Background Cystic fibrosis (CF) is the commonest inherited disease in white populations, and as a classically inherited genetic disease, there is no socio-economic gradient in incidence. Despite this, we have previously demonstrated early inequalities in CF outcomes such as reduced growth and poorer lung function in children from more socio-economically disadvantaged areas. In the present study, we used data from the UK CF Registry to examine the impact of newborn bloodspot screening (NBS), introduced in 2007, on inequalities in clinical outcomes in children with CF born in the new millennium.

Methods We carried out longitudinal analyses of data on 4117 individuals with CF born between 2000 and 2014 who are captured in the UK CF Registry. Clinical outcomes were the trajectories of lung function measured using percent predicted FEV1 (ppFEV1) from age five, weight and body mass index (BMI) z-scores from age one, and time to chronic Pseudomonas Aeruginosa (PA) infection. We developed longitudinal models for ppFEV1, weight, and BMI and a time-to-event model for PA infection to assess the association of NBS with outcomes and potential interactions with childhood socio-economic conditions (SECs), measured by the index of multiple deprivation, whilst adjusting for sex, genotype, birth cohort, ethnicity, and pancreatic insufficiency.

Results Complete data for the analyses of the effect on lung function, weight, BMI and time to chronic PA infection were available for 2267, 3424, 3410 and 3428 individuals, respectively. About one third of the individuals were diagnosed by NBS. NBS was associated with a shallower rate of lung function decline (0.45; 95% CI 0.13 to 0.76 per year), and higher average weight trajectory intercept (0.14; 95% CI 0.06 to 0.23 standard deviations) as well as increased time to chronic PA infection. We found no significant association of NBS with the intercept for lung function or BMI; or with longitudinal trajectories of weight and BMI. There was no significant interaction between NBS and childhood SECs.

Conclusion Analyses of data from a large national CF Registry show that NBS is associated with better lung function and increased weight for all children with CF, but there is no evidence that it has narrowed health inequalities.