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INTRODUCTION

Knee osteoarthritis represents a significant healthcare burden in Colombia, affecting approximately 13.5% of the population over 45 years. With an estimated 4,921 new cases annually requiring joint replacement intervention, cost-effective treatment strategies are essential for optimizing healthcare resource allocation within Colombia's health benefit package.

OBJECTIVE

To estimate the budget impact of increasing utilization of multidose hyaluronic acid viscosupplementation among knee osteoarthritis patients aged ≥ 45 years requiring joint replacement intervention within Colombia's health benefit package.

METHOD

Study Design: Budget impact model adopting Colombian healthcare payer perspective over 5-year horizon (2025-2029).

Population: Patients aged ≥ 45 years with knee osteoarthritis indicated for arthroplasty (4,921 incident cases annually).

Interventions: Multidose hyaluronic acid compared to:

- Multimodal analgesia (12.8% annual arthroplasty rate)
- Platelet-rich plasma (5.1% annual arthroplasty rate)
- Corticosteroids (8.4% annual arthroplasty rate)
- Hyaluronic acid (4.2% annual arthroplasty rate)

Data Sources:

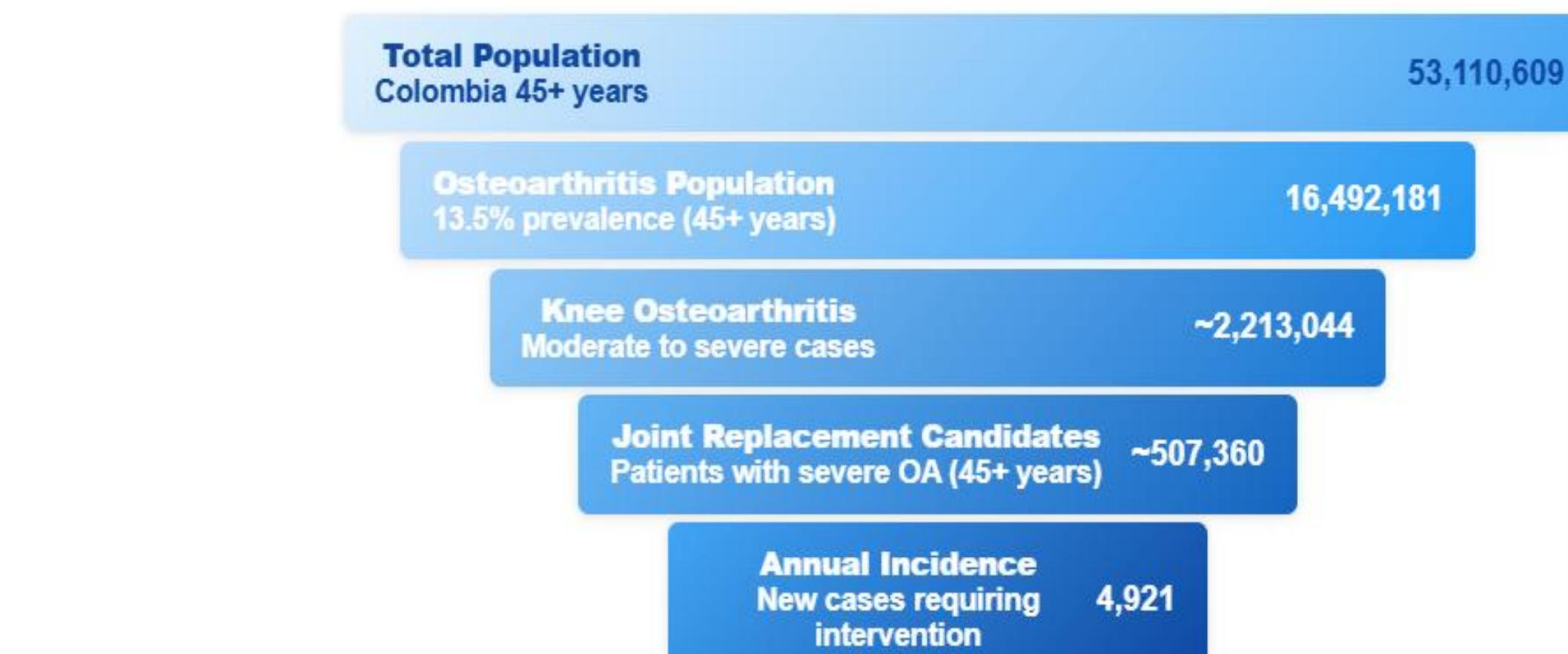
- **Treatment costs:** SISMED 2023 pharmaceutical pricing database.
- **Resource utilization:** Clinical practice guidelines and expert elicitation.
- **Currency conversion:** 4,081.15 COP/USD (June 2025)
- **Market Scenarios:** Modeled increased utilization from current practice patterns to enhanced access scenarios.

RESULTS

The eligible population comprised patients aged ≥ 45 years with knee osteoarthritis indicated for arthroplasty, estimated at 4,921 incident cases annually based on epidemiological data.

Osteoarthritis Population Funnel

From Total Population to Joint Replacement Candidates



Prevalence Breakdown: Weighted average prevalence of $\sim 13.5\%$ for the combined male/female population over 45 years (Men: 10.80%, Women: 16%). Data based on Colombian epidemiological studies and DANE 2024 population projections.

Methodology Note: Calculations assume weighted average prevalence based on Colombian epidemiological data. Annual incidence represents new cases requiring joint replacement intervention. Actual numbers may vary based on precise demographic distribution and updated epidemiological data.

Sources: DANE 2024 population projections, Londoño et al. 2018 prevalence data, Clinical expert consultation 2025.

Treatment-specific annual arthroplasty probabilities were extracted through focused literature review: hyaluronic acid (4.2%), multimodal analgesia (12.8%), platelet-rich plasma (5.1%), and corticosteroids (8.4%).

Resource utilization patterns were derived from clinical practice guidelines and validated through structured expert elicitation. Unit costs were sourced from SISMED 2023 pharmaceutical pricing database and the UPC sufficiency technical database, inflated to 2023 values.

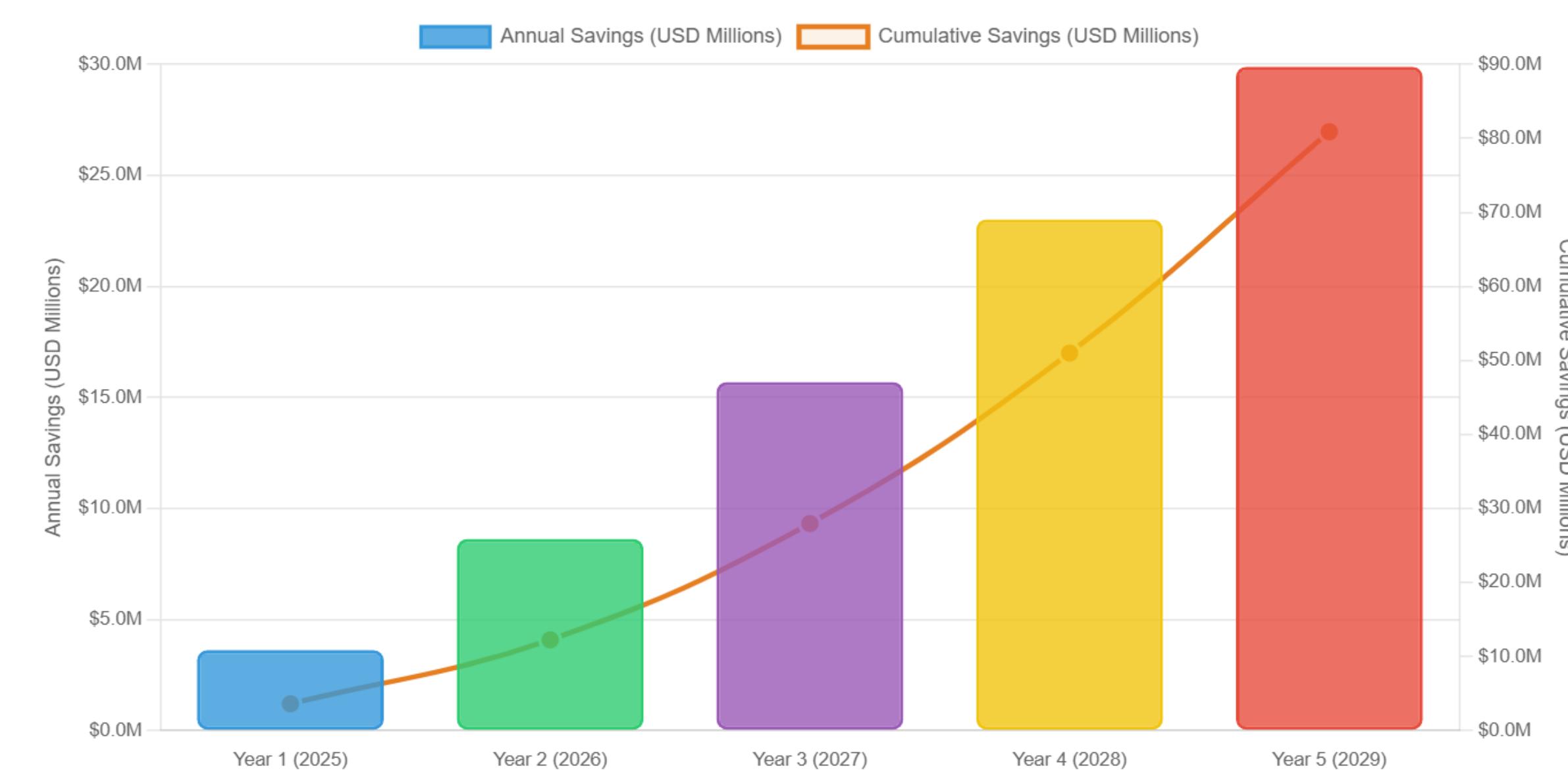
Budget impact analysis revealed progressive cost savings favoring hyaluronic acid implementation.

Key Financial Outcomes:

- **Year 1:** USD \$3.6 million savings
- **Year 5:** USD \$29.9 million savings
- **Cumulative 5-year savings:** USD \$80.9 million.

Annual Cost Savings Progression

Hyaluronic Acid Viscosupplementation vs. Standard Care (2025-2029)



CONCLUSIONS

- **Economic Impact:** Expanding utilization of multidose hyaluronic acid viscosupplementation represents a cost-saving strategy for knee osteoarthritis management within Colombia's healthcare system.
- **Clinical Value:** Robust sensitivity analyses confirmed negative budget impact across all evaluated scenarios, supporting initiatives to increase access and utilization.
- **Policy Implications:** The intervention's capacity to defer high-cost surgical procedures while maintaining clinical effectiveness establishes strong economic rationale for utilization optimization and clinical pathway enhancement.
- **Healthcare System Benefits:** Results support policy decisions aimed at expanding access to viscosupplementation as a cost-effective intervention for osteoarthritis management.

REFERENCES



CONTACT INFORMATION

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