Audit of Diabetes Care Processes in Patients with Diabetes Attending Medical Retina Clinics

Duncan Maclean, Sam Philip, Cynthia Santiago

NHS Grampian

Introduction

Diabetic Retinopathy (DR) is a leading cause of preventable visual impairment worldwide. It affects 74% of adults with type 1 diabetes mellitus (T1DM) and 30% of adults with type 2 diabetic mellitus (T2DM) [1].
Visual loss in any individual can cause significant morbidity and mortality, often leading to increased falls and an increased dependency on others for activities of daily life [2] .

Our rapid review aims to synthesise the available evidence and create a set of audit standards for the management of DR risk factors in primary and secondary care settings. We will then use these audit standards and compare them against the population of the diabetic retinopathy clinic in Aberdeen Royal Infirmary.

With the audit data we hope to guide future actions that can be taken to improve DR outcomes in NHS Grampian.

Evidence for Audit Standards

Glycaemic Control	Blood Pressure	Lipid Control	Surveillance Intervals
3 Large Studies showed glycaemic control reduces DR • the ACCORD [3], • DCCT [4] • UKPDS [5]	A Cochrane trial suggested that BP control may reduce instances of DR but did not show benefit in slowing down progression.[6]	The FIELD study suggested Fenofibrate may reduce DR. This seems unrelated to plasma lipid levels [6] The LENS trial looks to asses lipid control with results to be released in June 2024	Surveillance intervals are based on the severity of the disease.[7] Yearly is the minimum interval recommended

To synthesise these audit standards, we performed an EMBASE search. We then collated the most up to date research on DR risk factors.

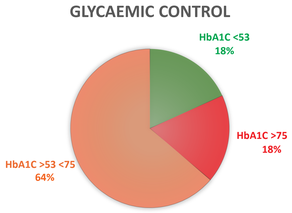
We then compared the search results against the guidance from the American Diabetes Association, Diabetes Canada, the Royal College of Ophthalmologists and NICE.

Audit Standards

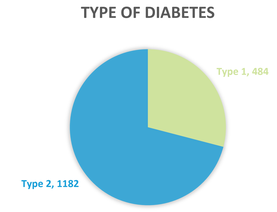
	Green Standard	Amber Standard	Red Standard
HbA1C Control	<53 mmol/l	53-63 mmol/l	>63 mmol/l
Hypertension Control	<140/90 mmhg		>140/90 mmhg
Lipid Control	Cholestrol <5mmol/l		Cholestrol >5mmol/l

On the basis of these sythesised audit guidelines we performed an audit of our patient base. The results are as follows:

Results



18% of patients had a HbA1C <53mmol/l, 60.5% of patients had a blood pressure of < 140/90 mmHg and 76.8% of patients had a cholesterol level of <5 mmol/l. 36% had an HbA1c above 75



Of 1700 patients identified 1182 (69.5%) had Type 2 diabetes, 484 (28.5%) Type 1. Average durations of diabetes 21.6 yrs(13.4), Male (60.1%),

Discussion

We conducted this audit because despite the best medical care NHS Grampian can offer there is still a cohort of patients who have progression of their DR. We wanted to identify risk factors in this cohort and discuss how we could address these risk factors to improve patient care .

We know from our evidence search that HbA1C is the biggest risk factor for DR progression [9]. Our audit shows that 88% of patients attending the medical retinopathy clinic had a HbA1C >53 mmol/l.

Improving HbA1C in diabetics requires the consideration of several health behaviours. The factors that shoould be considered as are:

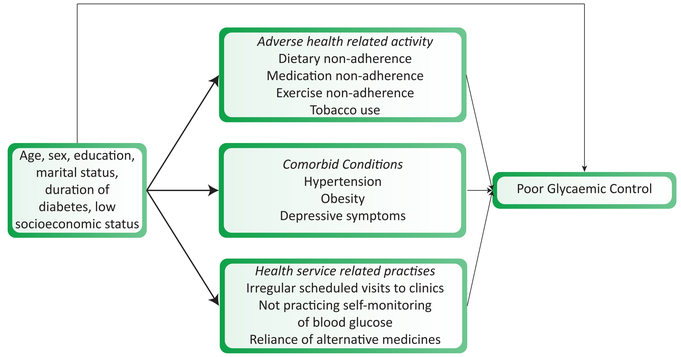


Figure adapted from M. N. K. H. S. e. a. Rahman, "Mediators of the association between low socioeconomic status and poor glycemic control among type 2 diabetics in Bangladesh," Scientific Reports, vol. 10, p. 6690, 2020. M. N. K. H. S. e. a. Rahman, "Mediators of the association between low socioeconomic status and poor glycemic control among type 2 diabetics in Bangladesh," Scientific Reports, vol. 10, p. 6690, 2020.

There is no “one size fits all” policy and the intervention we can use to improve outcomes are numerous. Methods such as lifestyle behaviours modification programs and novel technology to improve access have proved to be effective[10].

We hope through the use of this data this audit has provided to implement changes in NHS Grampian and improve DR outcomes.

References

[1] M. Monique S. Roy, M. M. Ronald Klein, M. Benita J. O'Colmain and e. al, "The Prevalence of Diabetic Retinopathy Among Adult Type1 Diabetic Persons in the United States," JAMA Opthalmology , 2004.
[2] M. A. A. E. F. M. R. G. K. G. B. F. D. M. F. F. 3. C. E. Cusick M and E. T. D. R. S. R. Group., "Associations of mortality and diabetes complications in patients with type 1 and type 2 diabetes: early treatment diabetic retinopathy study report no. 27," Diabetes Care, vol. 28, pp. 617-25, 2005.
[3] T. A. S. Group, "Effects of Medical Therapies on Retinopathy Progression in Type 2 Diabetes," 2010.
[4] D. R. G. David M. Nathan, "The Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications Study at 30 Years: Overview," 2014.
[5] U. P. D. S. [. Group, "Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33)," Lancet, 1998.
[6] H. G. A. S. S. G. V. S. H. B. Do DV, "Blood pressure control for diabetic retinopathy.," Cochrane Database of Systematic Reviews, no. 3, 2023.
[7] M. P. S. P. e. a. Keech AC, " Effect of fenofibrate on the need for laser treatment for diabetic retinopathy (FIELD study): A randomised controlled trial," vol. 370, no. 1687–97, 2007.
[8] J. S. 2. R. K. 3. P. R. 4. N. G. S. V. C. L. 6. M. M. 7. W. M. 8. S. M. 9. M. M. K. M. 1. S. R. 1. I. V. 1. P. Z. 1. F. F. Tien Y Wong 1, "Guidelines on Diabetic Eye Care: The International Council of Ophthalmology Recommendations for Screening, Follow-up, Referral, and Treatment Based on Resource Settings," American Academy of Opthalmology, vol. 125, no. 10, pp. 1608-1622, 2018.
[9] T. R. C. o. Ophthalmologists, "Diabetic Retinopathy Guidelines," The Royal College of Ophthalmologists, London, 2012.
[10] A. D. A. P. P. Committee, " Prevention or Delay of Diabetes and Associated Comorbidities: Standards of Care in Diabetes—2024," Diabetes Care, vol. 47, 2024.