investigate relationships of lung function in early childhood with growth patterns (here considered as change in weight) before the age of five years. We use flexible longitudinal modelling methods to describe early growth trajectories, and identify factors associated with suboptimal growth.

Methods Growth measurements from diagnosis to five years were extracted from two national CF registries: UK (n=2999, years 2007–2015) and Canada (n=2690, years 1990–2013). SITAR (super-imposition by translation and rotation) was used to model weight (kg) over the 5 years. Output parameters were average growth curve, summaries of growth velocity and overall weight. Associations of growth and growth velocity with sex, genotype and new born screening (NBS) were investigated.

Results Most children in the UK had been diagnosed early in life (median age of diagnosis 0.06 years; inter quartile range 0.03 to 0.1) by NBS. 52% were homozygous for deltaF508. Despite similar initial average weight in boys and girls, males were heavier than females over the first five years. Children homozygous for deltaF508 were lighter than other children. No tested factor was associated with velocity of weight gain. Only 10% of the Canadian children were diagnosed by NBS, and, overall, the age at diagnosis was later (median 0.17 years; inter quartile range 0.08 to 0.53). Over the first five years, Canadian CF children were lighter than those in the UK (figure 1). Associations of weight with sex and genotype were similar to those seen in the UK. In addition, we observed that those diagnosed by NBS were heavier than those who were not.

Conclusions In children with CF there are sex differences in weight during the first 5 years, despite similar initial weight. In Canada, NBS has a positive impact on early growth. SITAR allows exploration of growth patterns in CF patients, but time independent characteristics were not associated with velocity of growth. Statistical modelling incorporating time dependent factors (e.g., infections, treatments) are required to explain variability of growth trajectories.

Abstract S91 Figure 1 Average growth curves for children with CF.