Economic burden of neovascular macular degeneration and diabetic macular edema in Colombia

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Introduction

Vision loss has a significant impact on the health and economic condition of patients.[1] Some of the leading vision impairing causes are neovascular age-related macular degeneration (nAMD) and diabetic macular edema (DME).[1]

This study aimed to estimate the economic burden of these two etiologies responsible for visual impairment in Colombia, to generate evidence that contributes to public policy decision-making and efficient use of healthcare resources at the national level

Methods

This is a micro-costing study based on medical literature, local databases and expert information. We adopted a societal perspective; therefore, the study included direct medical and indirect costs. Costs were measured following a prevalence approach and they were calculated for 2021 and expressed in euros (€) (1€ = COP$4,425).

We estimated the prevalence for the health conditions. Cases were calculated based on population-based studies and stratified by level of severity and age groups as reported in the Individual Healthcare Services Provision Registry (RIPS) database.

Direct medical costs

We used a bottom-up approach. Costs were estimated per patient per year and projected at the national level.

Direct medical costs included: outpatient visits, imaging tests, surgical procedures, vision and mobility aids, medication (anti-vascular endothelial growth factor drugs [Anti-VEGF therapy] and multivitamins), falls and fractures.

Frequency and percentage of use were defined by clinical experts (theoretical) and compared with the information reported in RIPS[2] and Mipres (local databases).[3] Unit costs were extracted from local sources.[2,4-6]

Imaging tests and intravitreal drug injections were adjusted to bilateral cases. It was estimated that 23.7% of patients with nAMD[7] and 51.2% with DME[8] required bilateral treatment.

Indirect costs

Lost productivity of the patient:

No access to the labor market: Defined as the losses related to lower participation in the labor force.[9] It was calculated based on Rein et al., which state that the reduction in participation in visually impaired people is 48% and 65% in people with blindness.[10-11] It was estimated by multiplying the reduced employability in each age group by the annual salary income.[10]

Absenteeism: Defined as the days of work lost among patients who are part of the labor market. Information related to disability days caused by visual impairment was taken from the Sick Leave database.[12] The costs were obtained considering the disability days in each age group by the daily salary income.[10]

Lost productivity of the caregiver:

This includes the caregiver's loss of productivity in assisting patients in their daily activities and taking them to outpatient visits. The analysis included the opportunity cost of leisure time. The cost of caregivers was applied only to patients who were not part of the labor force.[13]

Out of pocket expenses (OOP)

Transportation: It was the average annual cost of patients and caregivers to go to outpatient visits.[2, 13-15] The costs were calculated by multiplying the number of outpatient visits, the number of trips and the cost of public transportation.

Results

nAMD

0.32% (IC95%: 0.13-0.75%)[16]
Prevalence of late AMD

51%[26]
Neovascular cases

29,354
Overall cases nAMD

22,377 Mild/Moderate
3,611 Severe
3,366 Blindness

Direct medical costs

Annual cost per patient (€)
6,870 vs 701
Annual cost per cohort (€)
201,695,960 vs 20,611,601
Theorical vs RIPS

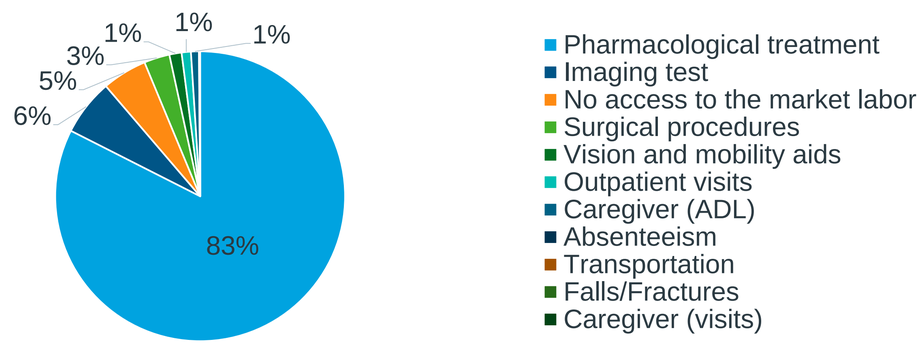
The main drivers were pharmacological treatment (88%; € 4,873) and imaging tests (7%; € 370)

Indirect costs

Annual cost per cohort (€)
12,883,948

The main drivers were the No access to the labor market (83%; € 10,773,824) and the Caregiver's loss of productivity in support of ADL (15%; € 1,897,736)

Figure 1. Total costs and breakdown in nAMD



Resource	Experts / Literature (Theoretical) Lower (ISS+25%)	Upper (ISS+48%)	Mean (ISS+30%)
Direct costs (€)	199,560,114	218,849,132	201,695,960
Indirect costs (€)	10,307,158	15,460,738	12,883,948
Total costs (€)	**209,867,272**	**234,309,869**	**214,579,908**

DME

8.40% (IC95%: 6.00-11.30%)[17]
Prevalence of Diabetes Mellitus

4.92% (IC95%: 3.39-7.08%)[18]
Prevalence of DME

151,920
Overall cases DME

139,413 Mild/Moderate
4,418 Severe
8,089 Blindness

Direct medical costs

Annual cost per patient (€)
5,134 vs 1,003
Annual cost per cohort (€)
780,030,548 vs 152,502,058
Theorical vs RIPS

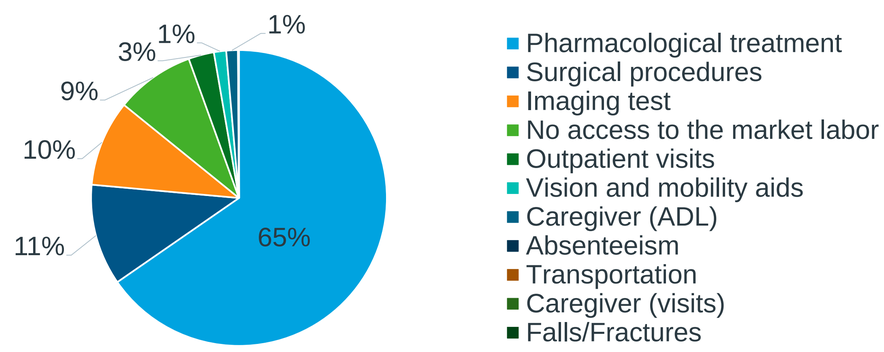
The main drivers were pharmacological treatment (73%; € 2,467), surgical procedures (12%; € 631) and imaging tests (10%; €355)

Indirect costs

Annual cost per cohort (€)
86,897,918

The main drivers were the No access to the labor market (86%; € 75,028,167) and the Caregiver's loss of productivity in support of ADL (13%; € 11,020,676)

Figure 2. Total costs and breakdown in DME



Resource	Experts / Literature (Theoretical) Lower (ISS+25%)	Upper (ISS+48%)	Mean (ISS+30%)
Direct costs (€)	757,950,515	857,548,550	780,030,548
Indirect costs (€)	69,518,334	104,277,501	86,897,918
Total costs (€)	**827,468,849**	**961,826,051**	**866,928,465**

Conclusions

In nAMD, direct costs represent 94% of total costs, while in DME, they correspond to 90%. According to local databases (RIPS), resource utilization is small, particularly for imaging tests and drugs. Loss of patient productivity accounts for more than 80% of indirect costs.

nAMD and DME have a high economic impact on the health system and a high social impact on patients, which is why they must be prioritized and addressed to stall deterioration.

References

1. World Health Organization (WHO). https://t.ly/u0GP
2. Ministerio de Salud y Protección Social. Registros Individuales de Prestación de Servicios (RIPS). 2021.
3. Ministerio de Salud y Protección Social. Cubo de prescripciones Mipres. 2021.
4. ISS 2001 - Acuerdo N° 256 de 2001. https://t.ly/gONR
5. SECOP II (CPAP). MI 0044-DMORI-2021. https://t.ly/XfxC
6. SISMED-Sistema de Información de Precios de Medicamentos. Circular 2 de 2010. https://t.ly/3LIy
7. Khanani AM, et al. Ophthalmol Retina. Feb 2020;4(2):122-133. doi:10.1016/j.oret.2019.09.009
8. Cantrell RA, et al. Ophthalmology. Mar 2020;127(3):427-429. doi:10.1016/j.ophtha.2019.10.019
9. Brown MM, et al. Can J Ophthalmol. 2005;40(3):277-87. doi:10.1016/S0008-4182(05)80070-5
10. Ministerio del Trabajo. Fuente de información laboral de Colombia - FILCO: Estadísticas. 2021.
11. Rein DB, et al. Arch Ophthalmol. Dec 2006;124(12):1754-60. doi:10.1001/archopht.124.12.1754
12. Ministerio de Salud y Protección Social. Bodega de datos Sispro: Cubo de incapacidades.
13. Brown MM, et al. Retina. 2016;36(2):285-98. doi:10.1097/IAE.0000000000000717
14. Departamento Administrativo Nacional de Estadísticas (DANE). https://t.ly/PjHU
15. Prenner JL, et al. Am J Ophthalmol. 2015;160(4):725-731. doi:10.1016/j.ajo.2015.06.023
16. Wong WL, et al. Lancet Glob Health. Feb 2014;2(2):e106-16. doi:10.1016/S2214-109X(13)70145-1
17. International Diabetes Federation. 2021. https://t.ly/rUlO
18. Teo ZL, et al. Ophthalmology. 2021; 128(11):1580-1591. doi: 10.1016/j.ophtha.2021.04.027

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