

OBSTETRIC AND NEONATAL OUTCOMES IN WOMEN WITH CF (wwCF)

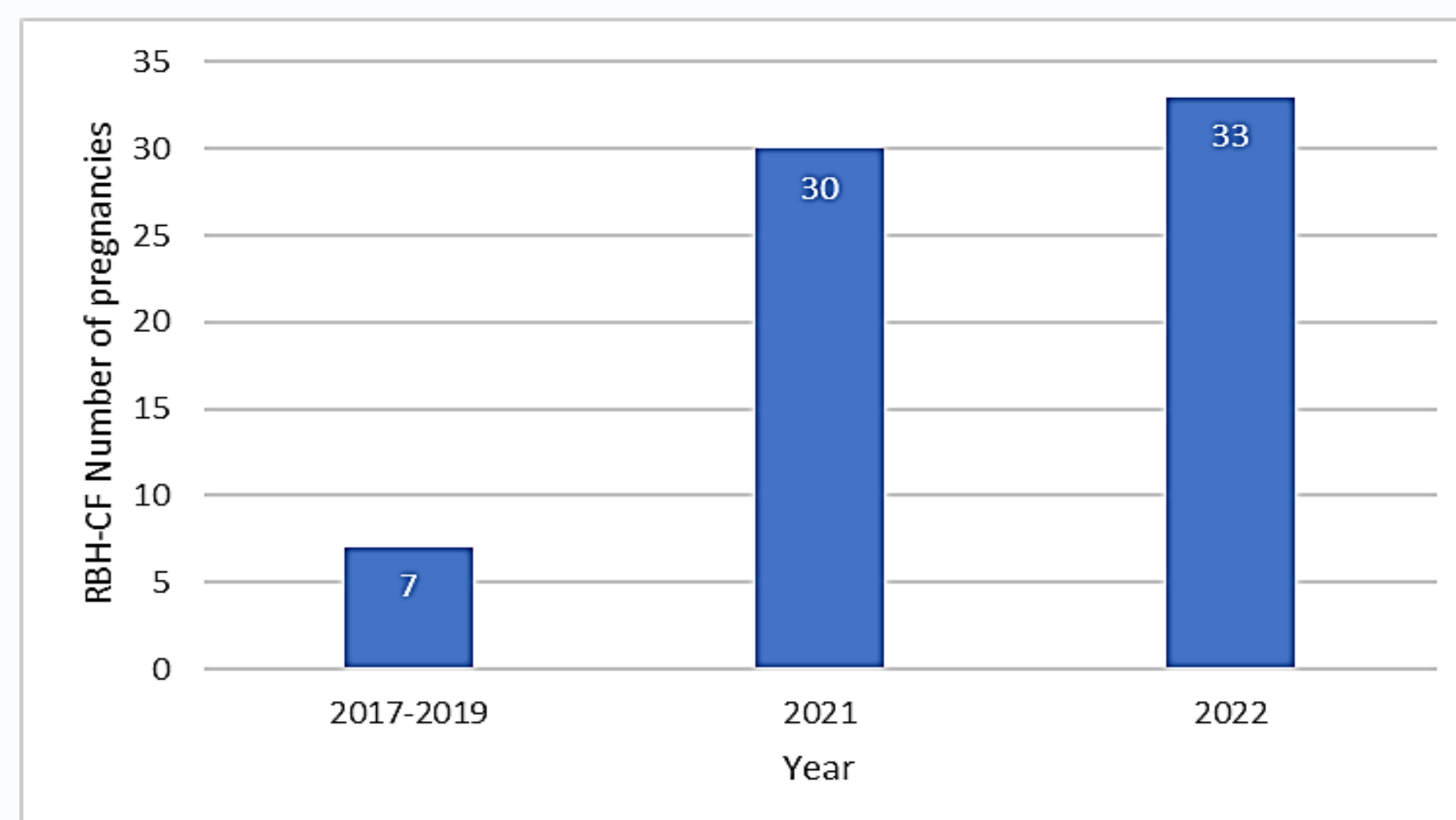
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BACKGROUND AND AIMS

- Historically pregnancy in women with cystic fibrosis (wwCF) has been considered high-risk requiring management in specialist centres¹, with guidelines stipulating that lung function (based on percentage predicted forced expiratory volume in 1 second, FEV1pp) <50% should be viewed as an absolute contraindication to pregnancy¹.
- In August 2020 a new generation of treatment, highly effective CF-genotype specific modulator therapies (specifically elexacaftor-tezacaftor-ivacaftor (ETI), brand name Kaftrio®) were approved and funded for use by NHS England. 90-95% of adults with CF are eligible, and since its availability there has been a significant increase in pregnancy rates with a fourfold rise in this large adult CF centre, a trend also reflected in UK CF patient registry reports².
- ETI confers both direct (better general health/nutrition, decreased cervical mucus viscosity & increase in pH) and indirect (increased quality of life, expectation of increased life expectancy) pro-fertility effects.
- Increasing pregnancy rates and increased stability since the introduction of ETI warrants review of these outcomes according to pre-conception lung function.



DESIGN AND METHOD

- Single-centre patient records review of all wwCF who completed pregnancies from Sept 2020-Nov 2022.
- All completed pregnancies were categorised into three groups according to maternal FEV1pp at conception:
 - Mild/no impairment (>80% FEV1pp) n= 13 (median 93% (89, 99))
 - Moderate impairment (50-80% FEV1pp) n= 16 (median 65.5% (59, 71.5))
 - Severe impairment (<50% FEV1pp) n = 5 (median 42% (38, 43))

RESULTS

- 51 pregnancies were identified.
 - Eight first trimester miscarriages (no later miscarriages) and nine terminations for social indication were excluded – live birth rate: 83.3%.
 - 32 women completed 34 pregnancies over the study period (35 live births – one twin pregnancy).
- Pre-existing CF-Diabetes was present in seven wwCF prior to pregnancy, of the 27 remaining 13 (48%) went on to develop gestational diabetes.
- Overall there was no maternal or infant mortalities, and no maternal peripartum respiratory support was required.
- 5 (16%) infants required brief neonatal ICU support for: prematurity (n=1), hypoglycaemia (n=1), transient tachypnoea of the newborn (n=2) and circulatory shock post-delivery (n=1).
- One infant was found to have simple dextrocardia, there were no other abnormalities regardless of ETI use, including no cases of cataracts on routine neonatal screen.

Pre-Term Delivery Rates (<37 weeks)

- Rates of **pre-term delivery** were higher with **lower lung function** but did not reach statistical significance ($p=0.51$)
 - Mild: n=2/13 (15.4%)
 - Moderate: n=5/16 (31.25%)
 - Severe: n= 2/5 (40%)

Gestational Age at delivery

- Median **gestational age** (weeks+days) was similar between all groups ($p=0.27$)
 - Mild: 38 (37+1, 38+1)
 - Moderate: 37 (36+6, 37+6)
 - Severe: 37+3 (35+1, 37+4)

Mode of Delivery

- Caesarean section** delivery rate was lowest in those with most severe lung function impairment ($p=0.19$)
 - Mild: 8/13 (61%)
 - Moderate 10/16 (62.5%)
 - Severe: 1/5 (20%)

Birth Weight

- Mean birth weight (kg) proportionately decreased with lung function but birth centiles were similar, and neither was statistically significant ($p=0.33$ and $p=0.98$ respectively)
 - Mild: $3.11 \pm 0.44\text{kg}$; 50th (25, 75)
 - Moderate: $2.89 \pm 0.56\text{kg}$; 50th (31, 75)
 - Severe: $2.70 \pm 0.52\text{kg}$; 50th (25, 83)

CONCLUSIONS

- Since the introduction of ETI the majority of pregnancies in this large adult CF centre are among wwCF with moderate-severe pre-conception lung function impairment.
- Overall, obstetric and neonatal outcomes are good with low incidence of complications.
- Women with low lung function can go on to have successful pregnancies without complications.
- There is a high rate of diabetes (CF-Diabetes and Gestational diabetes) in wwCF who become pregnant, with a higher rate of gestational diabetes than the general UK population (48% vs 5%)³.
- However, there does appear to be a trend towards lower birth weight with more severe lung function impairment, and larger studies with greater numbers of pregnancies in women with pre-conception FEV1pp <50% would be helpful to further explore this.

REFERENCES

- Edenborough FP et al. European Cystic Fibrosis Society. Guidelines for the management of pregnancy in women with cystic fibrosis. J Cyst Fibros. 2008 Jan; 7 Suppl 1:S2-32.
- UK Cystic Fibrosis Registry: 2021 Annual Data Report https://www.cysticfibrosis.org.uk/sites/default/files/2022-10/CFT_2021-Annual-Data-Report-WEB.pdf
- Diabetes in Pregnancy: Management from preconception to the postnatal period (NG3) NICE Guidance

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