Methods: A survey with 52 questions was sent out to 27 microbiology laboratories providing support to CF Centres in Italy. Participants answered questions on methods for processing CF respiratory samples, including homogenisation, culture, identification, susceptibility testing and communication of results to CF clinicians.
Results: Twenty (74%) laboratories participated, 12 (60%) had a dedicated staff to CF and 90% declared adherence to Italian CF indication for microbiology. Most (90%) performed external quality control, although there is no specific one for CF. Almost all lab (95%) diluted sputum, but there was considerable variability in how sample were plated and how long the samples were incubated. All reported the number of microorganisms present (85% with semi-quantitation method) and 100% used EUCAST interpretative criteria for antibiotic susceptibility testing. All laboratories used selective media to isolate *Burkholderia cepacia* complex (Bcc), 95%, 90% and 35% used selective media for fungi, *S. aureus* and *P. aeruginosa*, respectively. Only 30% and 10% used specific media for MRSA and *Scedosporium* spp. 78% used MALDI-TOF to identified microorganism and 56% used molecular methods to confirm identity of Bcc, 22% used the national reference laboratory. Of concern, 6 laboratories (33%) did not use molecular identification methods for Bcc. Broth micro dilution and automated method were the most common susceptibility testing method (89% and 72% respectively), 90% performed broth micro dilution for *P. aeruginosa* and other non-fermenters Gram-negative.
Conclusion: Almost all laboratories demonstrated good agreement with the Italian CF indication for microbiology. A fair amount of variability has been observed and new technologies have been introduced compared to the past. However, molecular approaches should be implemented.

P147

In vitro sensitivity of Gram-negative cystic fibrosis isolates to a 4th generation fluoroquinolone

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Objectives: There is increasing prevalence of multi-drug-resistant bacterial pathogen infection in cystic fibrosis (CF). Delafloxacin, a 4th generation fluoroquinolone antibiotic, is licensed for treatment of bacterial skin infections and has been demonstrated to be efficacious in the treatment of bacterial pneumonia. We aimed to investigate the *in vitro* susceptibility to delafloxacin of various Gram-negative CF bacterial isolates.
Methods: Susceptibility testing for ciprofloxacin and delafloxacin was performed by Etest (Biomerieux, Liofilchem) on 160 Gram-negative CF isolates (Table 1). For *P. aeruginosa*, EUCAST v12.0 (2022–01–01) clinical breakpoints were utilised for ciprofloxacin (MIC ≤0.001 mg/L = Sensitive; MIC >0.5 mg/L = Resistant). For all other organisms, EUCAST PK-PD (non-species-related) breakpoint for ciprofloxacin was used (MIC ≤0.25 mg/L = Sensitive; MIC >0.5 mg/L = Resistant).
Results: In total, 127 organisms were identified as ciprofloxacin resistant (Table 1). MIC50 and MIC90 demonstrated considerably lower MICs for delafloxacin compared to ciprofloxacin with *Pandoraea sp* and *Burkholderia multivorans* MIC50 exhibiting the greatest difference of 4 standard dilutions. In *P. aeruginosa*, the largest difference between ciprofloxacin and delafloxacin MICs was observed in isolates identified as ciprofloxacin-resistant with the smallest differences between MIC's in isolates identified as 'I' (sensitive with increased exposure), suggesting increased effectiveness of delafloxacin against ciprofloxacin-resistant isolates.

Table 1.
Comparison of susceptibility of CF GNR's to delafloxacin and ciprofloxacin

	Ciprofloxacin			Delafloxacin		
	MIC50	MIC90	MIC Range	MIC50	MIC90	MIC Range
Pseudomonas aeruginosa (n = 80)	1	8	0.125–>32	0.25	2	0.064–>32
Achromobacter sp (n = 30)	8	>32	1–>32	2	>32	0.25–>32
Pandoraea sp (n-26)	>32	>32	4–>32	2	>32	0.25–>32
Ralstonia sp (n = 10)	>32	>32	4–>32	1	16	0.125–>32
Burkholderia cepacia complex *(n = 14)*	8	>32	4–>32	0.5	4	0.125–>32

Conclusion: Delafloxacin appears to have greater *in vitro* activity than ciprofloxacin in a range of Gram-negative bacterial CF isolates and may offer an additional potential option for treating CF infections. However, caution must be used interpreting this data in view of lack of specific EUCAST guidance on both delafloxacin and most of these gram-ve organisms.

P148

Parental perspectives on sending respiratory tract specimens for microbiology from home in children with cystic fibrosis - experience from a tertiary service provider in the northwest United Kingdom

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Objectives: Routine microbiological surveillance forms a cornerstone in the management of children with cystic fibrosis (CF). This helps in better patient segregation, protection from cross-contamination, early detection of infective exacerbations, and directed antimicrobial therapy. Unlike standard practice elsewhere, Royal Manchester Children's Hospital (RMCH) has an established practice of frequently obtaining respiratory tract specimens from home for microbiological surveillance; however, this strategy is associated with an additional burden of care. This study aimed at gathering insight into parental perspectives on this process.
Methods: Of the eligible 201 patients cared at RMCH, 20% of the parents (every fifth patient) were approached to fill in a questionnaire survey.
Results: Of the eligible 40 families, a response was obtained from 24 parents (63%) having a child of median age of 7.2 years. The median number of samples sent in the past 6 months was 4 (range 0–20). All participants understood home sampling helped early detection and management of bacterial infections, and most agreed to it to prevent the spread of infection. "Treatment changes," "monitoring of general health," "catch it early," and "to do more regular samples if have a cough," were some of the comments made by parents. Most parents mentioned the process of specimen collection to be easy but preferred some form of a reminder system (text being the most preferred option).
Conclusion: The overall majority of respondents expressed their satisfaction with the RMCH strategy but preferred a reminder system. Given the feasibility of this strategy and its wider implications, this study supports the case for a national strategy, which would result in enhanced microbiological surveillance in children with CF.

P149

The association between the cumulative dose of aminoglycoside exposure and hearing loss in children with cystic fibrosis

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Objectives: Recurrent pulmonary exacerbations increase the requirement of aminoglycoside (AG) antibiotics in patients with cystic fibrosis (CF).

Some studies show that AGs have a cumulative effect on ototoxicity. We aimed to investigate the relationship between AG exposure and hearing loss in patients with CF.
Methods: The ongoing study included 55 patients with CF aged between 5 and 18 with a history of AG exposure. Standard pure tone audiometry, extended high frequency audiometry and DPOAE tests were performed. The patients were screened for m.1555A>G mitochondrial mutation which predisposes to AG ototoxicity.
Results: The mean age of the patients was 12 ± 3.6years and 56.4% (n = 31) were male. Sixty percent (n = 33) of the patients were colonised with *Pseudomonas aeruginosa*. 27.3% (n = 15) of them had received parenteral AG more than 5 courses/lifetime. Standard pure tone audiometry showed that 103 of 110 ears (93.6%) had normal hearing thresholds. A decrease in high frequency audiometry thresholds was observed in 25 (24.2%) of 103 ears. Hearing loss was detected in 7 ears in at least 1 frequency in standard audiometry. A decrease in high frequency hearing thresholds was detected in at least 1 ear in 14 patients (25.4%). While the rate of hearing loss was found to be 20% (n = 8) in those who had a history of taking less than 5 courses of AG, it was 40% (n = 6) in patients who received more than 5 courses (p = 0.12). No m1555A>G mutation was detected in 28 patients whose mutation analyses were completed.
Conclusion: As AG ototoxicity occurs primarily at high frequencies, extended high frequency audiometry is important in early detecting toxicity. All CF patients with a history of AG exposure should be evaluated for hearing loss since hearing loss may only be noticed in a late period by patients and caregivers.

P150
Antimicrobial prescribing in people with cystic fibrosis: exploring inhaled antibiotic use for *Pseudomonas aeruginosa* infections across the ECFS-CTN

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Objectives: Inhaled antibiotics have helped to improve clinical outcomes for people with cystic fibrosis (pwCF), either by eradicating early onset *Pseudomonas aeruginosa* (Pa) respiratory infections or by suppressing established chronic infections. However, antimicrobial resistance in Pa remains a concern and ongoing clinical review of inhaled antibiotics could help to retain their therapeutic efficacy.
Methods: An online questionnaire was developed to explore the decision-making process behind prescribing inhaled antibiotics as eradication and chronic suppressive regimens for Pa infections in pwCF. Following ethical approval, this was forwarded to Principal Investigators (PIs) at 57 CF centres within the ECFS-Clinical Trials Network.
Results: To date, 34 of 57 responses have been received from 13 countries in Europe covering adult (35%), paediatric (35%), and mixed (29%) CF centres. When selecting an inhaled antibiotic to prescribe, PIs (%) most frequently ranked clinical trial evidence (21%) as most important, followed by patient preference (9%), and antibiotic susceptibility test (AST) profiles (9%). Type of inhalation delivery was the most frequently selected factor by PIs (91%) overall. 58% of PIs used AST profiles to inform their choice of antibiotic for both eradication and chronic suppression regimens, whilst 32% routinely monitored changes in resistance rates of clinical Pa isolates. Preferred eradication regimens were inhaled tobramycin alone (35%) or oral ciprofloxacin and nebulised colistin (29%). Nebulised colistin (43%) or tobramycin inhalation solution (40%) were the most popular chronic suppression choices.
Conclusions: Preliminary analysis shows that PIs at CF centres across Europe favour current guidelines on inhaled antibiotic prescribing for, eradication of, and suppression of, chronic Pa infections, with type of delivery system listed as the most important factor when deciding which inhaled antibiotic to prescribe. This study is funded by Chiesi.

P151
Drug sensitivity of *Mycobacterium abscessus* in patients with cystic fibrosis

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Introduction: Mycobacteria are a serious pathological agent complicating the course of cystic fibrosis.
Objective: To evaluate the drug susceptibility spectrum of *M. abscessus* detected in patients with a confirmed diagnosis of cystic fibrosis.
Results: Most strains of *M. abscessus* were shown to be resistant to the maximum suggested concentration of drugs. For amoxicillin/clavulanic acid combination (MIC >64/32, 11/13 strains), cefepime (MIC uniformly distributed over >32 to 16 mcg/mL, 13 strains), ceftriaxone (MIC >64 mcg/mL, 9/13 strains), doxycycline (MIC >16 μg/mL, 11/13 strains), trimethoprim/sulfamethoxazole combinations (MIC >8/152, for all 13 strains), ciprofloxacin - MIC >4 and 4, 10/13 strains. For minocycline, most 10/13 strains are resistant to MICs of 16 and above. MIC cefoxitin for all 13 strains of *M. abscessus* was not less than 32 μg/ml, MIC tobramycin - from 16 to more than 16 μg/ml 11/13 strains. MIC of imipenema and linezolid for all strains exceeded 8 μg/ml), MIC of moxifloxacin - more than 4 μg/ml (11/13 strains). For 3 preparations there was no predominant MIC for strains of *M. abscessus*: MIC of amikacin was distributed for all strains in range from 2 to 32 mcg/ml, tigecycline - from 0.5 to more than 4 mcg/ml, for clarithromycin from > 16 to 0.12 mcg/ml.
Conclusion: *M. abscessus* strains were generally resistant to most of the drugs in the panel under study. Only amikacin, tigecycline and clarithromycin have not been found to have a predominant MIC for *M. abscessus.*

P152
Trends in intravenous antibiotic prescriptions pre- and post-introduction of Kaftrio® in a large UK adult cystic fibrosis centre

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Background: Since the introduction of Kaftrio® in 2020, people with CF (pwCF) have reported significant health improvements. Real-world experiences over the last 2 years suggest that pwCF are using fewer antibiotics. Evidence has confirmed this is the case with nebulised antibiotics, however it is unclear what the impact has been on intravenous antibiotics (IVABx).
Objective: To investigate IVABx use in pwCF, in our centre, pre and post Kaftrio® commencement.
Method: Retrospective data was collected from our internal pharmacy database on number of IVABx dose units issued pre and post the widespread use of Kaftrio®.
Results: Since Jan 2020, 282 pwCF, 81% of our cohort, have commenced on Kaftrio®; initially via clinical trials and compassionate use programmes, then more widely from August 2020 following its UK licence.

Table 1.
Dose units of IVABx issued 2019–2021

	2019	2020	2021
Inpatients	20580	12585	7452
Out Patients	11947	11790	12286
Homecare	40	1542	502
Total	32567	25917	20240