

Economic Evaluation of Surfactant Therapy for Neonatal Respiratory Distress Syndrome: 5-Year Real-World Evidence on Poractant Alfa vs. Beractant From the IMSS Perspective in Mexico

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Introduction

In Mexico, neonatal respiratory distress syndrome (RDS) remains a life-threatening complication of prematurity, generating a substantial clinical and economic burden for the Mexican Institute of Social Security (IMSS) through prolonged intensive care, high rates of adverse events, and increased mortality. This study evaluated the long-term cost-effectiveness of Poractant Alpha (Curosurf®, 200 mg/kg) versus Beractant (Survanta®, 100 mg/kg) for the treatment of neonatal RDS, using five-year real-world data from IMSS.

Methods

Clinical and economic outcomes were assessed in preterm infants treated with Poractant Alpha or Beractant between 2020 and 2024. Patient-level data were extracted from IMSS clinical and administrative databases, including diagnostic codes, treatment records, resource use, and outcomes.

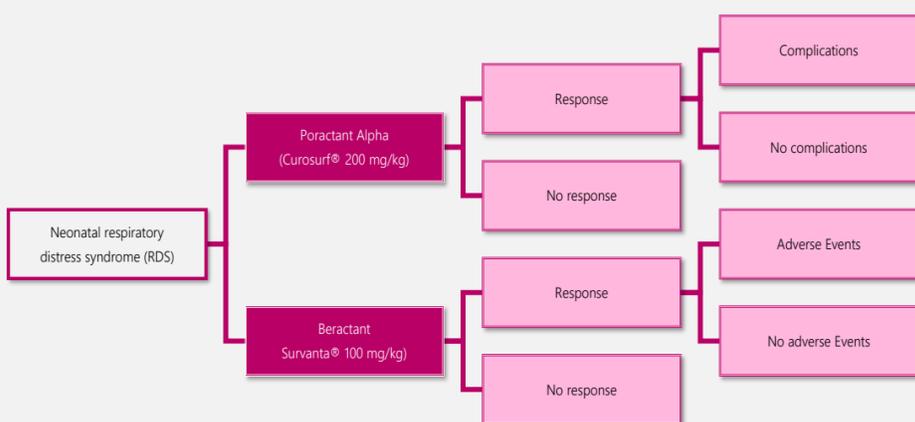
Table 1. Model Parameters.

Prescribed dosage	First dose	Second dose	Source
Poractant Alpha (Curosurf® 200 mg/kg)	200 mg/Kg	100 mg/Kg	Full prescribing information
Beractant (Survanta® 100 mg/kg)	100 mg/Kg	100 mg/Kg	Full prescribing information
Expected dosage	Poractant alfa	Beractant	Source
Single-dose patients	88%	69%	Dizdar Evrim, 2012
Patients receiving a second dose	12%	31%	Dizdar Evrim, 2012
Neonatal Intensive Care Unit (NICU) hospitalization per year	NICU cost per day	Days in NICU	Source
Poractant Alpha (Curosurf® 200 mg/kg)	\$1,755.49	33.0	Dizdar Evrim, 2012
Beractant (Survanta® 100 mg/kg)	IMSS DOF	41.0	Dizdar Evrim, 2012
Annual mortality rate	Poractant alfa	Beractant	Source
Poractant alfa 200 mg vs beractant 100 mg (average)	8.0%	16.0%	Calculated
Adverse events (5-year period)	Poractant alfa	Beractant	Source
Bronchopulmonary dysplasia (BPD)	21.30%	41.50%	IMSS
Expected cost per patient	\$162.80	\$317.20	IMSS
Patent ductus arteriosus (PDA)	39.94%	65.07%	IMSS
Expected cost per patient	\$179.11	\$291.76	IMSS
Adverse Events costs	\$341.91	\$608.96	IMSS
Cost of illness	Relative weight	Total cost	Source
BDP, cost of illness (GRD, 196)	6.44	\$14,904.42	IMSS-GRD, 2017
Cost of Patent ductus arteriosus (PDA) (GRD, 306)	3.78	\$8,743.90	IMSS-GRD, 2017
Birth weight (g)	Grams	Kilograms	Source
Birth weight, Poractant Alfa	1,165 grams	1.17 Kg	Dizdar Evrim, 2012
Birth weight, Beractant	1,080 grams	1.08 Kg	Dizdar Evrim, 2012
Average weight	1,123 grams	1.12 Kg	Calculated

The primary outcome was all-cause in-hospital mortality. Secondary outcomes included NICU length of stay, incidence of bronchopulmonary dysplasia (BPD), and persistent ductus arteriosus (PDA).

Cost components included surfactant acquisition, NICU hospitalization, and management of complications, all calculated from the IMSS perspective using official tariffs, Diagnosis-Related Groups (DRGs), and standard unit costs.

Illustration 1. Decision model structure.



A decision-analytic model (decision tree) was developed to estimate cumulative costs and outcomes over five years. Discounting was not applied due to the nature of the real-world data. Incremental cost-effectiveness ratios (ICERs) were calculated based on avoided mortality. All costs are presented in 2025 US dollars.

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Presented at ISPOR Europe 2025.
 November 9-12, 2025.
 Glasgow Scotland, UK.

Results

Poractant Alpha consistently outperformed Beractant, demonstrating lower mortality (8.0% vs. 16.0%), reduced BPD (21.3% vs. 41.5%) and PDA (39.94% vs. 65.07%), shorter NICU stays (33 vs. 41 days), and lower per-patient total costs (\$295,147 vs \$364,300 USD).

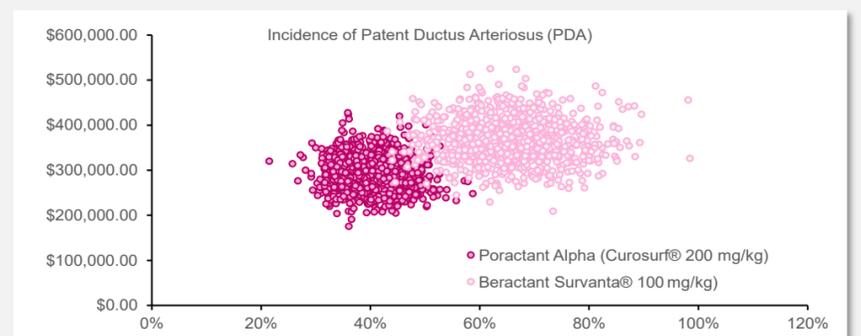
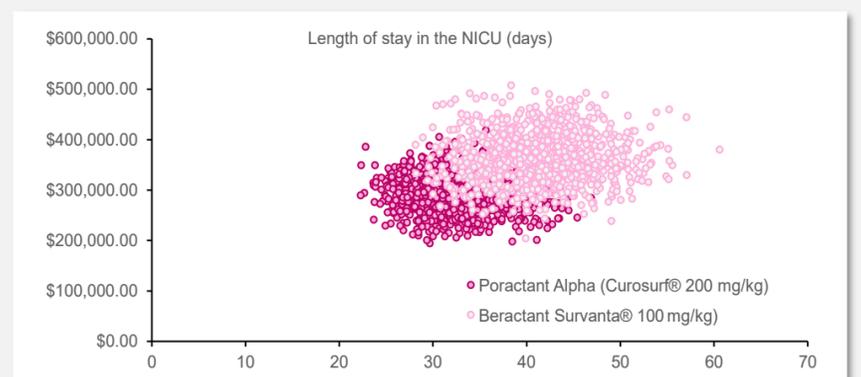
Table 2. CEA results in all scenarios.

Mortality rate (Negative effectiveness measure)					
Available treatments at IMSS	Cost	Incremental cost	Effectiveness	Incremental E.	ICER
Poractant Alpha (Curosurf® 200 mg/kg)	\$295,147	-\$69,153	8.0%	0.0800	Dominant
Beractant Survanta® 100 mg/kg)	\$364,300	Reference	16.0%	Reference	Dominated
Length of stay in the NICU (Negative effectiveness measure)					
Available treatments at IMSS	Cost	Incremental cost	Effectiveness	Incremental E.	ICER
Poractant Alpha (Curosurf® 200 mg/kg)	\$295,147	-\$69,153	33.00 days	8.0	Dominant
Beractant Survanta® 100 mg/kg)	\$364,300	Reference	41.00 days	Reference	Dominated
Incidence of bronchopulmonary dysplasia (Negative outcome measure)					
Available treatments at IMSS	Cost	Incremental cost	Effectiveness	Incremental E.	ICER
Poractant Alpha (Curosurf® 200 mg/kg)	\$295,147	-\$69,153	21.3%	20.2%	Dominant
Beractant Survanta® 100 mg/kg)	\$364,300	Reference	41.5%	Reference	Dominated
Incidence of patent ductus arteriosus (Negative outcome measure)					
Available treatments at IMSS	Cost	Incremental cost	Effectiveness	Incremental E.	ICER
Poractant Alpha (Curosurf® 200 mg/kg)	\$295,147	-\$69,153	39.9%	25.1%	Dominant
Beractant Survanta® 100 mg/kg)	\$364,300	Reference	65.1%	Reference	Dominated

Probabilistic sensitivity analyses using Monte Carlo simulations were conducted to assess uncertainty in inputs and outcomes.

These findings were robust under uncertainty in over 95% of simulations.

Illustration 2. PSA results in all scenarios.



Conclusion

Over five years of real-world use within IMSS, Poractant Alpha proved to be a dominant strategy, delivering superior clinical outcomes and greater cost-efficiency in the treatment of neonatal RDS in Mexico's public healthcare system.

References

Baroutis G, Kaleyias J, Liarou T, Papatoma E, Hatzistamatiou Z, Costalos C. Comparison of three treatment regimens of natural surfactant preparations in neonatal respiratory distress syndrome. *Eur J Pediatr* 2003;162:476-480