

Cost Effectiveness of Infliximab when Treating IVIG-resistant Kawasaki Disease

Jada Johnson, MS
Kit Simpson, DrPH
Daniel Brinton, PhD
Jane C. Burns, MD
Annie N. Simpson, PhD

INTRODUCTION

1. Intravenous immunoglobulin (IVIG) is a known effective treatment to reduce the incidence of coronary artery aneurysms in Kawasaki Disease patients (KD).
2. The KIDCARE trial compared 2nd IVIG vs. infliximab for treatment of IVIG-resistant KD and showed that infliximab was associated with shorter duration of fever, reduced need for additional therapy, less severe anemia, and shorter hospitalization.
3. This study aims to determine if second round IVIG or infliximab is more cost effective for treatment of IVIG-resistance in children with KD.

METHODS

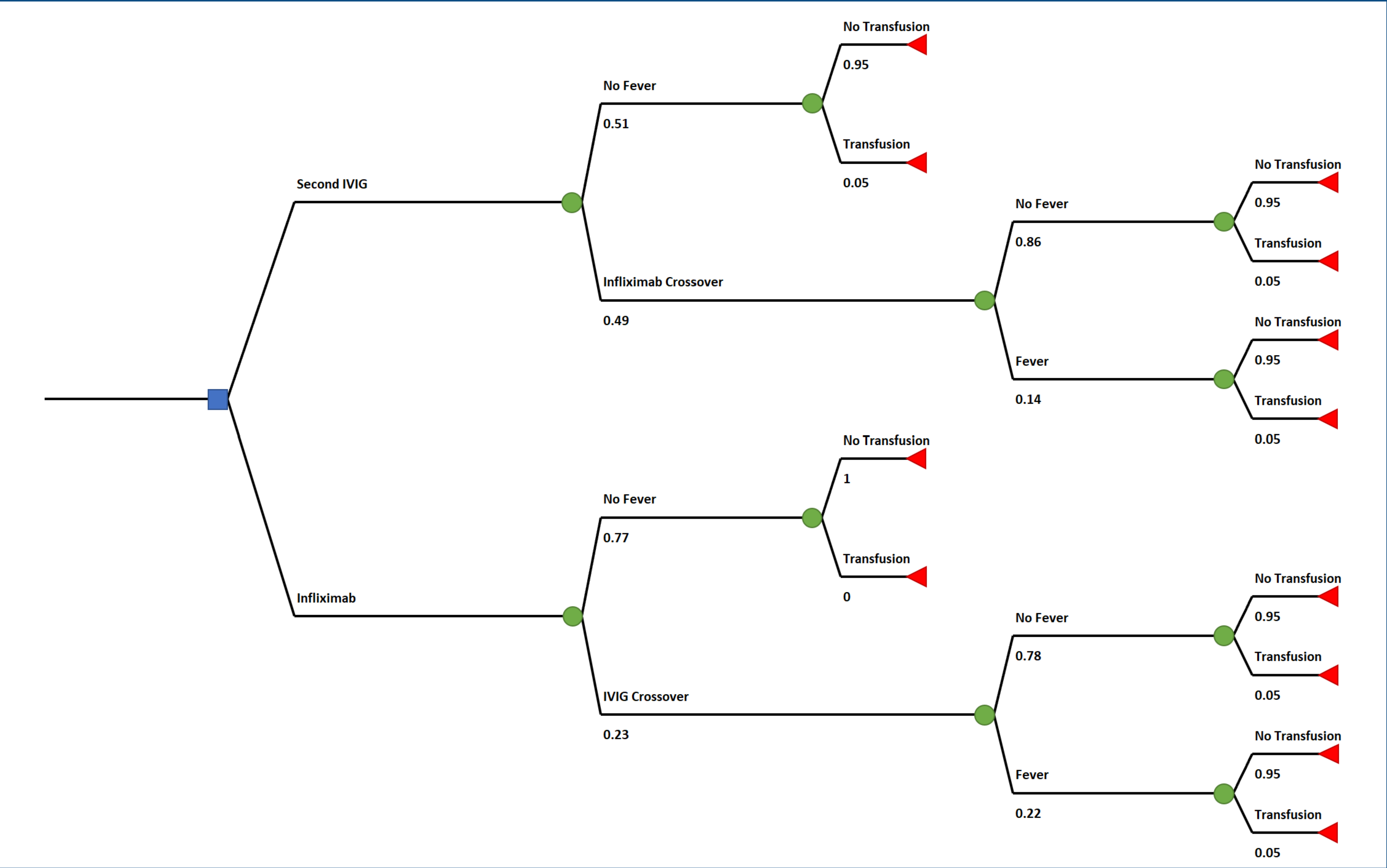
1. A decision tree was developed to estimate total costs and outcomes.
2. Cost effectiveness ratios were calculated for both treatment pathways.
3. Cost and resource use was estimated from MarketScan, US Bureau Labor of Statistics, Redbook and relevant peer-reviewed sources.
4. Outcomes were measured using fever free days based on KIDCARE study results.
5. A sensitivity analysis was conducted on all cost parameters, probabilities of main predictor and cost of transfusion (infiximab), and weight of a child.

RESULTS

1. Use of Infliximab in IVIG-resistant patients was found to be the least costly and more effective treatment pathway in children with KD.
2. The second IVIG treatment pathway had a cost of \$1,809 per additional fever free day and the infliximab treatment pathway had a cost of \$1,289 per additional fever free day.
3. Infliximab saved one additional inpatient day.
4. ICER = -\$11,812
5. Infliximab is the dominant economic treatment choice compared to treating IVIG-resistant patients with a second dose of IVIG under a range of assumptions for both treatment patterns.



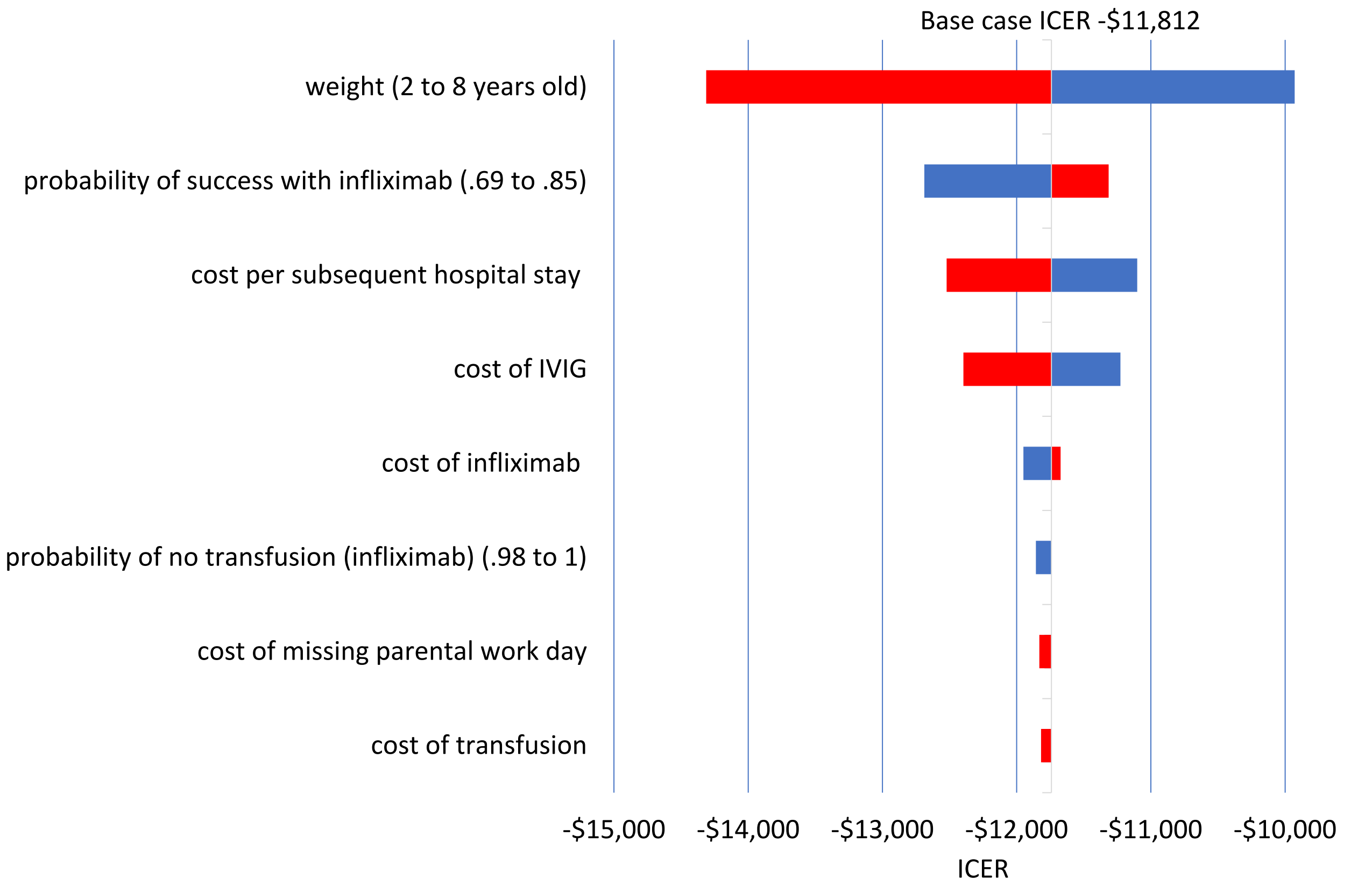
Second round Infliximab is a dominant (cost effective) choice for treatment resistant Kawasaki Disease children compared with a second dose of IVIG.



Key Assumptions	Model Input	Sources
Cost of hospital day	\$7546	Johnson et al. 2021
Cost of infliximab	\$2701	Redbook 2020; MarketScan 2020; CDC; Burns et al. 2021
Cost of IVIG	\$7099	Redbook 2020; MarketScan 2020; CDC; Burns et al. 2021
Missed parental workday	\$189	US Bureau of Labor and Statistics 2021
Cost of transfusion	\$1660	MarketScan 2020
Length of stay following second IVIG dose	4.5	Burns et al. 2021
Length of stay following infliximab dose	3.2	Burns et al. 2021
Length of stay following IVIG crossover	6.4	Burns et al. 2021
Length of stay following Infliximab crossover	5.3	Burns et al. 2021
Probability of successful 1st treatment Infliximab	77%	Burns et al. 2021
Probability of successful 1st treatment w/ 2nd IVIG	51%	Burns et al. 2021
Probability of successful treatment w/ Infliximab crossover	86%	Burns et al. 2021
Probability of successful treatment w/ 2nd IVIG crossover	78%	Burns et al. 2021
Probability of transfusion following IVIG	5%	Burns et al. 2021

**All costs were inflated to 2022 dollars*

One Way Sensitivity Analysis



References
Johnson, S. C., Williams, D. C., Brinton, D., Chew, M., Simpson, A., & Andrews, A. L. (2021). A Cost Comparison of Infliximab Versus Intravenous Immunoglobulin for Refractory Kawasaki Disease Treatment. *Hospital pediatrics*, 11(1), 88–93.
Burns, J. C., Roberts, S. C., Tremoulet, A. H., He, F., Printz, B. F., Ashouri, N., Jain, S. S., Michalik, D. E., Sharma, K., Truong, D. T., Wood, J. B., Kim, K. K., Jain, S., & KIDCARE Multicenter Study Group (2021). Infliximab versus second intravenous immunoglobulin for treatment of resistant Kawasaki disease in the USA (KIDCARE): a randomised, multicentre comparative effectiveness trial. *The Lancet. Child & adolescent health*, 5(12), 852–861.