HPR127

# Evolution of technology diffusion within Brazilian Universal healthcare system (*Sistema Único de Saúde* - SUS) 2+ years after listing of antiangiogenics treatment for Diabetic Macular Edema (DME)

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## Background & Rationale

Among the population with diabetes ageing 20-79 years old, approximately 7.5% will have Diabetic Macular Edema (DME). DME is the main cause of vision impairment and blindness in diabetic patients, impacting their quality of life importantly, thus providing treatment for this condition becomes a matter of public health.

Antiangiogenic drugs are available for DME treatment in many countries worldwide, since they are the gold-standard choice for these patients. Since April/2022, antiangiogenics have been listed by the Brazilian Universal Healthcare System (*Sistema Único de Saúde* - SUS).

Technology diffusion management after listing by healthcare systems is challenging, considering it relies on multiple factors that are context and/or technology-specific. For example, in terms of context, Brazil has continental dimensions and distinct characteristics throughout the territory, what makes more difficult to reach all the corners of the country equally. Besides, antiangiogenics technologies require cold chain logistics and intravitreal administration must be performed in referenced institutions by qualified ophthalmologists (retina specialists), increasing their complexity of usage.

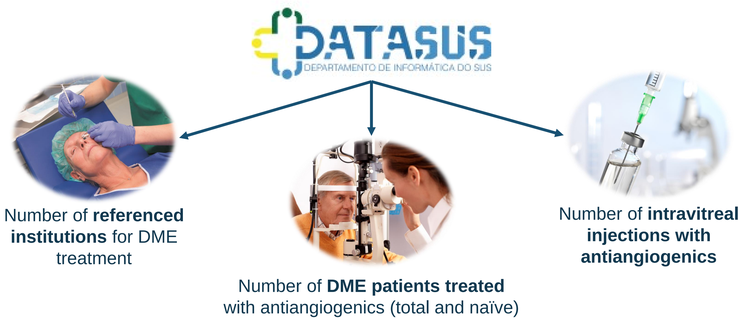
## Objectives

This study focused on describing the current picture of antiangiogenics usage within SUS after listing. Analysis were based on the influence of infrastructure of the healthcare system over technology diffusion.

To assess the effectiveness of antiangiogenics diffusion, real-world data was gathered along 29 months post-listing (from April/2022 to August/2024).

## Methods

### Data Mining of the SUS database (DataSUS)




### Projections & Statistics

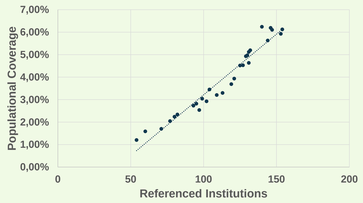
- **Populational coverage of DME treatment:** percentage was calculated based on epidemiology of DME in Brazil and total number of treated patients under SUS.
- **Influence of infrastructure for technology diffusion:** Pearson Correlation (PC) and R-squared ($R^2$) were calculated to estimate the influence of referenced institutions over populational coverage, naive patients starting treatment and number of antiangiogenics injection administered.
- **Antiangiogenics posology:** assessed by calculating the average number of injections administered per patient during the timeframe analyzed.

## Results

Along the months studied, the number of referenced institutions increased 159% (54 to 140 institutions), demonstrating the growth of system's infrastructure. This increment is positively correlated with augmentation of populational coverage, number of naïve patients starting treatment and total antiangiogenics injections administered. During the 29-months period, the average number of antiangiogenics injections per AMD-patient was 4.32.

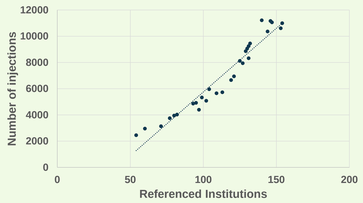
| Performance indicators by August/2024 | 140 institutions treated AMD | 6.2% populational coverage | 4.32 intravitreal injections/patient | 1732 Naïve patients treated |
|---|---|---|---|---|

**1.Influence of infrastructure over populational coverage**



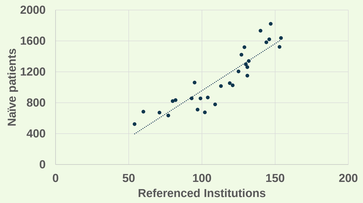

$R^2$=0,9483
PC=0,9738

**2. .Influence of infrastructure over number of antiangiogenic injections**




$R^2$=0,9351
PC=0,9670

**3.Influence of infrastructure over naïve patients starting treatment**




$R^2$=0,8175
PC=0,8911

## Conclusions

Implementing public policies for healthcare in Brazil is a complex endeavor, particularly because of the territory extension and size of the population. Besides, antiangiogenics usage requires specific infrastructure that increases barriers for technology diffusion throughout the healthcare system. Therefore, we hypothesized that referenced institutions are the main bottleneck in this scenario, since they can store antiangiogenics molecules and provide qualified medical services at the same time.

This hypothesis is reinforced by the positive correlation we found between increased number of centers and growth of populational coverage, treatment of more naive patients and augmented number of intravitreal injections administration. **That data corroborates with the need of implementing more referenced institution for expanding antiangiogenics usage and enlarging number of patients treated**, in this context, percentage of populational coverage might increase.

Although the constant increase of antiangiogenics diffusion along time, **the mean number of intravitreal injections per patient (4.32 injections/patient) indicates undertreatment**, since all the molecules listed for DME require more injections than what has been performed. Despite we do not have information about market share of antiangiogenics in SUS, the mean number of injections used for each antiangiogenic is higher than the current practice (ranibizumab: 7.7; aflibercept: 7.5 injections/patient in the first year of treatment).

**In summary, although investing on infrastructure might expand antiangiogenics diffusion and populational coverage, it is also important to find ways of increasing average number of injections per patient to assure proper treatment effectiveness.**

### Bibliography

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*Contact the author for more detailed information about the data/results*