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EDITORIAL OPEN

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Diabetic retinopathy in Africa

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EPIDEMIOLOGY

The number of people with diabetes mellitus (DM) in sub-Saharan Africa is projected to increase from 19.4 million in 2019 to 47.1 million by 2045 [1]. Currently the age standardised prevalence of DM in Africa averages 4.7% of the population aged over 20 years and given that ~50% of the population are aged over 20 an estimated 23,500 people/million population in Africa have diabetes [2, 3].

All people with DM are at risk of developing diabetic retinopathy (DR) and so the magnitude of DR will increase proportionally to the increase in DM. It is estimated that 35% of people with DM have some DR and about 10% have vision-threatening DR (VTDR), either proliferative DR or diabetic macula oedema [4, 5]. (Fig. 1)

Most blindness caused by DR can be prevented through early detection and treatment of VTDR as recommended by WHO [6, 7].

Health systems in Sub-Saharan Africa face significant challenges to the management of DM and DR due to limitations in human resources, equipment, medicines and finances [8].

THE DIABETIC RETINOPATHY NETWORK (DR-NET)

The DR-NET was established in 2014 as part of a larger 5-year programme—the Commonwealth Eye Health Consortium—set up by The Queen Elizabeth Diamond Jubilee Trust to prevent avoidable blindness across the Commonwealth [9–11].

The DR-NET is part of the eye health partnerships programme (VISION 2020 LINKS), at the International Centre for Eye Health, London School of Hygiene & Tropical Medicine [12]. This programme partners eye units in low- and middle-income countries (LMICs), particularly in Africa, with eye units in the UK, to improve the quantity and quality of eye care training and service delivery (Fig. 2). Over the last decade, many of the LINK partnerships identified DR services as a priority for development, reflecting the increase in DM and its complications in the region [13]. This led to individual LINKS, interested in DR, forming a training and knowledge exchange network: the DR-NET.

OBJECTIVES, ACTIVITIES AND ACHIEVEMENTS OF DR-NET

The DR-NET currently brings together 36 DR screening and treatment centres in 17 LMICs from Africa, Asia, the Pacific and Caribbean regions (8, 1, 4 and 4 countries respectively).

These centres work to prevent blindness and visual impairment caused by DR through the establishment, implementation and expansion of DR screening and treatment services.

The DR-NET objectives are to:

- Establish national frameworks and guidelines for DR services
- Develop integrated DR screening and treatment services
- Acquire and maintaining essential technology and infrastructure for DR
- Facilitate clinical skills training and knowledge exchange to develop multidisciplinary teamwork.

The different DR programmes have adapted and implemented methods of screening, referral and treatment to their resource-limited context, sharing challenges and solutions with each other through the DR-NET. To date these projects have collectively screened over 190,000 people with diabetes and have treated more than 37,000 with VTDR. In Africa, 21 DR centres in 8 countries screened 117,000 people with DM and treated over 20,000 for VTDR (Fig. 3).

DR-NET RESEARCH SUPPLEMENT

The progression of the programme to find context-relevant solutions to screen and treat DR in different countries has highlighted the paucity of evidence and research on DR particularly from Africa, which this Supplement seeks to begin to address.

Governance and integration of DR services into diabetic services are the focus of two papers. The first paper is a case study of the south-south partnership for development of DR National Guidelines in Ghana. It is followed by a paper which explores the rationale for integrating DR services into diabetic services in Kenya.

The following two papers present the theoretical framework for development and delivery of a health intervention to prevent avoidable blindness due to DR in the Kilimanjaro region in Tanzania. A third paper explores gender imbalance amongst people registered with the DR screening programme in the same region.

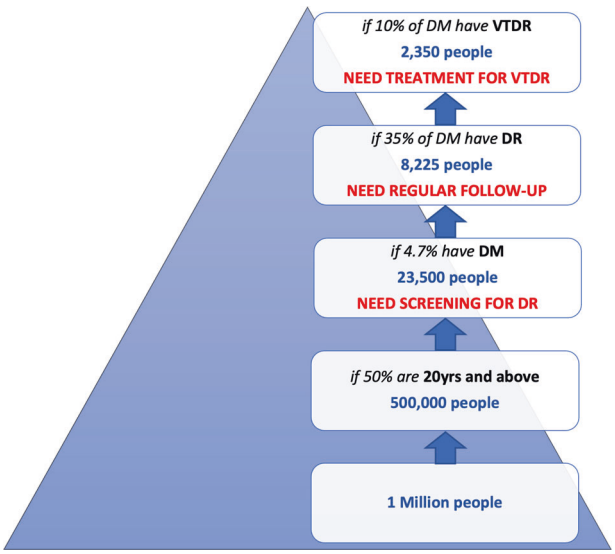
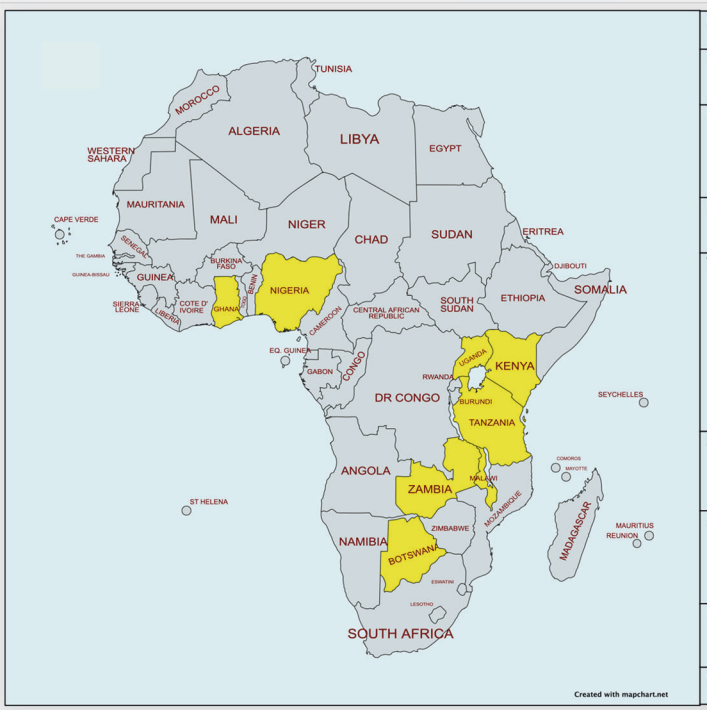


Fig. 1 Magnitude of DR in Africa. Estimated magnitude of DM, DR, and VTDR for 1 million population in Africa.



Country	Africa DR Centres	UK LINK partner
Botswana	Institute of Health Sciences, Molepolole	Addenbrooke's H. Cambridge
	Princess Marina H.	
Malawi	Queen Elizabeth Central H., Blantyre	Royal Liverpool University H.
	Kamuzu Central H., Lilongwe	Princess Alexandra Eye Pavilion H./Queen Margaret H., Fife
	Mzuzu Central H.	
Kenya	Kenyatta National H.	Warwick H.
	Kwale Eye Centre	Southampton General H.
Tanzania	Kilimanjaro Christian Medical Centre, Moshi	University H., Birmingham
	Dodoma Referral H.	Queen's University H. Belfast/ Altnagelvin H. Londonderry
	Mbeya Referral H.	
	Muhimbili National H.	St Thomas' H., London
	Mloganzila H.	
	Bugando Medical Centre	Dorset County H.
Zambia	University Teaching H., Lusaka	Frimley Park H., Surrey
	Kitwe Central H.	
	Chipata Central H.	
Nigeria	University of Calabar Teaching H.	New Cross H., Wolverhampton
	Lagos University Teaching H.	Stoke Mandeville H., Aylesbury/ Manchester Royal Infirmary
Uganda	Mbarara Referral H./ Ruharo Mission H.	Bristol Eye H.
	Mulago National H.	Royal Free H., London
Ghana	Korle-Bu Teaching H., Accra	Central Middlesex H., Moorfields Eye H., London

Fig. 2 DR-NET Africa members. DR-NET Agrican Programme Countries, DR centres and UK VISION 2020 LINKS Partners. Other partners in the Caribbean and Pacific are also members of the DR-NET.

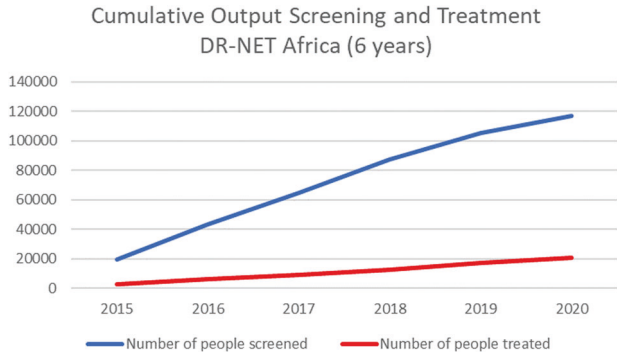


Fig. 3 DR-NET screening and treatment outcomes. Cumulative number of patients screened for DR and treated for VTDR across all DR-NET Programmes in African from 2015 to 2020.

Finally, two studies from Ghana and Uganda report outcomes and challenges of using anti-VEGF for the treatment of diabetic macular oedema.

This research collection contributes to the evidence base around DR services in sub-Saharan Africa, covering different aspects of the eye health system with different methodologies and approaches.

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AUTHOR CONTRIBUTIONS

CB conceptualized and wrote first draft. AF, NJA, CW and MZ reviewed and commented on all the drafts.

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COMPETING INTERESTS

The authors declare no competing interests.

ADDITIONAL INFORMATION

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