

Current appointments:

Consultant Respiratory Physician, Cambridge Centre for Lung Infection, Royal Papworth Hospital (2003 to present)

Affiliated Associate Professor, Department of Medicine, University of Cambridge (2022 to present)

Clinical Trials Lead, Cambridge Centre for Lung Infection, Royal Papworth Hospital (2019 to present)

Previous Appointments:

2007-2019 Director, Cambridge Centre for Lung Infection, Royal Papworth Hospital

2013-2016 Clinical Director Thoracic Medicine, Royal Papworth Hospital

2000-2003 Specialist Registrar Respiratory Medicine (Royal Brompton, Hammersmith, Ealing Hospitals)

National / International Examples of Strategic Leadership in Specialty Area:

2023 – present, European Respiratory Society Bronchiectasis Guidelines group member

2023 – European Cystic Fibrosis Society LMIC Twinning Group Steering Committee

2022 – present, NIHR Cystic Fibrosis National Research Strategy Group

2022 – present, Management group for EMBARC-3 (ERS funded [£8m] Bronchiectasis Research Consortium)

2019 – 2022 Chest Infection Editorial Board, CHEST, Journal of American College of Chest Physicians

2016 – Co-chair Global Consensus Definition Committee for Bronchiectasis Exacerbation (joint 1st author)

2016 – 2019 Member, European Cystic Fibrosis Society Scientific Committee

2016 – 2022 Member, Cystic Fibrosis Trust Research Grant Review Committee

2015 – 2017 Member, European Respiratory Society Bronchiectasis Guidelines Committee (co-author)

2015 – present Member, European Bronchiectasis Registry Scientific Committee

2014 – 2018 Member, British Thoracic Society Bronchiectasis Guidelines Committee (co-author)

2013 – 2016 External advisor to the Denver CF NTM Diagnosis and Treatment program

2012 – 2017 Co-chair, British Thoracic Society NTM Guidelines Committee (1st author)

2011 – 2022 Member, United States CF Foundation Data Safety Monitoring Board

2011 – 2015 Co-chair, US / European CF NTM Guidelines Committee (senior author)

2009 – 2011 Co-chair, European Cystic Fibrosis Society Bone Health Guidelines Committee (senior author)

Selected Grant Income:

- 1. Asthma and Lung UK (2023)** – A novel synthetic mycolic acid ELISA as a screening test of *Mycobacterium avium* complex lung disease in people with bronchiectasis. **£96,000. Role: Co-I**
- 2. NIHR (2022) NIHR133876** - Seven versus Fourteen Days Antibiotics for Patients with Bronchiectasis Requiring Intravenous Antibiotics. **£1.2M. Role: Co-I**
- 3. NIHR (2021) NIHR131889** - A randomised open label trial to assess change in respiratory function for people with cystic fibrosis established on triple combination CFTR therapy after rationalisation of nebulised mucocactive therapies (the CF STORM trial). **£1.5M. Role Co-I**
- 4. HDR-UK (2020-2021)** AI-driven improved clinical decision-making tools to manage a life-long chronic condition. **£176,992. Role: PI**
- 5. Cystic Fibrosis Trust Strategic Research Centre Award (2019-2022)** Mucociliary clearance – from fundamentals to personalised treatment. **£750,000 Role: Co-I**
- 6. NIHR (2020-2023)** Bronchodilators and corticosteroids in bronchiectasis. **£1.8M. Role: Co-I**
- 7. Cystic Fibrosis Trust Venture Innovation Award (2019-2020).** Volatile organic compounds in the early detection of pulmonary exacerbations in cystic fibrosis. **£36,000. Role: PI**
- 8. Chief Scientist Office, Scotland (2019-2021).** Development of biomarkers to identify inhaled antibiotic response. **£286,838. Role: Co-I**
- 9. Vertex Innovation Award (2016-2018)** Tackling NTM infection in individuals with cystic fibrosis through population level whole genome sequencing. **€300,900. Role: Co-PI**
- 10. European Commission FP7 Health Innovative Medicines Initiative (IMI) Grant** in collaboration with Novartis (2015-2019) Inhaled antibiotics in Bronchiectasis and Cystic fibrosis. **€50,000,000. Role: International Chief Investigator of phase II dose and regimen finding study** of dry powder tobramycin in patients with bronchiectasis and *Pseudomonas aeruginosa* infection; within the same IMI grant, **Co-I of phase I dose escalation study** of inhaled murepavadin in healthy subjects in collaboration with Polyphor.
- 11. European Commission FP7 Health Grant (2013-2016)** Microbiome-determined antibiotic therapy trial in cystic fibrosis. **€5,999,748. Role: Co-I**

International Chief Investigator roles: Phase II trial evaluating the safety and efficacy of nebulised colistin in patients with bronchiectasis (Haworth *et al.* Am J Resp Crit Care Med 2014); Phase III pivotal trials evaluating the safety and efficacy of nebulised colistin in patients with bronchiectasis (under review); Phase III pivotal trials evaluating the safety and efficacy of nebulised liposomal ciprofloxacin in patients with bronchiectasis (Haworth *et al.* Lancet Resp Med 2019); Phase II dose and regimen finding study of dry powder tobramycin in patients with bronchiectasis and *Pseudomonas aeruginosa* infection (Loebinger *et al* Eur Resp J 2021 [CSH senior author]).

Current investigator-led studies: 30 Technology Inhaled acidified nitrite for the treatment of *Mycobacterium abscessus*-lung disease (CI); Owlstone Use of volatile organic compounds to assess pulmonary exacerbations in patients with cystic fibrosis (CI); Circadia Sensors (bedside radar) in the early detection of pulmonary exacerbations in CF (CI); Tactile Medical Evaluation of high frequency chest wall oscillation in patients with bronchiectasis (CI).

International Steering Committee roles: Zambon (phase III study of nebulised colistimethate sodium in patients with bronchiectasis and *Pseudomonas aeruginosa*); Insmad (phase III study of Brensocatib in patients with bronchiectasis); Vertex (inhaled mRNA / Liposomal Nano Particle programme); AstraZeneca (Phase III study of a monoclonal antibody in patients with bronchiectasis and *Pseudomonas aeruginosa*); Pneumagen (phase II study of prophylactic anti-viral therapy in COPD)

Key publications (citations 12,044; h-index 45; i10-index 78):

1. Mandating indoor air quality for public buildings. Morawska L, *et al.* **Science** 2024 [co-author]
2. Chalmers JD, *et al.* Bronchiectasis in Europe: data on disease characteristics from the European Bronchiectasis Registry (EMBARC). **Lancet Respir Med.** 2023 Jul;11(7):637-649. doi: 10.1016/S2213-2600(23)00093-0. Epub 2023 Apr 24. PMID: 37105206 [co-author]
3. Allen L, *et al.* Future therapies for cystic fibrosis. **Nat Commun.** 2023 Feb 8;14(1):693. doi: 10.1038/s41467-023-36244-2. PMID: 36755044 [co-author]
4. Shoemark A, *et al.* Characterisation of eosinophilic bronchiectasis. **Am J Respir Crit Care Med.** 2022 Apr 15;205(8):894-902. doi: 10.1164/rccm.202108-1889OC. PMID: 35050830 [co-author]
5. Morawska L, *et al.* A paradigm shift to combat indoor respiratory infection. **Science.** 2021 [co-author]
6. Loebinger MR, *et al.* Efficacy and safety of TOBI Podhaler in *Pseudomonas aeruginosa*-infected bronchiectasis patients: iBEST study. **Eur Respir J.** 2021 [senior author]
7. Chalmers JD, Haworth CS, *et al.* Phase II trial of the DPP-1 inhibitor Brensocatib in bronchiectasis. **New Engl J Med.** 2020 [second author]
8. Haworth CS, *et al.* Inhaled liposomal ciprofloxacin in patients with non-cystic fibrosis bronchiectasis and chronic lung infection with *Pseudomonas aeruginosa* (ORBIT-3 and ORBIT-4): two phase 3, randomised controlled trials. **Lancet Respir Med.** 2019 [first author]
9. Haworth CS, *et al.* British Thoracic Society Guidelines for the Management of Non-Tuberculous Mycobacterial Pulmonary Disease (NTM-PD). **Thorax.** 2017 [first author]
10. *Hill A, *Haworth CS, *et al.* Pulmonary exacerbation in adults with bronchiectasis: a consensus definition for clinical research. **Eur Respir J.** 2017 [*Joint first authors]
11. Bryant JM, *et al.* Emergence and spread of a human- transmissible multidrug-resistant nontuberculous mycobacterium. **Science** 2016 [co-author]
12. Floto RA, *et al.* CF Foundation and European CF Society Consensus Recommendations for the management of nontuberculous in individuals with CF. **Thorax** 2016 [senior author]
13. Haworth CS, *et al.* Inhaled colistin in patients with bronchiectasis and chronic *Pseudomonas aeruginosa* infection. **Am J Resp Crit Care Med** 2014 [first author]
14. Bryant JM, *et al.* Whole-genome sequencing to identify transmission of *Mycobacterium abscessus* between patients with cystic fibrosis: a retrospective cohort study. **Lancet** 2013 [co-author]

Recent invitations to speak: “Colistimethate sodium in bronchiectasis: the PROMIS-I randomised controlled trial” ERS Sept 2021; “Brensocatib and other therapies – do they have a role in NTM?” NTM Research Consortium meeting, Portland, USA Nov 2021; “Treating the untreatable: guideline-based approaches and emerging therapies for NTM” BTS Nov 2021; “Safety and efficacy of nebulised colistimethate sodium in patients with bronchiectasis” ATS, San Francisco May 2022; “Management of difficult lung pathogens” World Bronchiectasis meeting, Prague July 2022; “Inhaled antibiotics in bronchiectasis” BTS, Nov 2022; “Inhaled antibiotics in bronchiectasis” World Bronchiectasis Conference, July 2023; “Inhaled antibiotics” World Bronchiectasis Conference, Dundee July 2024; “Inhaled antibiotics” BTS Winter Nov 2024.

Charles Haworth publications:

Citations: 12,044; h-index 45; i10-index 78

1. Morawska L, Allen J, Bahnfleth W, Bennett B, Bluysen PM, Boerstra A, Buonanno G, Cao J, Dancer SJ, Floto A, Franchimon F, Greenhalgh T, **Haworth C**, Hogeling J, Isaxon C, Jimenez JL, Kennedy A, Kumar P, Kurnitski J, Li Y, Loomans M, Marks G, Marr LC, Mazzarella L, Melikov AK, Miller SL, Milton DK, Monty J, Nielsen PV, Noakes C, Peccia J, Prather KA, Querol X, Salthammer T, Sekhar C, Seppänen O, Tanabe SI, Tang JW, Tellier R, Tham KW, Wargocki P, Wierzbicka A, Yao M. Mandating indoor air quality for public buildings. *Science*. 2024 Mar 29;383(6690):1418-1420. doi: 10.1126/science.adl0677. Epub 2024 Mar 28. PMID: 38547291
2. Polverino E, Dimakou K, Traversi L, Bossios A, **Haworth CS**, Loebinger MR, De Soyza A, Vendrell M, Burgel PR, Mertsch P, McDonnell M, Škrgat S, Maiz Carro L, Sibila O, van der Eerden M, Kauppi P, Hill AT, Wilson R, Milenkovic B, Menendez R, Murris M, Digalaki T, Crichton ML, Borecki S, Obradovic D, Nowinski A, Amorim A, Torres A, Lorent N, Welte T, Blasi F, Van Braeckel E, Altenburg J, Shoemark A, Shteinberg M, Boersma W, Elborn JS, Aliberti S, Ringshausen FC, Chalmers JD, Goeminne PC; EMBARC registry investigators. Bronchiectasis and asthma: Data from the European Bronchiectasis Registry (EMBARC). *J Allergy Clin Immunol*. 2024 Feb 23:S0091-6749(24)00189-1. doi: 10.1016/j.jaci.2024.01.027. Online ahead of print. PMID: 38401857
3. Cordeiro R, Choi H, **Haworth CS**, Chalmers JD. The efficacy and safety of inhaled antibiotics for the treatment of bronchiectasis in adults: updated systematic review and meta-analysis. *Chest*. 2024 Feb 1:S0012-3692(24)00139-9. doi: 10.1016/j.chest.2024.01.045. Online ahead of print. PMID: 38309462
4. Polverino E, De Soyza A, Dimakou K, Traversi L, Bossios A, Crichton ML, Ringshausen FC, Vendrell M, Burgel PR, **Haworth CS**, Loebinger MR, Lorent N, Pink I, McDonnell M, Škrgat S, Carro LM, Sibila O, van der Eerden M, Kauppi P, Shoemark A, Amorim A, Brown JS, Hurst JR, Miravittles M, Menendez R, Torres A, Welte T, Blasi F, Altenburg J, Shteinberg M, Boersma W, Elborn SJ, Goeminne PC, Aliberti S, Chalmers JD. The association between bronchiectasis and chronic obstructive pulmonary disease: data from the European bronchiectasis registry (EMBARC). *Am J Respir Crit Care Med*. 2024 Jan 25. doi: 10.1164/rccm.202309-1614OC. Online ahead of print. PMID: 38271696
5. Shteinberg M, Spinou A, Goeminne P, Crichton M, **Haworth C**, Chalmers JD. Prescribing preferences and availability of nebulisers and inhalers for inhaled medications in bronchiectasis: results of a specialist survey. *ERJ Open Res*. 2024 Jan 15;10(1):00724-2023. doi: 10.1183/23120541.00724-2023. eCollection 2024 Jan. PMID: 38226061
6. Morton M, Wilson N, Homer TM, Simms L, Steel A, Maier R, Wason J, Ternent L, Abouhajar A, Allen M, Joyce R, Hildreth V, Lakey R, Cherlin S, Walker A, Devereux G, Chalmers JD, Hill AT, **Haworth C**, Hurst JR, De Soyza A. Dual bronchodilators in bronchiectasis study (DIBS): protocol for a pragmatic, multi-centre, placebo-controlled, three-arm, double-blinded, randomised controlled trial studying bronchodilators in preventing exacerbations in bronchiectasis. *BMJ Open*. 2023 Aug 10;13(8):e071906. doi: 10.1136/bmjopen-2023-071906. PMID: 37562935
7. Chalmers JD, Aliberti S, Altenburg J, Blasi F, Clarke C, Chotirmall SH, Crichton ML, Dhar R, Goeminne P, **Haworth C**, Loebinger MR, Lorent N, Polverino E, Ringshausen FC, Shoemark A,

- Shteinberg M, Sibila O, Spinou A, Welte T. Transforming research and science in bronchiectasis: EMBARC3 a European Respiratory Society Clinical Research Collaboration. *Eur Respir J*. 2023 Jun 29;61(6):2300769. doi: 10.1183/13993003.00769-2023. Print 2023 Jun. PMID: 37385653
8. Chalmers JD, Polverino E, Crichton ML, Ringshausen FC, De Soyza A, Vendrell M, Burgel PR, **Haworth CS**, Loebinger MR, Dimakou K, Murris M, Wilson R, Hill AT, Menendez R, Torres A, Welte T, Blasi F, Altenburg J, Shteinberg M, Boersma W, Elborn JS, Goeminne PC, Aliberti S; EMBARC Registry Investigators. Bronchiectasis in Europe: data on disease characteristics from the European Bronchiectasis Registry (EMBARC). *Lancet Respir Med*. 2023 Jul;11(7):637-649. doi: 10.1016/S2213-2600(23)00093-0. Epub 2023 Apr 24. PMID: 37105206
 9. Malhotra AM, Bryant S, Kunst H, **Haworth CS**, Lipman M; NTM Network UK. Management of nontuberculous mycobacteria-pulmonary disease: results from the first UK survey of clinical practice. *J Infect*. 2023 Jul;87(1):64-67. doi: 10.1016/j.jinf.2023.04.009. Epub 2023 Apr 18. PMID: 37080255
 10. Morawska L, Bahnfleth W, Bluysen PM, Boerstra A, Buonanno G, Dancer SJ, Floto A, Franchimon F, **Haworth C**, Hogeling J, Isaxon C, Jimenez JL, Kurnitski J, Li Y, Loomans M, Marks G, Marr LC, Mazzearella L, Melikov AK, Miller S, Milton DK, Nazaroff W, Nielsen PV, Noakes C, Peccia J, Querol X, Sekhar C, Seppänen O, Tanabe SI, Tellier R, Wai TK, Wargocki P, Wierzbicka A. Coronavirus Disease 2019 and airborne transmission: science rejected, lives lost. Can society do better? *Clin Infect Dis*. 2023 May 24;76(10):1854-1859. doi: 10.1093/cid/ciad068. PMID: 36763042
 11. Allen L, Carr S, Davies G, Davies JC, Downey D, Egan M, Forton J, Gray R, **Haworth CS**, Horsley A, Smyth AR, Southern K. Future therapies for cystic fibrosis. *Nat Commun*. 2023 Feb 8;14(1):693. doi: 10.1038/s41467-023-36244-2. PMID: 36755044
 12. Bashford J, Flowers W, **Haworth C**, Ryan J, Cervi A, Dulayymi JRA, Mason PS, Plank A, Baird M, Floto A. Evaluation of a novel ELISA test using synthetic mycolic acid antigens for the serodiagnosis of nontuberculous mycobacterial infections. *Thorax*. 2023 Mar;78(3):309-312. doi: 10.1136/thorax-2022-218800. Epub 2023 Jan 10. PMID: 36627190
 13. Haworth CS and Floto RA. Antibiotic management in bronchiectasis. *Clin Chest Med*. 2022 Mar;43(1):165-177. doi: 10.1016/j.ccm.2021.11.009. PMID: 35236556
 14. Shoemark A, Shteinberg M, De Soyza A, **Haworth CS**, Richardson H, Gao Y, Perea L, Dicker AJ, Goeminne PC, Cant E, Polverino E, Altenburg J, Keir HR, Loebinger MR, Blasi F, Welte T, Sibila O, Aliberti S, Chalmers JD. Characterisation of Eosinophilic Bronchiectasis: a European Multicohort Study. *Am J Respir Crit Care Med*. 2022 Apr 15;205(8):894-902. doi: 10.1164/rccm.202108-1889OC. PMID: 35050830
 15. Elborn JS, Blasi F, **Haworth CS**, Ballmann M, Tiddens HAWM, Murris-Espin M, Chalmers JD, Cantin AM. Bronchiectasis and inhaled tobramycin. *Respir Med*. 2022 Feb;192:106728. doi: 10.1016/j.rmed.2021.106728. Epub 2022 Jan 1. PMID: 34998112
 16. Aliberti S, Goeminne PC, O'Donnell AE, Aksamit TR, Al-Jahdali H, Barker AF, Blasi F, Boersma WG, Crichton ML, De Soyza A, Dimakou KE, Elborn SJ, Feldman C, Tiddens H, **Haworth CS**, Hill AT, Loebinger MR, Martinez-Garcia MA, Meerburg JJ, Menendez R, Morgan LC, Murris MS, Polverino E, Ringshausen FC, Shteinberg M, Sverzellati N, Tino G, Torres A, Vandendriessche

- T, Vendrell M, Welte T, Wilson R, Wong CA, Chalmers JD. Criteria and definitions for the radiological and clinical diagnosis of bronchiectasis in adults for use in clinical trials: international consensus recommendations. *Lancet Respir Med*. 2022 Mar;10(3):298-306. doi: 10.1016/S2213-2600(21)00277-0. Epub 2021 Sep 24. PMID: 34570994
17. Morwaska L, Allen J, Bahnfleth W, Bluysen PM, Boerstra A, Buonanno G, Cao J, Dancer SJ, Floto A, Franchimon F, Greenhalgh T, **Haworth C**, Hogeling J, Isaxon C, Juminez JL, Kurnitski J, Li Y, Loomans M, Marks G, Marr LC, Mazzearella L, Melikov AK, Miller S, Milton DK, Nazarov W, Nielson PV, Noakes C, Peccia J, Prather K, Querol X, Sekhar C, Seppanen O, Tanabe SI, Tang JW, Tellier R, Tham KW, Wargocki P, Wierzbicka A, Yao M. A paradigm shift to combat indoor respiratory infection. *Science*. 2021;372:689-691. PMID: 33986171
 18. De Soyza A, Mawson P, Hill AT, Elborn S, Bradley JM, **Haworth CS**, Floto RA, Wilson R, Loebinger MR, Carroll M, Crichton M, Chalmers JD, Sullivan A, Brown J, Hurst JR, Duckers J, Kelly M, Steer J, Gatheral T, Walker PP, Winstanley C, McGuire A, Denning D, McNally R. BronchUK: protocol for an observational cohort study and biobank in bronchiectasis. *ERJ Open Res*. 2021;7:00775-2020. PMID: 33898620
 19. Mingotti N, Grogono D, dello Iorio G, Curran M, Barbour K, Taveira M, Rudman J, **Haworth CS**, Floto RA, Woods AW. The impact of hospital ward ventilation on airborne pathogen exposure. *Am J Respir Crit Care Med*. 2021;203:766-769. PMID:33211973
 20. Deane J, Fouhy F, Ronan NJ, Daly M, Fleming C, Eustace JA, Shanahan F, Flanagan ET, Dupont L, Harrison MJ, **Haworth CS**, Floto A, Rea MC, Ross RP, Stanton C, Plant BJ. A multicentre analysis of *Clostridium difficile* in persons with cystic fibrosis demonstrates that carriage may be transient and highly variable with respect to strain and level. *J Infect*. 2021 Mar;82(3):363-370. doi: 10.1016/j.jinf.2020.12.027. Epub 2021 Jan 11. PMID: 33444699
 21. O'Neill K, Ferguson K, Cosgrove D, Tunney MM, De Soyza A, Carroll M, Chalmers JD, Gatheral T, Hill AT, Hurst JR, Johnson C, Loebinger MR, Angyalosi G, **Haworth CS**, Jensen R, Ratjen F, Saunders C, Short C, Davies JC, Elborn JS, Bradley JM. Multiple breath washout in bronchiectasis clinical trials: is it feasible? *ERJ Open Res*. 2020 Oct 13;6(4):00363-2019.
 22. Schildkraut JA, Gallagher J, Morimoto K, Lange C, **Haworth C**, Floto RA, Hoefsloot W, Griffith DE, Wagner D, Ingen JV; NTM-NET. Epidemiology of nontuberculous mycobacterial pulmonary disease in Europe and Japan by Delphi estimation. *Respir Med*. 2020 Nov;173:106164.
 23. Loebinger MR, Poverino E, Blasi F, Elborn SJ, Chalmers JD, Tiddens HA, Goossens H, Tunney M, Zhou W, Angyalosi G, Hill AT, **Haworth CS**, on behalf of the iBEST-1 Trial Team. Efficacy and safety of TOBI Podhaler in *Pseudomonas aeruginosa*-infected bronchiectasis patients: iBEST study. *Eur Respir J*. 2021 Jan 5;57(1):2001451. doi: 10.1183/13993003.01451-2020. Print 2021 Jan. PMID: 32855225
 24. Chalmers JD, **Haworth CS**, Metersky ML, Loebinger MR, Blasi F, Sibila O, O'Donnell, Sullivan EJ, Mange KC, Fernandez C, Zou J, Daley CL, on behalf of the WILLOW investigators. Phase II trial of the DPP-1 inhibitor Brensocatib in bronchiectasis. *New England Journal of Medicine*. 2020 Nov 26;383(22):2127-2137. doi: 10.1056/NEJMoa2021713. Epub 2020 Sep 7.
 25. Chalmers JD, Cipolla D, Thompson B, Davis AM, O'Donnell A, Tino G, Gonda I, **Haworth C**, Froehlich J. Changes in respiratory symptoms during 48 weeks treatment with ARD-3150

(inhaled liposomal ciprofloxacin) in bronchiectasis: results from the ORBIT-3 and -4 studies. *Eur Respir J*. 2020 Jun 18:2000110

26. Morwaska L, Tang JW, Bahnfleth W, Bluyssen PM, Boerstra A, Buonanno G, Cao J, Dancer S, Floto A, Franchimon F, **Haworth C**, Hogeling J, Isaxon C, Juminez JL, Kurnitski J, Li Y, Loomans M, Marks G, Marr LC, Mazzarella L, Melikov AK, Miller S, Milton DK, Nazarov W, Nielson PV, Noakes C, Peccia J, Querol X, Sekhar C, Seppanen O, Tanabe SI, Tellier R, Tham KW, Wargocki P, Wierzbicka A, Yao M. How can airborne transmission of COVID-19 indoors be minimised? *Environ Int*. 2020 Sep;142:105832
27. Martiniano SL, Esther CR, **Haworth CS**, Kasperbauer SH, Zemanick ET, Caverly LJ. Challenging clinical scenarios in nontuberculous mycobacterial infection in cystic fibrosis. *Pediatr Pulmonol*. 2020 Feb;55(2):521-525.
28. Loebinger MR, Polverino E, Blasi F, Elborn SJ, Chalmers JD, Tiddens HA, Goossens H, Tunney M, Zhou W, Angyalosi G, Hill AT, **Haworth CS**; iBEST-1 Trial Team. Efficacy and safety of tobramycin inhalation powder in bronchiectasis patients with *P. aeruginosa*: design of a dose-finding study (iBEST-1). *Pulm Pharmacol Ther*. 2019 Oct;58:101834.
29. Allen O, Jadkauskaite L, Shafi NT, Jackson A, Athithan V, Chiu Y-D, Evans IES, Floto RA, **Haworth CS**. Microbiological evaluation of UV disinfection effectiveness in a specialist cystic fibrosis clinic. *J Cyst Fibros* 2019 Jul;18(4):e37-e39.
30. **Haworth CS**, Bilton D, Chalmers JD, Davis AM, Froehlich J, Gonda I, Thompson B, Wanner A, O'Donnell AE. Inhaled liposomal ciprofloxacin in patients with non-cystic fibrosis bronchiectasis and chronic lung infection with *Pseudomonas aeruginosa* (ORBIT-3 and ORBIT-4): two phase 3, randomised controlled trials. *Lancet Respir Med*. 2019 Mar;7(3):213-226. doi: 10.1016/S2213-2600(18)30427-2.
31. Hill AT, Sullivan AL, Chalmers JD, De Soyza A, Elborn SJ, Floto AR, Grillo L, Gruffydd-Jones K, Harvey A, **Haworth CS**, Hiscocks E, Hurst JR, Johnson C, Kelleher PW, Bedi P, Payne K, Saleh H, Sreaton NJ, Smith M, Tunney M, Whitters D, Wilson R, Loebinger MR. British Thoracic Society Guideline for Bronchiectasis in adults. *Thorax*. 2019 Jan;74(Suppl 1):1-69. doi: 10.1136/thoraxjnl-2018-212463. PMID:30545985
32. The BRICS (Bronchiectasis Radiologically Indexed CT Score): A multicenter study score for use in idiopathic and postinfective bronchiectasis. Bedi P, Chalmers JD, Goeminne PC, Mai C, Saravanamuthu P, Velu PP, Cartlidge MK, Loebinger MR, Jacob J, Kamal F, Schembri N, Aliberti S, Hill U, Harrison M, Johnson C, Sreaton N, **Haworth CS**, Polverino E, Rosales E, Torres A, Benegas MN, Rossi AG, Patel D, Hill AT. *Chest*. 2018 May;153(5):1177-1186. doi: 10.1016/j.chest.2017.11.033. Epub 2017 Dec 13.
33. Chalmers JD, Ringshausen FC, Harris B, Elborn JS, Posthumus A, **Haworth CS**, Pilkington N, Polverino E, Ruddy T, Aliberti S, Goeminne PC, Winstanley C, De Soyza A. Cross-infection risk in patients with bronchiectasis: a position statement from the European Bronchiectasis Network (EMBARC), EMBARC/ELF patient advisory group and European Reference Network (ERN-Lung) Bronchiectasis Network. *Eur Respir J*. 2018 Jan 11;51(1). pii: 1701937. doi: 10.1183/13993003.01937-2017
34. **Haworth CS**, Banks J, Capstick T, Fisher A, Gorsuch T, Laurenson IF, Leitch A, Loebinger M, Milburn H, Nightingale M, Ormerod P, Shingadia D, Smith D, Whitehead N, Wilson R, Floto RA.

British Thoracic Society Guidelines for the Management of Non-Tuberculous Mycobacterial Pulmonary Disease (NTM-PD). *Thorax*. 2017 Nov;72(Suppl 2):1-64

35. **Haworth CS**, Floto RA. Introducing the new British Thoracic Society Guidelines for the Management of Non-Tuberculous Mycobacterial Pulmonary Disease (NTM-PD). *Thorax*. 2017 Nov;72(11):969-970
36. Polverino E, Goeminne PC, McDonnell MJ, Aliberti S, Marshall SE, Loebinger MR, Murris M, Cantón R, Torres A, Dimakou K, De Soyza A, Hill AT, **Haworth CS**, Vendrell M, Ringshausen FC, Subotic D, Wilson R, Vilaró J, Stallberg B, Welte T, Rohde G, Blasi F, Elborn S, Almagro M, Timothy A, Ruddy T, Tonia T, Rigau D, Chalmers JD. European Respiratory Society guidelines for the management of adult bronchiectasis. *Eur Respir J*. 2017 Sep 9;50(3). pii: 1700629. doi: 10.1183/13993003.00629-2017.
37. *Hill A, ***Haworth CS**, Aliberti S, Barker A, Blasi F, Boersma W, Chalmers J, De Soyza A, Dimakou K, Elborn J, Feldman C, Flume P, Goeminne P, Loebinger M, Menéndez R, Morgan L, Murris M, Polverino E, Quittner A, Ringshausen F, Tino G, Torres A, Vendrell M, Welte T, Wilson R, Wong C, O'Donnell A, Aksamit T. Pulmonary exacerbation in adults with bronchiectasis: a consensus definition for clinical research. *Eur Respir J*. 2017 Jun 8;49(6). pii: 1700051. doi: 10.1183/13993003.00051-2017 *Joint first author
38. Van Ingen J, Wagner D, Gallagher J, Morimoto K, Lange C, **Haworth CS**, Floto RA, Adjemian J, Prevots DR, Griffiths DE. Poor adherence to management guidelines in nontuberculous pulmonary mycobacterial diseases. *Eur Respir J* 2017 Feb 15;49(2). pii: 1601855. doi: 10.1183/13993003.01855-2016
39. Plant B, Eustace J, Jone AM, **Haworth CS**, Bilton D, Ketchell I, Gunaratnam C, Peckham D, A treatment evaluator tool to monitor the real-world effectiveness of inhaled aztreonam lysine in cystic fibrosis. *J Cyst Fibros* 2017 Apr 6.pii: S1569-1993(17)30031-0. doi: 10.1016/j.jcf.2017.02.006.
40. Hilliam Y, Moore M, Lamont I, Bilton D, **Haworth CS**, Foweraker J, Walshaw M, Williams D, Fothergill J, De Soyza A, Winstanley C. *Pseudomonas aeruginosa* adaptation and diversity in the non-cystic fibrosis bronchiectasis lung. *Eur Respir J* 2017;49:1602108 [https://doi.org/10.1183/13993003.02108-2016].
41. Bryant JM, Grogono DM, Rodriguez-Rincon D, Everall I, Brown KP, Moreno P, Verma D, Emily Hill E, Drijckoning J, Gilligan P, Esther CR, Noone PG, Giddings O, Bell SC, Thomson R, Wainwright CE, Coulter C, Pandey S, Wood ME, Stockwell RE, Ramsay KA, Sherrard LJ, Kidd TJ, Jabbour N, Johnson GR, Knibbs LD, Morawska L, Sly PD, Jones A, Bilton D, Laurenson I, Ruddy M, Bourke S, Bowler ICJW, Chapman SJ, Clayton A, Cullen M, Daniels T, Dempsey O, Denton M, Desai M, Drew RJ, Edenborough F, Evans J, Folb J, Humphrey H, Isalska B, Jensen-Fangel S, Jönsson B, Jones AM, Katzenstein TL, Lillebaek T, MacGregor G, Mayell S, Millar M, Modha D, Nash EF, O'Brien C, O'Brien D, Ohri C, Pao CS, Peckham D, Perrin F, Perry A, Pressler T, Prtak L, Qvist T, Robb A, Rodgers H, Schaffer K, Shafi N, van Ingen J, Walshaw M, Watson D, West N, Whitehouse J, **Haworth CS**, Harris SR, Ordway D, Parkhill J, Floto RA. Emergence and spread of a human- transmissible multidrug-resistant nontuberculous mycobacterium. *Science* 2016;354:751-757
42. Viviani L, Harrison MJ, Zolin A, **Haworth CS**, Floto RA. Epidemiology of nontuberculous mycobacteria (NTM) amongst individuals with cystic fibrosis. *J Cyst Fibros* 2016;15:619-623

43. Floto RA, Olivier KN, Saiman L, Daley CL, Herrmann J-L, Nick JA, Noone PG, Bilton D, Corris P, Gibson RL, Hempstead SE, Koetz K, Sabadosa KA, Sermet-Gaudelus I, Smyth AR, van Ingen J, Wallace R, Winthrop KL, Marshall BC, **Haworth CS**. Cystic Fibrosis Foundation and European Cystic Fibrosis Society Consensus Recommendations for the management of nontuberculous in individuals with cystic fibrosis. *Thorax* 2016;71 Suppl 1:i1-i22
44. Floto RA, Olivier KN, Saiman L, Daley CL, Herrmann J-L, Nick JA, Noone PG, Bilton D, Corris P, Gibson RL, Hempstead SE, Koetz K, Sabadosa KA, Sermet-Gaudelus I, Smyth AR, van Ingen J, Wallace R, Winthrop KL, Marshall BC, **Haworth CS**. Cystic Fibrosis Foundation and European Cystic Fibrosis Society Consensus Recommendations for the management of nontuberculous in individuals with cystic fibrosis: executive summary *Thorax* 2016;71:88-90
45. Hurst JR, Elborn JS, De Soysa A on behalf of the Bronch-UK investigators. COPD-Bronchiectasis overlap syndrome. *Eur Resp J* 2015
46. **Haworth CS**, Foweraker J, Wilkinson PW, Kenyon P, Bilton D. Inhaled Colistin in patients with bronchiectasis and chronic *Pseudomonas aeruginosa* infection. *Am J Resp Crit Care Med* 2014;189:975-982 (Editorial)
47. Bryant JM, Grogono DM, Greaves D, Foweraker J, Roddick I, Inns T, Reacher M, **Haworth CS**, Curran MD, Harris SR, Peacock SJ, Parkhill J, Floto RA. Whole-genome sequencing to identify transmission of *Mycobacterium abscessus* between patients with cystic fibrosis: a retrospective cohort study. *Lancet* 2013;381:1551-1560
48. **Haworth CS**, Sharples L, Hughes V, Elkin SL, Hodson ME, Conway SP, Etherington C, Elborn JS, Rendall J, Wheaton E, Kadri E, Elliott J, Barker HC, Bearcroft PWP, Hlaing T, Compston JE. Multicentre trial of weekly risedronate on bone density in adults with cystic fibrosis. *J Cyst Fibros* 2011;10:470-476
49. Renna M, Schaffner C, Brown K, Shang S, Henao Tamayo M, Hegyi K, Grimsey NJ, Cusens D, Coulter S, Cooper J, Bowden AR, Newton S, Kampmann B, Helm J, Jones A, **Haworth CS**, Basaraba RJ, DeGroot MA, Ordway DJ, Rubinshtein DC, Floto RA. Azithromycin blocks autophagy and may predispose to mycobacterial infection. *J Clin Invest* 2011 Sep 1;121(9):3554-3563
50. Adler AI, Shine B, **Haworth CS**, Leelarathna L, Bilton D. Hyperglycaemia and death in cystic fibrosis related diabetes. *Diabetes Care* 2011;34:1577-1588
51. Sermet-Gaudelus I, Bianchi ML, Garabedian M, Aris R, Morton A, Hardin D, Elkin SL, Compston JE, Conway P, Castanet M, Wolfe S, **Haworth CS**. European cystic fibrosis bone mineralisation guidelines. *J Cyst Fibros* 2011;Suppl 2:S16-23
52. Shead EF, **Haworth CS**, Barker HC, Bilton D, Compston JE. Osteoclast function, bone turnover and inflammatory cytokines during infective exacerbations of cystic fibrosis. *J Cyst Fibros* 2010;9:93-98
53. Chamnan P, Shine BS, **Haworth CS**, Bilton D, Adler AI. Diabetes as determinants of mortality in cystic fibrosis. *Diabetes care* 2010;33:311-316

54. McKeon DJ, Cadwalladwe KA, Idreis S, Cowburn AS, Pasteur MC, Barker HC, **Haworth CS**, Bilton D, Chilvers ER, Condliffe AM. Cystic fibrosis neutrophils have normal intrinsic reactive oxygen species generation. *Eur Respir J* 2010;35:1264-1272
55. Gilham MI, Sundaram S, Loughton CR, **Haworth CS**, Bilton D, Foweraker JE. Variable antibiotic susceptibility in populations of *Pseudomonas aeruginosa* infecting patients with bronchiectasis. *J Antimicrob Chemother* 2009;63:728-732
56. Barker HC, **Haworth CS**, Williams D, Roberts P, Bilton D. Clostridium difficile pancolitis in adults with cystic fibrosis. *J Cyst Fibros* 2008;7(5):444-447
57. Adler AI, Shine BS, Chamnan P, **Haworth CS**, Bilton D. Genetic determinants and epidemiology of cystic fibrosis-related diabetes: results from a British cohort of children and adults. *Diabetes Care* 2008;31(9):1789-1794.
58. Nash KL, Allison ME, McKeon D, Lomas DA, **Haworth CS**, Bilton D, Alexander GJ. A single centre experience of liver disease in adults with cystic fibrosis 1995-2005. *J Cyst Fibros* 2008;7(3):252-257
59. Adler AI, Gunn E, **Haworth CS**, Bilton D. Characteristics of adults with and without cystic fibrosis related diabetes. *Diabetic Medicine* 2007;24:1143-1148
60. Shead EF, **Haworth CS**, Condliffe AM, McKeon DJ, Scott MA, Compston JE. Cystic fibrosis transmembrane conductance regulator (CFTR) is expressed in human bone. *Thorax* 2007;62(7):650-651
61. Fowler SJ, French J, Screaton NJ, Foweraker J, Condliffe A, **Haworth CS**, Exley AR, Bilton D. Non-tuberculous mycobacteria in bronchiectasis: prevalence and patient characteristics. *Eur Resp J* 2006;28(6):1204-1210
62. Shead EL, **Haworth CS**, Gunn E, Bilton D, Scott MA, Compston JE. Osteoclastogenesis during infective exacerbations in patients with cystic fibrosis. *Am J Resp Crit Care Med* 2006;174(3):306-311
63. Aris RM on behalf of the **Cystic Fibrosis Foundation Consensus Bone Health Group**. Guide to bone health and disease in cystic fibrosis. *J Clin Endocrinol Metab* 2005;90:1888-1896
64. **Haworth CS**, Jones AM, Selby PL, Webb AK, Adams JE. Randomised double blind placebo controlled trial investigating the effect of calcium and vitamin D supplementation on bone mineral density and bone metabolism in adult patients with cystic fibrosis. *J Cyst Fibros* 2004;3:233-236
65. **Haworth CS**, Selby PL, Webb AK, Martin L, Elborn S, Sharples L, Adams JE. Inflammatory related changes in bone mineral content in adults with cystic fibrosis. *Thorax* 2004;59:613-617
66. **Haworth CS**, Selby PL, Horrocks AW, Mawer EB, Adams JE, Webb AK. A prospective study of change in bone mineral density over one year in 114 adults with cystic fibrosis. *Thorax* 2002;57:719-723

67. **Haworth CS**, Selby PL, Adams JE, Mawer EB, Horrocks AW, Webb AK. The effect of intravenous pamidronate in adults with cystic fibrosis. **Thorax** 2001;56:314-316
68. Dodd ME, Kellet F, Davis A, Simpson JCG, Webb AK, **Haworth CS**, Niven RML. An audit of oxygen prescribing by doctors: a specific oxygen prescription chart improves clinical practice. **BMJ** 2000;321:864-865
69. **Haworth CS**, Webb AK, Egan JJ, Selby PL, Hasleton PS, Bishop PW, Freemont AJ. Bone histomorphometry in adult patients with cystic fibrosis. **Chest** 2000;118:434-439
70. **Haworth CS**, Dodd ME, Atkins M, Woodcock AA, Webb AK. Pneumothorax in cystic fibrosis adults dependent on nasal intermittent positive pressure ventilation (NIPPV): a management dilemma. **Thorax** 2000;55:620-623.
71. **Haworth CS**, Selby PL, Webb AK, Dodd ME, Musson H, Niven R M, Economou G, Horrocks AW, Freemont AJ, Mawer EB, Adams JE. Low bone mineral density in cystic fibrosis adults. **Thorax** 1999;54:961-967 **Editorial:** Conway SP. Bone mineral density in adults with cystic fibrosis. **Thorax** 1999;54:957
72. **Haworth CS**, Freemont AJ, Webb AK, Dodd ME, Selby PL, Mawer EB, Adams JE. Hip fracture and bone histomorphometry in a young adult with cystic fibrosis. **Eur Resp J** 1999;14:478-479
73. **Haworth CS**, Niven R, Moorcroft AJ, Phillips A, Dodd ME, Webb AK. Acute anaphylaxis following midline catheterisation in a patient with cystic fibrosis. **Thorax** 1999;54:747.
74. **Haworth CS**, Selby PL, Webb AK, Mawer EB, Adams JE, Freemont AJ. Severe bone pain after intravenous pamidronate in adult patients with cystic fibrosis. **Lancet** 1998;352:1753-1754

Charles Haworth book chapters:

1. **Haworth CS**, Webb AK. Cystic Fibrosis. In: Grassi C, ed. **Pulmonary Diseases**. London: McGraw-Hill, 1999:115-125
2. **Haworth CS**, Elkin SL. Bone Mineralisation in Cystic Fibrosis. In: Webb AK and Ratjen F, Eds. **Cystic Fibrosis. Eur Resp J Monograph** April 2006
3. Elkin SL, **Haworth CS**. Cystic Fibrosis Related Low Bone Mineral Density. In: Hodson, Geddes & Bush A, Eds. **Cystic Fibrosis, Third Edition**, 2007.
4. **Haworth CS**. Metabolic and musculoskeletal effects of cystic fibrosis. In: Innes A, Cunningham S, Horsley A, Eds. **Cystic Fibrosis**, Oxford Respiratory Medicine, 2010.
5. **Haworth CS**. Antibiotic treatment strategies in adults with bronchiectasis. In **Floto RA and Haworth CS. Eds. Bronchiectasis. Eur Resp J Monograph**, Number 52, June 2011
6. Hill UG, **Haworth CS**. Metabolic and musculoskeletal effects of cystic fibrosis. In: Innes A, Cunningham S, Horsley A, Eds. **Cystic Fibrosis**, Oxford Respiratory Medicine, Second edition, 2015.

7. Harrison M, **Haworth CS**. Exacerbations in bronchiectasis. In Acute Exacerbations of Pulmonary Diseases. **Eur Resp J Monograph**, number 77 September 2017.
8. Shteinberg M, Johnson C, **Haworth CS**. Antibiotic treatment in bronchiectasis. Bronchiectasis: The EMBARC manual. Springer 2018.
9. Haworth CS and Floto RA. Antibiotic management in bronchiectasis. **Clin Chest Med**. 2022 Mar;43(1):165-177. doi: 10.1016/j.ccm.2021.11.009.PMID: 35236556
10. Haworth CS and Floto RA. Infection Prevention and Control in cystic fibrosis. In: **Hodson & Geddes' Cystic Fibrosis. Fifth Edition**, 2024.

Charles Haworth invited reviews:

1. **Haworth CS**, Selby PL, Webb AK, Adams JE. Osteoporosis in cystic fibrosis. **J R Soc Med** 1998;91(Suppl.34):14-18
2. Dodd ME, **Haworth CS**, Webb AK. A practical approach to oxygen therapy in cystic fibrosis. **J R Soc Med** 1998;91(Suppl.34):30-39
3. Verma A, Dodd ME, **Haworth CS**, Webb AK. Holidays and cystic fibrosis. **J R Soc Med** 2000;93(Suppl. 38):20-26)
4. **Haworth CS**. Treatment of cystic fibrosis bone disease. **Pediatric Pulmonology** 2002; S24:180-181
5. **Haworth CS**, Shead EF, Compston JE. The influence of pulmonary infection on bone metabolism in cystic fibrosis. **Pediatric Pulmonology** 2007; S30:191-192
6. Idris SF, Chilvers ER, **Haworth CS**, Mckee D, Condiliffe AM. Azithromycin therapy for neutrophilic airways disease: myth or magic? **Thorax** 2009;64:186-189
7. **Haworth CS**. The bone health guidelines revisited: what was right and what wasn't – bisphosphonates work in adults with cystic fibrosis – where we got it right. **Pediatric Pulmonology** 2009;S32:179-181
8. **Haworth CS**. Treatment indications for low bone mineral density in the absence of fracture. **Pediatric Pulmonology** 2010;S33:154-155
9. **Haworth CS**. Impact of cystic fibrosis on bone health. **Curr Opin Pulm Med** 2010;16:616-622
10. Hill U, Floto RA, **Haworth CS**. NTM infection in CF. **J R Soc Med**. 2012 Jun;105 Suppl 2:S14-18
11. **Haworth CS**, Floto RA. International NTM management guidelines for people with cystic fibrosis. **Pediatric Pulmonology** 2013
12. **Haworth CS**, Bilton D, Elborn JS. Long-term macrolide maintenance therapy in non-CF bronchiectasis: Evidence and questions. **Respir Med** 2014;108:1397-1408

13. Floto RA and **Haworth CS**. The growing threat of nontuberculous mycobacteria in CF. *J Cystic Fibros* 2015;14 (1):1-2
14. Chalmers JD, Aliberti S, Polverino E, et al. The EMBARC European Bronchiectasis Registry: protocol for an international observational study. *ERJ open res* 2015;1:00081-2015
15. Johnson C, Haworth CS. Inhaled antibiotics in bronchiectasis. *Curr Pulmonol Rep* 2015;4:198-204
16. Johnson C, **Haworth CS**. Bronchiectasis. *Medicine* 2016;44:5
17. Marquette M, **Haworth CS**. Bone health in cystic fibrosis. *Paediatr Respir Rev* 2016 Aug;20 Suppl:2-5
18. **Haworth CS**, Floto RA. Nontuberculous mycobacteria: now that the guidelines are published. *Pediatric Pulmonology* 2016
19. Johnson C, Haworth CS. Bronchiectasis. *Medicine* 2020.