

INTRODUCTION

Osteoarthritis has been classified as one of the main causes of disability worldwide^{1,2}. Viscosupplementation treatment is an alternative to improve patient conditions by delaying the need for a knee replacement.

OBJECTIVE

This study aims to estimate the clinical and economic impact of viscosupplementation with Hylan G-F 20 (high molecular weight - HMW) versus medium molecular weight (MMW) hyaluronic acids and versus no viscosupplementation in knee osteoarthritis treatment, with knee replacement delay as the main outcome of interest.

METHODS

- An economic model was developed from the Colombian healthcare system perspective over a 5-year time horizon, comparing Hylan G-F 20 (high molecular weight) versus medium molecular weight hyaluronic acids and no viscosupplementation, for a hypothetical cohort of 10,000 patients.
- Time until knee replacement for the different technologies was obtained from published literature.
- The model includes the acquisition, administration, and knee replacement surgery costs, extracted from the local drug prices database (SISMED) and the sufficiency database from the Colombian Ministry of Health. Costs are expressed in USD using an exchange rate of USD 1 to COP\$ 4,276.59.

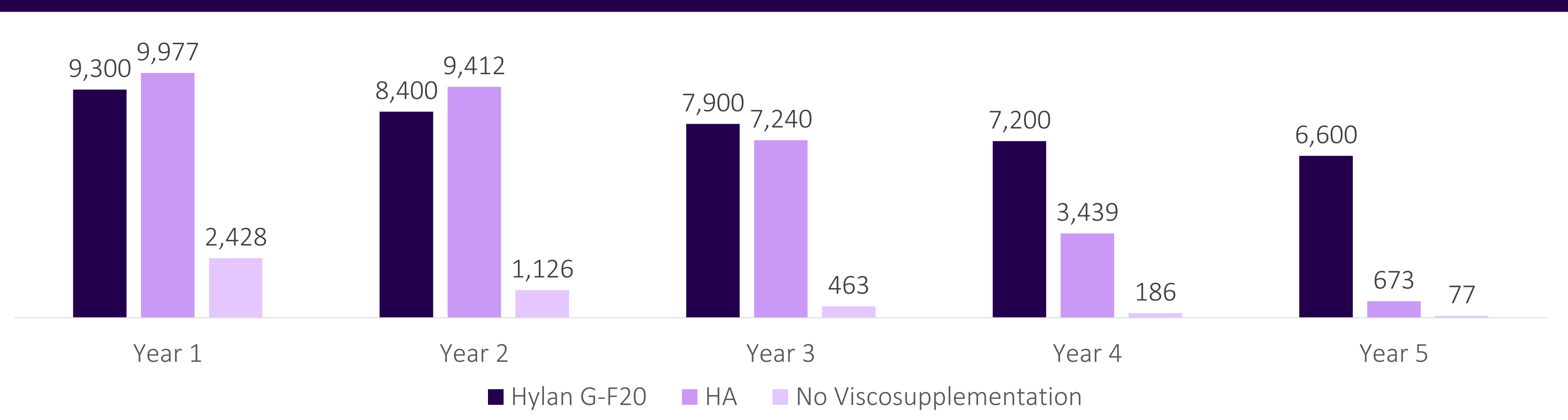


POSTER HIGHLIGHT: Hylan G-F 20 is a dominant strategy over medium molecular weight hyaluronic acids in the treatment of osteoarthritis by increasing the number of patients and years without total knee replacement at an overall lower cost.

Table 1. Survival probabilities without total knee replacement

| Time (years) | 1 | 2 | 3 | 4 | 5 | Source |
|-------------------------|--------|--------|--------|--------|--------|---------------------|
| Hylan G-F 20 (HMW) | 93.00% | 84.00% | 79.00% | 72.00% | 66.00% | Boutefnouchet, 2017 |
| Hyaluronic acid (MMW) | 99.77% | 94.12% | 72.40% | 34.39% | 6.73% | Altman, 2015 |
| No viscosupplementation | 24.28% | 11.26% | 4.63% | 1.86% | 0.77% | Altman, 2015 |

Figure 1. Patients Free of TKR

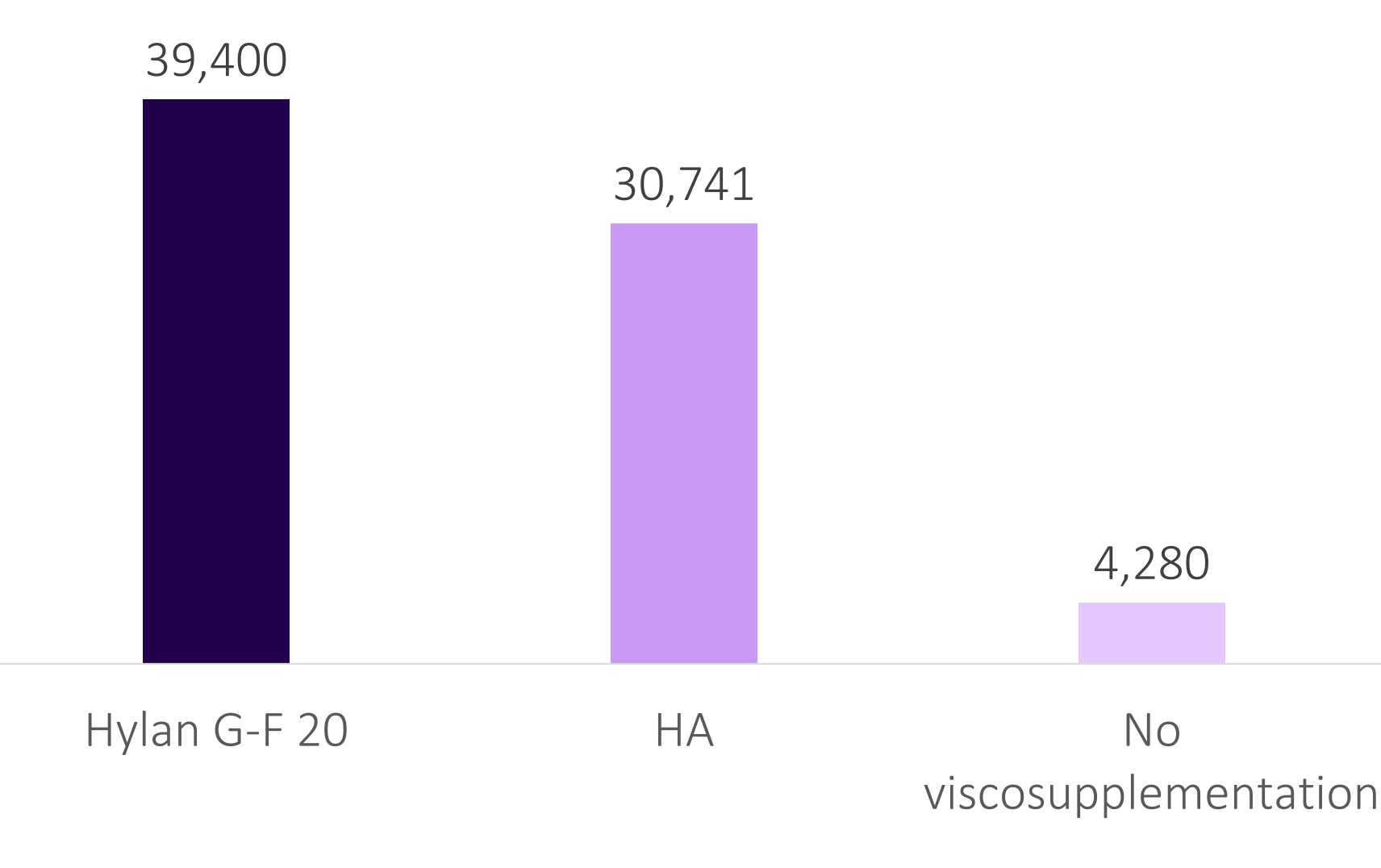


| Year | Hylan G-F20 | HA | No Viscosupplementation |
|--------|-------------|-------|-------------------------|
| Year 1 | 9,300 | 9,977 | 2,428 |
| Year 2 | 8,400 | 9,412 | 1,126 |
| Year 3 | 7,900 | 7,240 | 463 |
| Year 4 | 7,200 | 3,439 | 186 |
| Year 5 | 6,600 | 673 | 77 |

Table 2. Input costs

| Input | Unitary Cost | Source |
|--------------------------|--------------|------------------------------|
| Hylan G-F 20 6 ml | \$ 189.55 | SISMED, 2022 (17) |
| Hylan G-F 20 2 ml | \$ 123.15 | |
| Droptal/Olter/Suprahyal | \$ 32.12 | Private Pharmacy |
| Hyruan one | \$ 171.07 | |
| Syplasyn | \$ 128.05 | SISMED, 2022 (17) |
| Knee replacement surgery | \$1,239.26 | Colombian Ministry of Health |

Figure 2. Cumulative TKR-free years



| Treatment | Cumulative TKR-free years |
|-------------------------|---------------------------|
| Hylan G-F 20 | 39,400 |
| HA | 30,741 |
| No viscosupplementation | 4,280 |

Table 3. Cumulative TKR-free years

| Treatment | Total costs | Cost per TKR-free year |
|-------------------------|--------------|------------------------|
| Hylan G-F 20 (HMW) | \$45,188,523 | \$1,147 |
| Hyaluronic acid (MMW) | \$50,247,826 | \$1,635 |
| No viscosupplementation | \$27,345,736 | \$6,389 |

RESULTS

- The use of Hylan G-F 20 for 5 years has an associated total cost of USD \$45,188,523 compared to USD\$ 50,247,826 for medium molecular weight hyaluronic acid and \$27,345,736 for the no viscosupplementation.
- Hylan G-F 20 produces 39,400 years free of total knee replacement compared to 30,741 produced by medium molecular weight hyaluronic acid and 4,280 by the no viscosupplementation.
- The accumulated costs per patient free of surgery oscillated from USD\$1,158 during the first year to \$6,847 at the end of the fifth year for Hylan G-F 20 versus \$1,164 to \$74,662 for medium molecular weight hyaluronic acid, producing savings of around 80% in total costs.

CONCLUSIONS

Viscosupplementation with Hylan G-F 20 in patients with knee osteoarthritis reduces costs versus medium molecular weight hyaluronic acids, allowing for more free years until knee replacement. Therefore, it is a dominant alternative to include in the management and delay of surgery procedures in the affected population. Compared to no viscosupplementation, Hylan G-F 20 and HA provide a lower cost per TKR-free patient.

REFERENCES

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