### KCMC-Birmingham VISION 2020 LINK

All 11 participants in the laser training course at KCMC gave feedback on the value of the course. Examples of feedback were:

*"The workshop was an eye opener and helped me realise I was doing PRP the wrong way."*

*"Thankfully it alleviated my fears about lasering the macula. I was assured that I was right to worry about iatrogenic macular injury. It made me realise that YAG dispersion is not always necessary."*

*"The workshop was very helpful and timely to me. In two weeks' time I am starting PRP in a hospital in Kenya, where I am the only ophthalmologist."*

## Conclusions

The conclusions drawn from the roll-out of the training course are as follows:

- The quality of the product was considered to be excellent.
- There is a need for the course to include more on macular treatment, with training on using laser and anti-VEGFs.
- In many countries, ensuring adequate experience in training and ongoing retention of skills for treatment delivery is challenging as the number of people with diabetes undergoing screening and treatment is still low.
- Scaling up screening through outreach clinics should be a focus, as this will increase numbers of people attending for treatment.

## References

1. Astbury N, Burgess P, Foster A, et al. Tackling diabetic retinopathy globally through the VISION 2020 LINKS Diabetic Retinopathy Network. *Eye News* 2017;**23**(5):30-4.
2. ICO Guidelines for Diabetic Eye Care: <http://www.icoph.org/downloads/ICOGuidelinesforDiabeticEyeCare.pdf>

## Feedback on the laser training course in Uganda

### Makerere-Royal Free Hospital VISION 2020 LINK



Clare Davey and Anne Ampaire Musika at the COECSA congress in 2019.

*"I was on leave during the laser training course delivered by Clare Davey at Makerere in September 2018 but on my return was aware of the excitement of the final year MMed students about the course. These students found the teaching material very well presented and relevant to their work. They have now dispersed to their various postings and a new cohort has taken their place. I was happy to meet Denise Mabey and Clare Davey at the COECSA annual congress in Rwanda, in August 2019 and attended the talk on laser training given by Denise. The course material was offered to everyone and I was happy to accept, so that I can deliver the course to the next cohort of senior MMed students."*

**Dr Anna Ampaire Musika, Lecturer, Ophthalmology Department, Makerere University College of Health Sciences, Kampala, Uganda.**

## Case study:

### Muhimbili-St Thomas' Hospital VISION 2020 LINK

*"The laser training was very useful to me for many reasons. I had no formal training on laser, my knowledge was limited in decision-making. After the training, not only was I confident on what I am doing but also the reasoning on why I am doing it has improved."*

*I used to struggle during retina lasering, as most of the patients would complain of pain, but after the training patients are no longer complaining of pain. In the retinal laser course I was taught by Moin Mohamed on how to achieve the best results with minimal pain to patients. Previously we had to use scratched lenses and we were handling them wrongly, but the course ensured that we were able to handle them safely. We were fortunate to be given two retina lenses as well."*

*Currently I am training residents using the same training tool, of which two are competent on retinal lasers and they are now working with minimum supervision, 10 are on ongoing retinal laser training, which I am sure after practising they will be competent as well."*

*Much appreciation to the VISION 2020 LINKS for providing such useful training."*

**Joachim Kilemile, Ophthalmologist, Muhimbili National Hospital, Dar es Salaam, Tanzania.**

*"I felt the aspect of most value for the participants was the practical sessions; the direct supervision and observation of laser therapy to patients. The mentorship approach allowed practical advice on visualisation of the fundus and modifying parameters on the laser to optimise delivery of treatment."*

*The doctors noticeably gained confidence even with the relatively few patients (two to four each), especially in treatment of macular disease and proliferative retinopathy. Also giving feedback on the quality of prior laser treatments they had performed and how to improve the future treatments, was important, as no one had ever critically appraised them before."*

**Moin Mohamed, Ophthalmologist, St Thomas' Hospital, London.**



Joachim Kilemile and Moin Mohamed discuss management of diabetic retinopathy.

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