**Pregnancy and perinatal outcomes for women with Cystic Fibrosis: a UK population-based registry study, 2003-2017**

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# Background: Cystic fibrosis (CF) is an inherited, progressive condition affecting over 10 000 individuals in the UK. With advancement in care leading to improved prognosis and survival, women with CF are increasingly considering starting families, but there is currently a paucity of population-based evidence on the epidemiology of pregnancy in the CF population. We assessed pregnancy rates and outcomes for women with CF in the UK compared to the general population; and assessed the impact of the introduction of disease modifying treatments on pregnancy rates.

**Methods:** We used data from the UK CF Registry and population level conceptions data for England and Wales (E&W) for women aged 15-44 years who were pregnant between 2003-2017. For both population groups, we calculated three yearly crude pregnancy rates per 1,000 women years (wys), age specific rates, and compared pregnancy outcomes (live birth - LB) and determined the overall pregnancy rate amongst women who had in vitro fertilisation (IVF). For the CF population only, we assessed the overall pregnancy rates for women with a G551D mutation before and after Ivacaftor was introduced in 2012. To assess the impact of baseline health status on pregnancy outcomes for women with CF, we conducted a linear regression of gestational age on pre-pregnancy lung function (%FEV1) and nutrition (BMI).

**Results:** Of 3,831 women with CF included, 661 reported 818 pregnancies. The overall pregnancy rate was 26.4 (95% CI 24.7-28.3) per 1,000 wys - about a third that in E&W women (77.7). This pattern was evident in the age specific rates, except for those aged 40-44 years where the difference in rates was much less (CF women 8.2 per 1,000 wys vs. 13.3 in E&W), and the LB rate (CF women 17.4 per 1000 wys vs. 61.4 E&W women). Pregnancy rates in women with CF with G551D increased from 29.5 to 56.9 per 1000wys between 2012-2014 and 2015-2017. Women with CF who had IVF were younger than their E&W counterparts (31.2 years vs. 34.8 years). There was no correlation between %FEV1/gestational age (R=0.066, *P*=0.629) or BMI/gestational age (R=-0.06, *P*=0.585) of neonates.

**Conclusions:** Pregnancy rates in women with CF are about a third that of E&W women except for womenaged 40-44 years where the rates are similar. Overall live births were lower in women with CF compared to the general population. Pregnancy rates increased following introduction of modulator therapy.

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