Submission Title: *The Cost Efficacy of Providing Basic Evidence-Based Cystic Fibrosis Care to At-Risk Children in Mexico City*

SUBMISSION PREVIEW: *THE COST EFFICACY OF PROVIDING BASIC EVIDENCE-BASED CYSTIC FIBROSIS CARE TO AT-RISK CHILDREN IN MEXICO CITY*

The Cost Efficacy of Providing Basic Evidence-Based Cystic Fibrosis Care to At-Risk Children in Mexico City

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Author(s)

Mark A. Tremblay (he/him/his)
Role: Presenting Author

José Luis Lezana-Fernández, Sr. (he/him/his)
Role: Co-Author

Magali Reyes-Apodaca (she/her/hers)
Role: Co-Author

Sooho Lee (he/him/his)
Role: Co-Author

Kathleen Barrett (she/her/hers)
Role: Co-Author

Abstract

Primary Category

HEALTH EQUITY, CARE, DELIVERY, & ACCESS TO CARE

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- No

Best Abstract Awards for Junior Investigators Competition

- Yes

Background

Cystic fibrosis (CF) is a genetic disorder caused by over 2,000 known mutations, resulting in abnormal mucus production that impairs pulmonary and gastrointestinal function. This leads to multisystem complications, including malabsorption, recurrent infections, and progressive respiratory failure. Although CF is a global disease, access to treatment is highly inequitable and largely determined by geography and economic status. Approximately 27% of patients worldwide—primarily in high-income countries—have access to highly effective modulator therapy (HEMT), which has increased life expectancy into the mid-50s. In contrast, many patients in low-resource settings lack even basic interventions such as airway clearance, nebulized therapies, and nutritional support. In Mexico, survival remains substantially lower, with a median life expectancy of approximately 23 years at Federico Gómez Children's Hospital.

Methods

This study evaluated the clinical outcomes, quality of life, and cost-effectiveness of implementing a basic evidence-based CF care package in a cohort of 22 at-risk pediatric patients at a Mexico City clinic. Patients were selected based on low Body Mass Index (BMI) and limited access to essential therapies. The intervention included caloric supplementation, handheld airway clearance devices (e.g., Aerobika), hypertonic saline, nebulizer compressors, and, where indicated, portable oxygen concentrators. Outcomes were assessed over a nine-month intervention period and annualized for comparison against a 12-month baseline.

Results

Preliminary findings demonstrated substantial reductions in healthcare utilization, including a 62% decrease in inpatient hospital days and a 53% reduction in emergency room visits. Antibiotic utilization also declined significantly (IV 51%, oral 34%, inhaled 62%). Concurrently, clinical outcomes improved, with a 218% increase in BMI Z-score, a 12% increase in body weight, and a 2% improvement in lung function (FEV_1). Quality of life, measured by the Cystic Fibrosis Questionnaire-Revised (CFQ-R), improved across multiple domains: Digestive (27%), Respiratory (16%), Body (10%), and Physical (9%).

Cost-effectiveness analysis (Figure 1) demonstrated improved outcomes (ΔBMI Z-score = +3.05) and reduced costs (–$12,090), placing the intervention in the dominant quadrant. Incremental cost-effectiveness analysis will be completed at 12 months to assess sustainability.

Conclusions

Preliminary findings demonstrate that a basic, evidence-based CF care package represents a dominant intervention, improving clinical outcomes—most notably BMI Z-score—while reducing total healthcare costs. These results indicate that low-cost interventions can enhance nutritional status, quality of life, and health outcomes while decreasing reliance on high-acuity services. This study supports policy efforts to expand access to fundamental CF therapies in low- and middle-income countries as a cost-saving, high-value strategy to improve outcomes and reduce global health disparities.

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References

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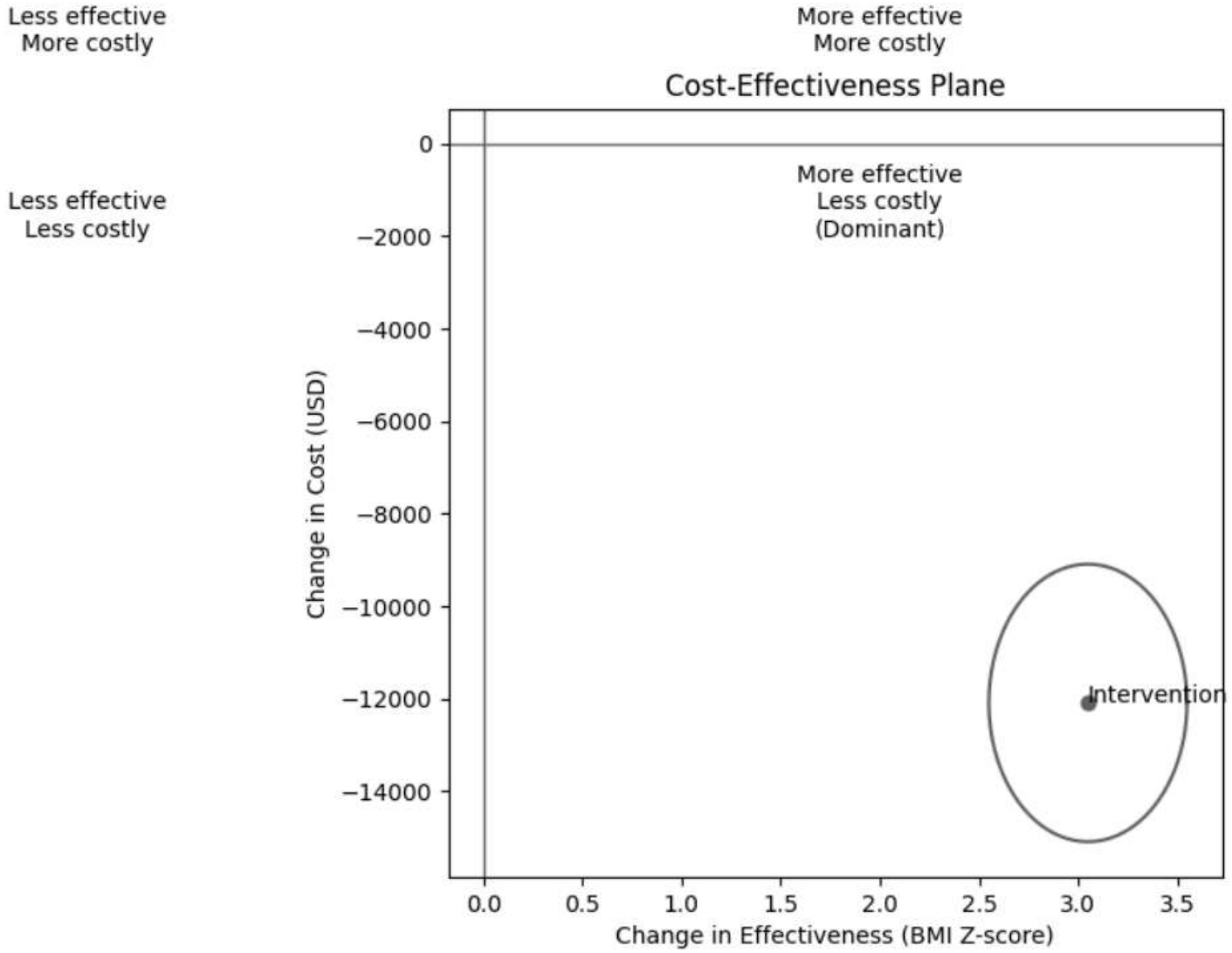

Cost-Effectiveness Plane Demonstrates a Dominant Intervention with Improved Outcomes and Reduced Costs.

CFV4L MM4M.png