Chronic *Pseudomonas aeruginosa* (PA) lung infections in cystic fibrosis (CF) patients present an infection paradox; antibiotics often fail to fully eradicate antibiotic susceptible bacteria, which successfully adapt and persist in the lungs of the patients. Our objective is to understand why antibiotic treatment fails in CF patients infected with PA. It has been suggested that bacterial persistence is associated with the presence of “persister” subpopulations. Persister bacteria are susceptible cells that survive antibiotic treatment and can resume growth when antibiotics are no longer present, resulting in antibiotic tolerance. We hypothesize that treatment failure may be worsened due to the presence of high persister mutants with significantly increased persister subpopulations in presence of antibiotics.