Cystic Fibrosis (CF) – OMIM 219700

Background

Cystic Fibrosis (CF) is one of the UK's most common life-threatening inherited diseases; it affects over 8,000 people in the UK. The gene responsible for CF, *CFTR* (OMIM 602421) is involved in controlling the movement of salt around the body. CF affects the internal organs, especially the lungs and digestive system, by clogging them with thick sticky mucus making it difficult to breathe and digest food. This can lead to infections and inflammation in the airways and gut. Another common symptom in males is infertility. Severity of the disease varies widely from mild to severe. CF is autosomal recessive; an individual needs two altered copies of the *CFTR* gene to be affected. Over two million people in the UK (about 1 in 25) are carriers of CF, and if two carriers have a child, there is a one in four chance of that child being affected. Advances in medicine means that life expectancy is increasing, so that due to a combination of treatments such as physiotherapy and medication, over half of CF sufferers can expect to live beyond 35 years old.

Recommended Clinical Referral Criteria

- Gut Echogenicity (EGB) on ultrasound scan of foetus (initially test parents)
- Meconium Ileus in newborn; failure to thrive in newborn and infant
- High Immuno Reactive Trypsinogen (IRT) found during newborn screening
- Pulmonary and/or digestive problems with positive sweat test in infant/child/adult
- Infertility in males due to Congenital Bilateral Absence of the Vas Deferens (CBAVD)
- Known family history (with or without confirmation of familial mutations)

Molecular Analysis

Mutation screen: Real-time PCR analysis of the *CFTR* gene for 8 common mutations; ARMS analysis of the *CFTR* gene for 50 common mutations:

8 common mutations (90% clinical sensitivity)**
50 common mutations (96.6% clinical sensitivity)**

EU2-50 mutations

CF8 mutations.doc

** Clinical sensitivity is based on the incidence of these CFTR mutations in the Welsh population – **it is important to note that the mutation frequencies vary between different ethnic populations.** For clinically diagnosed patients with no mutations detected with CF8 (1%) and/or EU2-50 (0.1%), with additional indication (e.g. a

positive sweat test is obtained), referral for whole gene screening can be initiated at the Manchester regional genetics laboratory – this analysis will incur a charge.

Family follow-up: Testing for known familial mutations in *CFTR* gene

Test (Price available on request)	**TAT(calendar days)**
Test for 8 common *CFTR* mutations (CF8)	42
Test for 50 common *CFTR* mutations (CF50)	42
Rapid CF8/CF50 analysis in neonates	14

Contact Details
All Wales Genomics Laboratory,
Institute of Medical Genetics,
University Hospital of Wales,
Heath Park,
Cardiff CF14 4XW
Tel: 029 2074 2641
Fax: 029 2074 4043
lab.genetics.CAV@wales.nhs.uk
www.medicalgenomicswales.co.uk
Accredited to ISO 15189:2012
(8988)

Sample Requirements
Blood – 5ml in EDTA (1ml neonates/infants);
Please contact lab prior to sending a prenatal sample.
Please label samples with three identifiers and date of collection.
All samples must be accompanied by request form
Consent for testing & DNA storage is assumed when request for test received

Links

Orphanet
http://www.orpha.net/
EDDNAL
http://www.eddnal.com/
OMIM
http://www.omim.org/
Genetic Test Registry
http://www.ncbi.nlm.nih.gov/gtr/
Support
Cystic Fibrosis Trust
http://www.cftrust.org.uk/