

The societal cost of age-related macular degeneration and diabetic macular edema: an estimation using a pragmatic literature review

Gervès-Pinquier C¹, Ajouri R², Nanoux H², Le lay K², Hidra R¹, Ba S¹, Leproust S¹.

1 IQVIA, La Défense, France

2 ROCHE, France

EE259

Background	AMD			DME		
	Pathology <ul style="list-style-type: none"> Age-related macular degeneration (AMD) is a common condition affecting central vision. Does not cause blindness but can make daily activities difficult. Exact cause unknown. May be associated with smoking, high blood pressure, excess weight, family history. 	Symptoms <ul style="list-style-type: none"> Blurred or distorted vision Central Scotoma Slow recovery after exposure to bright light Radical reduction in visual acuity Difficulty discerning colours Loss of contrast sensitivity Visual hallucinations and flashing lights 	Epidemiology in France <ul style="list-style-type: none"> AMD is affecting 8% of the french population, with a frequency increasing with age 	Pathology <ul style="list-style-type: none"> DME is caused by a complication of diabetes called diabetic retinopathy (DR) DME can occur at any stage in the progression of DR DME is the most common cause of vision loss in people with diabetic retinopathy 	Symptoms <ul style="list-style-type: none"> Blurred or wavy vision near or in the centre of the field of vision Colours appear washed out or faded Reduced BCVA (best corrected visual acuity) 	Epidemiology in France <ul style="list-style-type: none"> The prevalence of DME is estimated at around 10% of diabetic patients
		Therapeutic treatment <ul style="list-style-type: none"> Dry AMD → no treatment Wet AMD: Photodynamic therapy, Anti-VEGF treatments: ranibizumab (Lucentis), aflibercept (Eylea) 	Population and risk factors <ul style="list-style-type: none"> Patients aged around 70, with or without visual symptoms Risk factors: Age, Family and genetic history, Diet, Smoking 		Therapeutic treatment <ul style="list-style-type: none"> Control of systemic factors (before local treatment): glycaemia, blood pressure, lipids, sleep apnoea syndrome Ophthalmological treatment: Laser photocoagulation, Anti-inflammatory treatments, Vitrectomy, Anti-VEGF injections: ranibizumab (Lucentis), aflibercept (Eylea) 	Population and risk factors <ul style="list-style-type: none"> The patient population includes all patients with diabetes mellitus Long-standing and/or uncontrolled diabetes increases the risk of occurrence Average age of around 40

Objective

Since AMD and DME are pathologies that are disabling in everyday life and induce societal costs, the aim of this study is to estimate the societal cost of these two diseases and to identify the main determinants

Method

To estimate the societal costs of both AMD and DME, we conducted a pragmatic review of the French and European literature published between 2008 and 2022. Data from the literature were extracted using a standardized grid. We used both the replacement cost & opportunity cost methods to estimate informal care cost related to anti-VEGF injections

Results

- Of the 40 articles selected from the literature, based on title and abstract, seven met the inclusion criteria, two on DME and five on AMD, two of which used French data. No study specific to neovascular-AMD was identified.
- The annual societal cost per patient of AMD (DME) was estimated at €29,997 (€15,841)
- For AMD (DME) patient out-of-pocket was estimated at €2,139 (€706) per year
- For AMD, the annual cost of informal help was €1,119

Focus on the cost of informal care associated with Anti-VEGF injection

The average time spent by the caregiver accompanying the patient to an intra-vitreous injection is **3.6 hours**. Based on this figure, the cost of informal assistance per injection was calculated using two methods:

Replacement cost method

The median hourly wage of a personal help in France is **11€/hour**

3.6x11 = **€39,6/visit/year**

Using the replacement cost method, the cost of informal care is **€39.6 per injection**

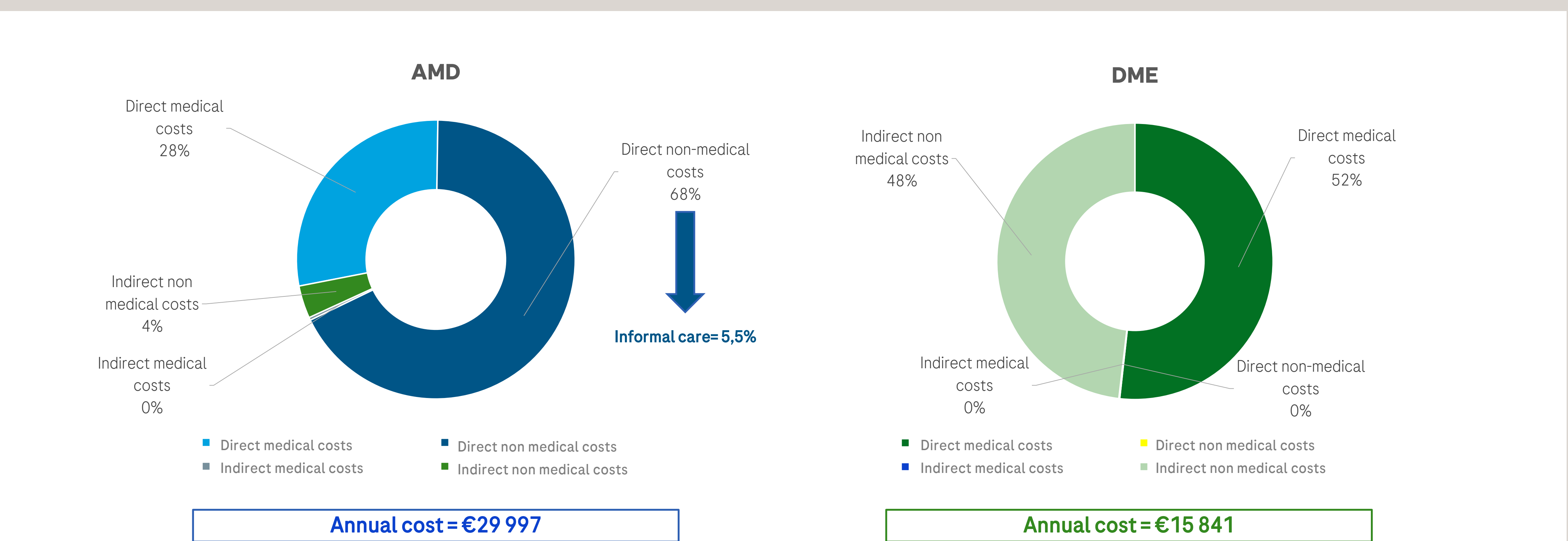
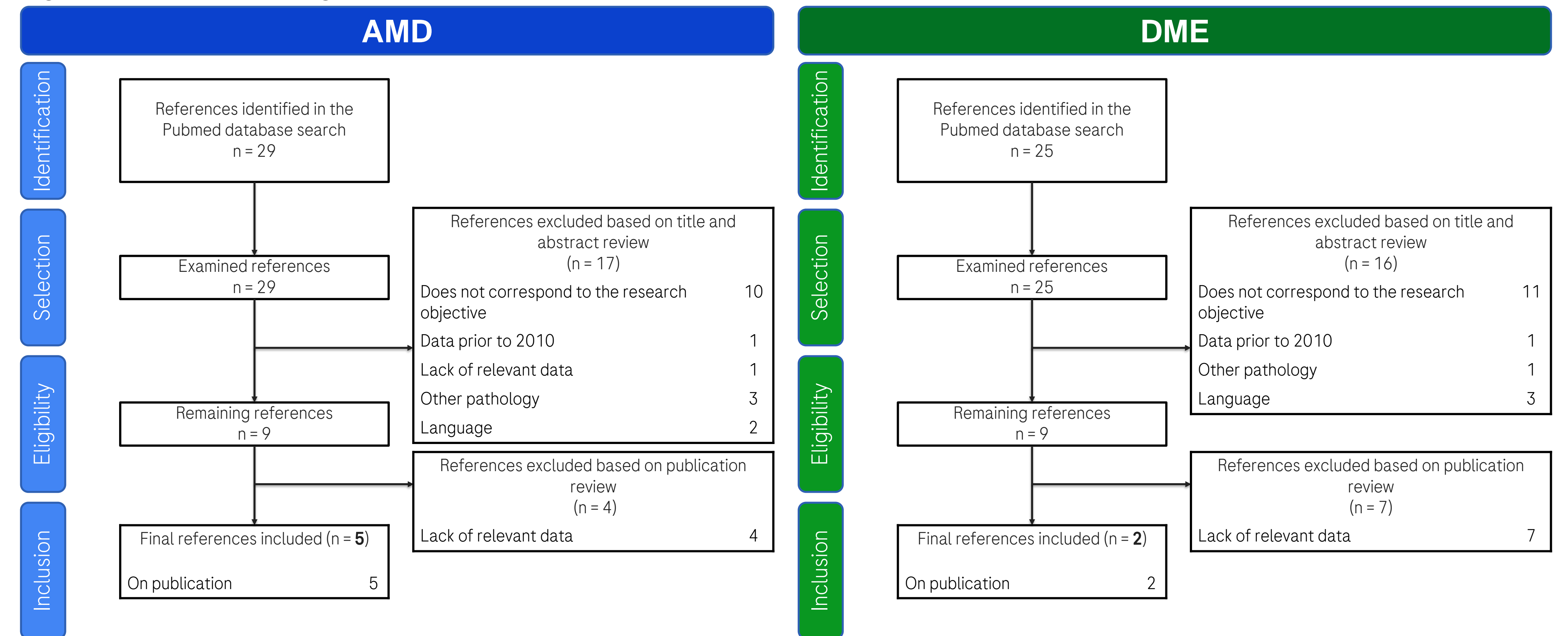
Opportunity cost method

The median hourly wage in France is **€12.4/hour**

3.6*12.4 = **€44,6/visit/year**

Using the opportunity cost method, the cost of informal help is **€44.6 per injection**.

Figure 1 : PRISMA diagram



References

Korabelnik et al. doi: 10.1080/13696998.2021.1971414
 Abrolides et al. 10.1016/j.oftal.2015.11.019
 Weyer Wendt H. et al. 10.1186/s13561-016-0116-4
 Ke K.M. et al. doi: 10.1007/s10198-009-0207-9.
 Cruess AF et al. 10.2165/00019053-200826010-00006.
 Happich M. et al. 10.1007/s00417-007-0573-x
 Matamoros E. et al. 10.1159/000433448

Conclusion

This study allowed to estimate AMD/DME societal cost. For AMD, these costs imply significant out-of-pocket expense for patients and their families. Reducing the frequency of anti-VEGF injections, by decreasing the costs of transport and informal care, could lower this remaining expense. An ongoing study based on both patients and their caregivers' interviews will enable to describe more accurately the economic burden - including non-medical costs and indirect costs - of these pathologies.