

## Background

- Cystic fibrosis bone disease (CFBD) is characterized by bone loss and fragility fractures.<sup>1</sup>
- With advances in disease management and increased life expectancy, the prevalence of CFBD is growing.<sup>1</sup>
- Trikafta, a novel combination therapy of ivacaftor with elxacaftor and tezacaftor, is designed to correct and potentiate the trafficking defect caused by CFTR mutation.<sup>2</sup>
- Early evidence has shown significant improvements in clinical outcomes linked to lung function with Trikafta.<sup>2</sup>
- To date, there are no published studies examining the effects of Trikafta on bone health in children with CF.

## Objective

- Examine the impact of 1-month and 6-months of Trikafta therapy on changes in total and regional bone mineral density (BMD) and bone mineral content (BMC) in children with CF.

## Methods

- Boys and girls with CF between 2 to 17 years of age who are initiating Trikafta therapy will be invited to complete 3 visits.
- Study visits will be identical, and will take place 1 month before beginning Trikafta, at 1-month and 6-months of therapy.
- Measurements will include:
  - 1) Anthropometrics: standing height and body weight.
  - 2) Body composition:
    - Bioelectrical impedance analysis
    - Dual x-ray absorptiometry: regional and whole-body scans will be completed to quantify BMD and BMC.

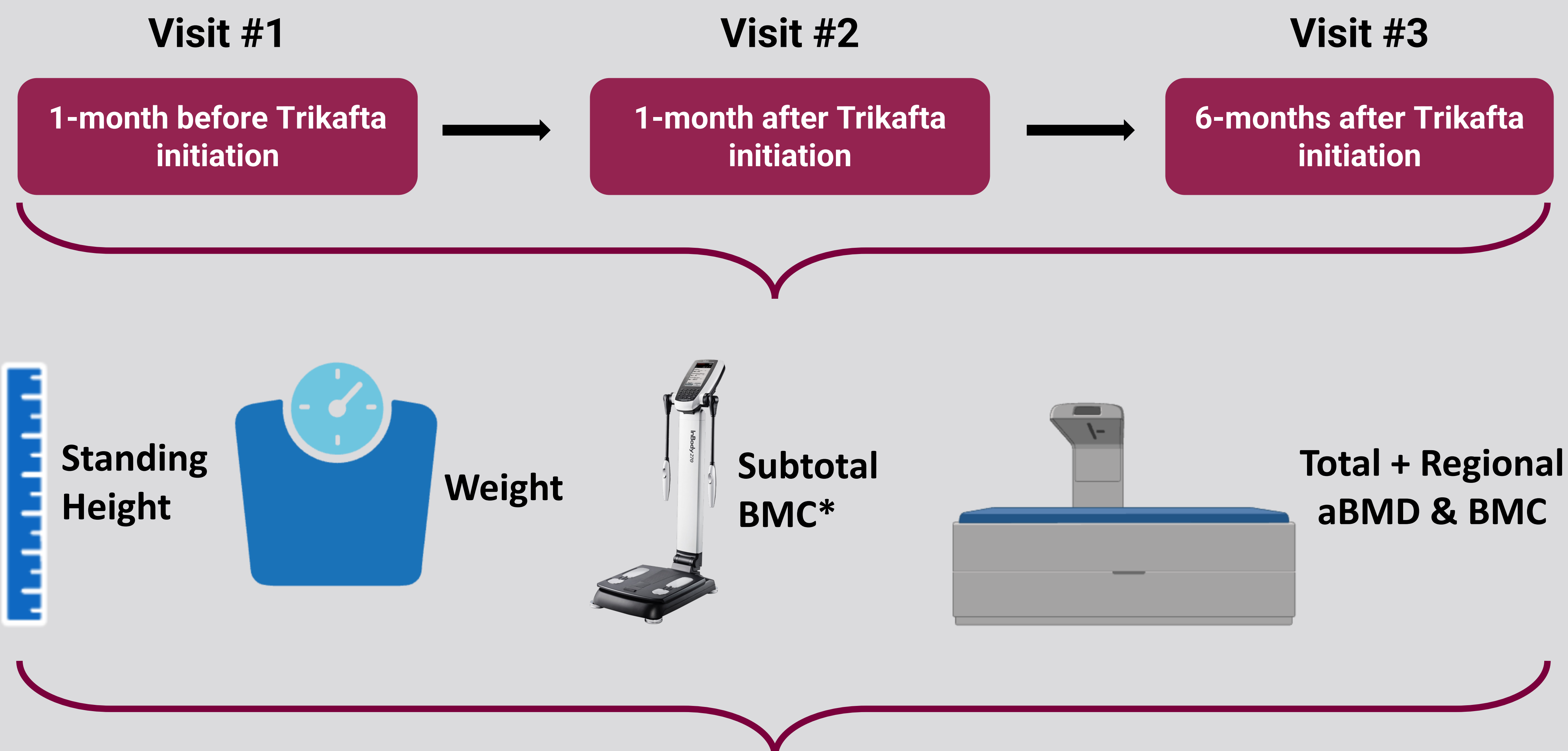
## Anticipated Findings

- We hypothesize that BMD and BMC will improve 1 month and 6 months into Trikafta therapy based on:
  - *In-vitro* evidence demonstrating the rescue of mutated CFTR protein improves bone remodeling.<sup>3</sup>
  - Increases in BMD but not BMC following 3 months of Trikafta treatment in adults with CF.<sup>4</sup>

## Significance

- This study will provide insight into the physiological response of bone to Trikafta in children with CF.
- Extended use of Trikafta during childhood may have lasting effects on bone architecture and strength of CF patients.
- Our findings will help us understand if bone health will continue to be an area of concern in CF management.

## TriFIT STUDY OVERVIEW



**Examine the impact of 1-month and 6-months of Trikafta therapy on BMD and BMC in children with CF**

\*Subtotal BMC (g) will be calculated using predictive model by Lee et al. (2020)

## References

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