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Background

- Cystic Fibrosis (CF) affects ~4300 patients in Canada
- The affected gene codes for the cystic fibrosis transmembrane conductance regulator (CFTR)
 - A transmembrane protein at the apical membrane of epithelial cells
 - CFTR dysfunction disrupts ion transport at the airway impairing clearance of mucous and debris and allowing opportunistic pathogens to thrive
- Pseudomonas aeruginosa* (*P aeruginosa*) is a common opportunistic pathogen in the CF population affecting ~40% of Canadian patients
 - Chronic colonization increases morbidity and mortality
- Since 1995, BC Children's Hospital (BCCH) treated a first *P aeruginosa* growth with IV antipseudomonal antibiotics for 2 weeks, PO ciprofloxacin for 3 weeks and inhaled colistin for 6 months
- In 2014 a new outpatient eradication protocol was implemented at BCCH

Outpatient Eradication Protocol

- Ciprofloxacin 20 mg/kg/dose BID by mouth daily for 3 weeks
- Tobramycin 300 mg BID inhaled for 4 weeks

*Patients that were unwell at isolation were admitted for 2 weeks of IV antipseudomonal antibiotics

Purpose

To assess the efficacy and safety of the new *P aeruginosa* eradication protocol implemented at BCCH in 2014

Outcomes

Primary: Rate of successful *P aeruginosa* eradication defined as negative culture after a minimum 7 days post eradication protocol

Secondary:

- Describe adverse events
- Time to regrowth within 12 months
- Change in BMI percentile pre and post eradication
- Change in lung function (FEV₁ % predicted) pre and post eradication
- Change in number of pulmonary exacerbations 12 months pre and post eradication

Methods

Design: Single centered, retrospective observational review

Inclusion: Confirmed CF diagnosis, first positive growth of *P aeruginosa*, received new eradication protocol between December 2014 and September 2019

Exclusion: Chronic *P aeruginosa* colonization, chronic inhaled antibiotic for *P aeruginosa* suppression, received different protocol and did not complete follow up cultures

Statistical Analysis: Descriptive statistics

Table 1: Demographics (N=55)

Male, n (%)	26 (47)
Weight percentile, median (range)	35.9 (0.4 – 92.6)
BMI percentile, median (range)	40.6 (0.3 – 98.7)
Age at first growth in years, median (range)	9 (0.4 – 18)
Pulmonary exacerbations events per year, median (range)	2 (0 – 6)
CF genes, n (%)	
F508del homozygous	30 (55)
F508del heterozygous	18 (33)
Other	7 (12)
Pancreatic insufficiency, n (%)	46 (84)
CF related diabetes, n (%)	5 (9)
Culture type, n (%)	
Cough swab	38 (69)
Sputum	17 (31)

Figure 1: *P aeruginosa* Eradication (N=55)

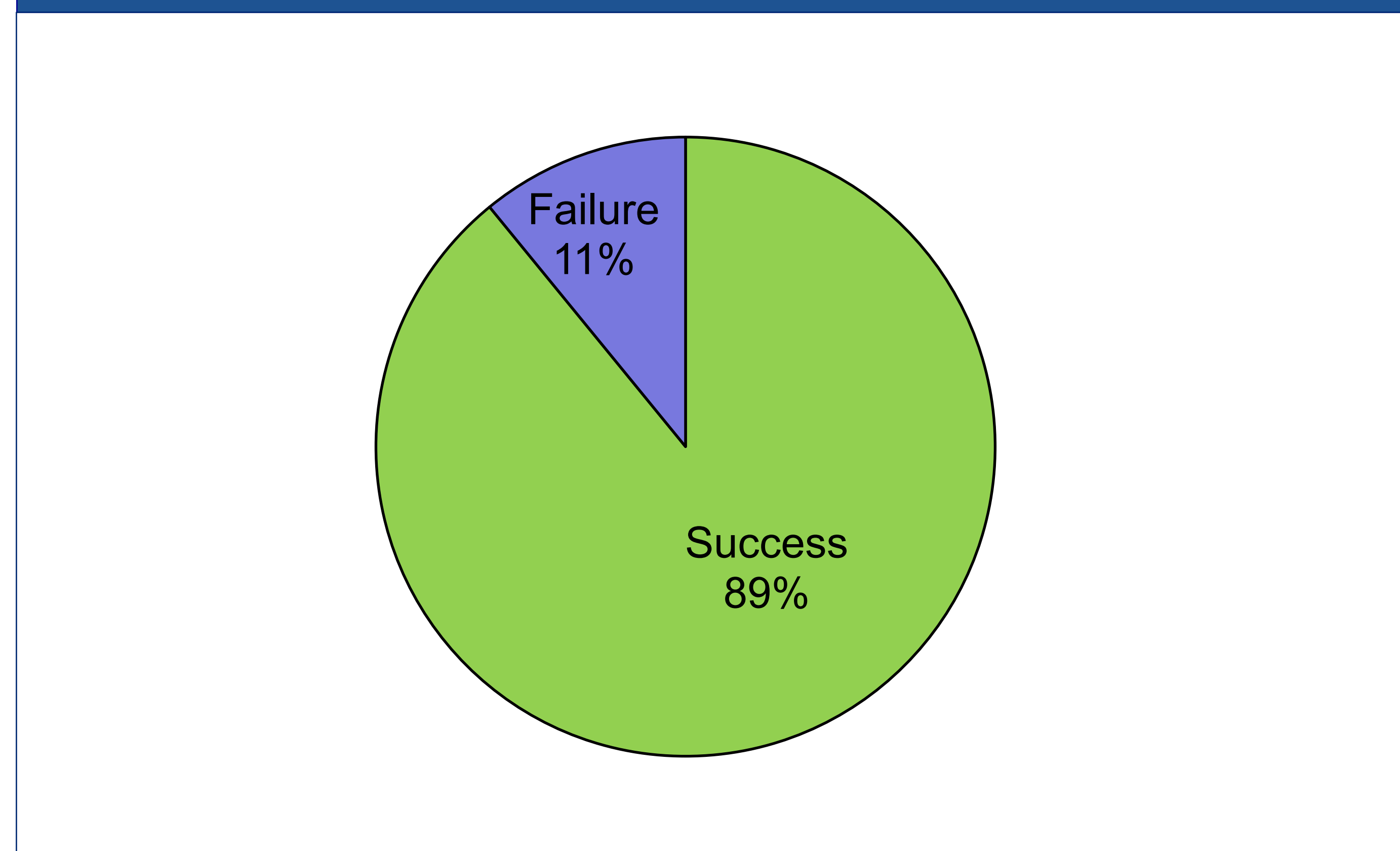


Table 2: Adverse Events (n=4)

Ciprofloxacin	Diarrhea, Diaper Rash (1) Stomach Upset (1) Oral Thrush (1)
Tobramycin	Dry Cough (1)

Table 3: *P aeruginosa* regrowth

Rate of regrowth in 12 months, n (%)	19 (35)
Time to regrowth within 12 months, median days (range)	104 (13 - 304)

Figure 2: Change in Lung Function (n=28)

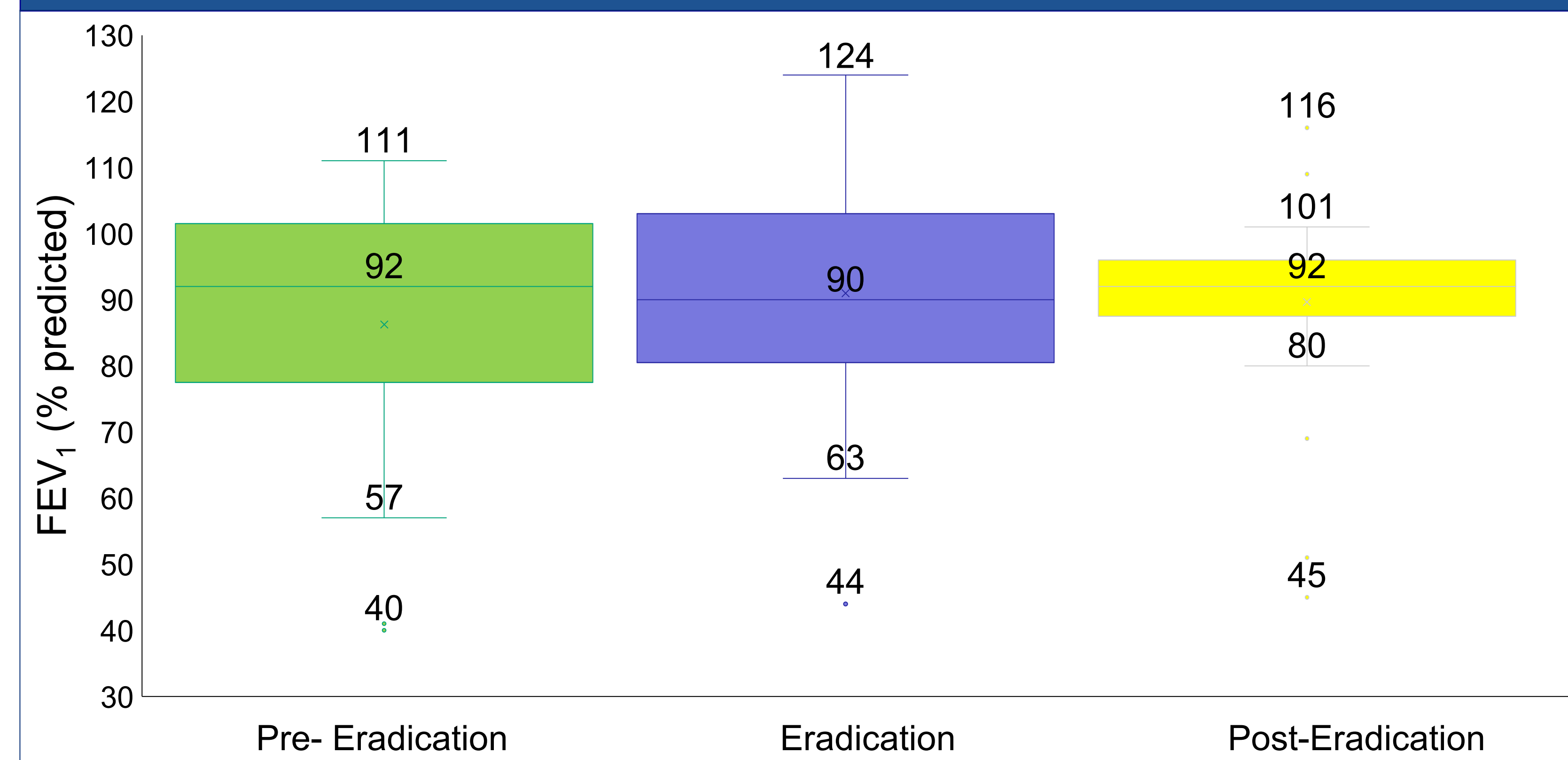
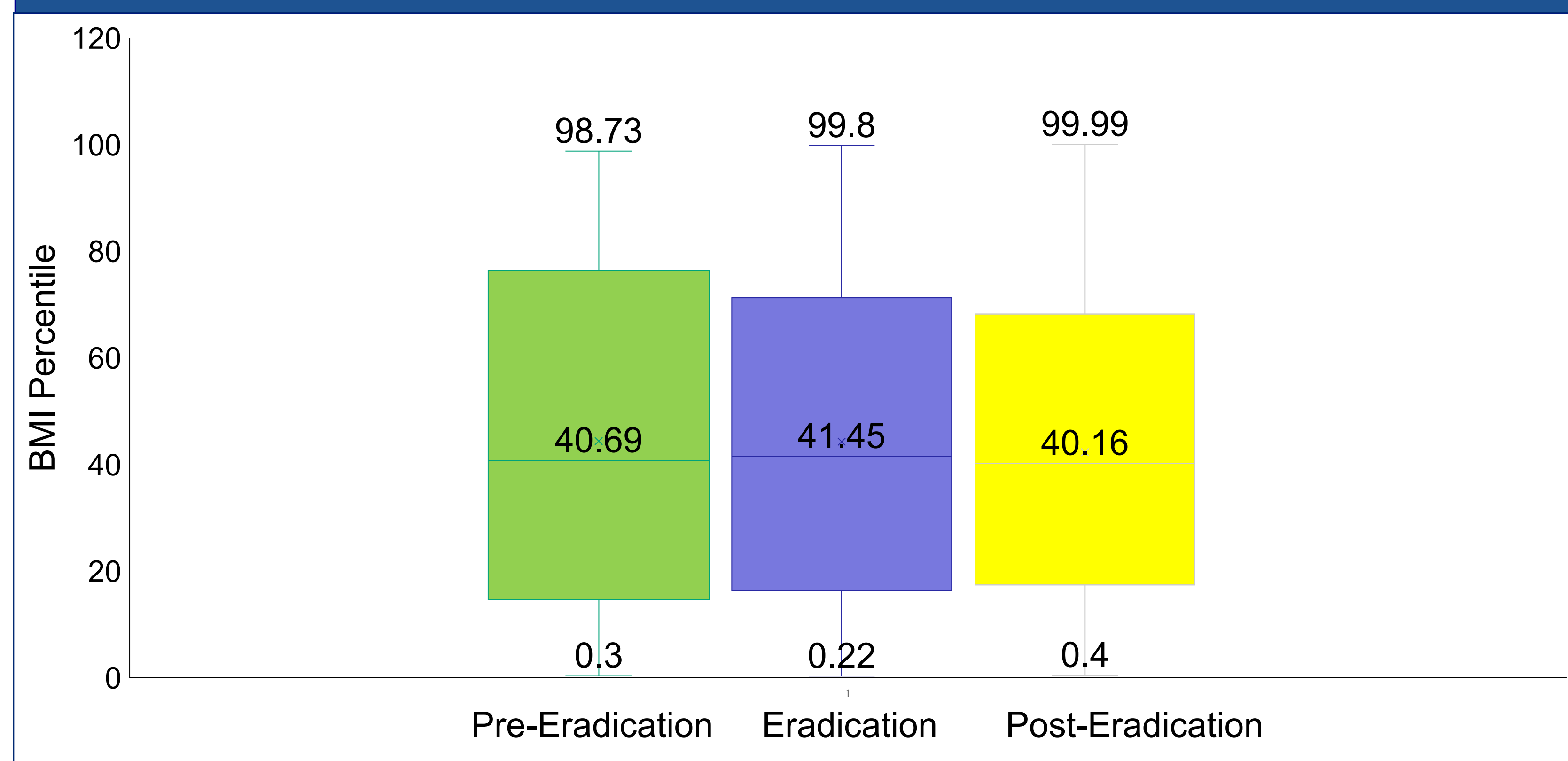


Figure 3: Change in BMI Percentile



Discussion

- The eradication rate of 89% is comparable to the 90% of the previous protocol
- In addition to the outpatient protocol, 25% (17/55) received IV antibiotics
 - Of these 31% (15/49) were in the successful eradication group and 33% (2/6) were in the failed eradication group
- A low number of adverse events reported may be due to the limitation of a retrospective review
- The regrowth rate at 35% compares to the 30% of the previous protocol

Conclusions

- The outpatient protocol has comparable efficacy to the previous protocol and those in the literature
- This supports continued use for this eradication protocol