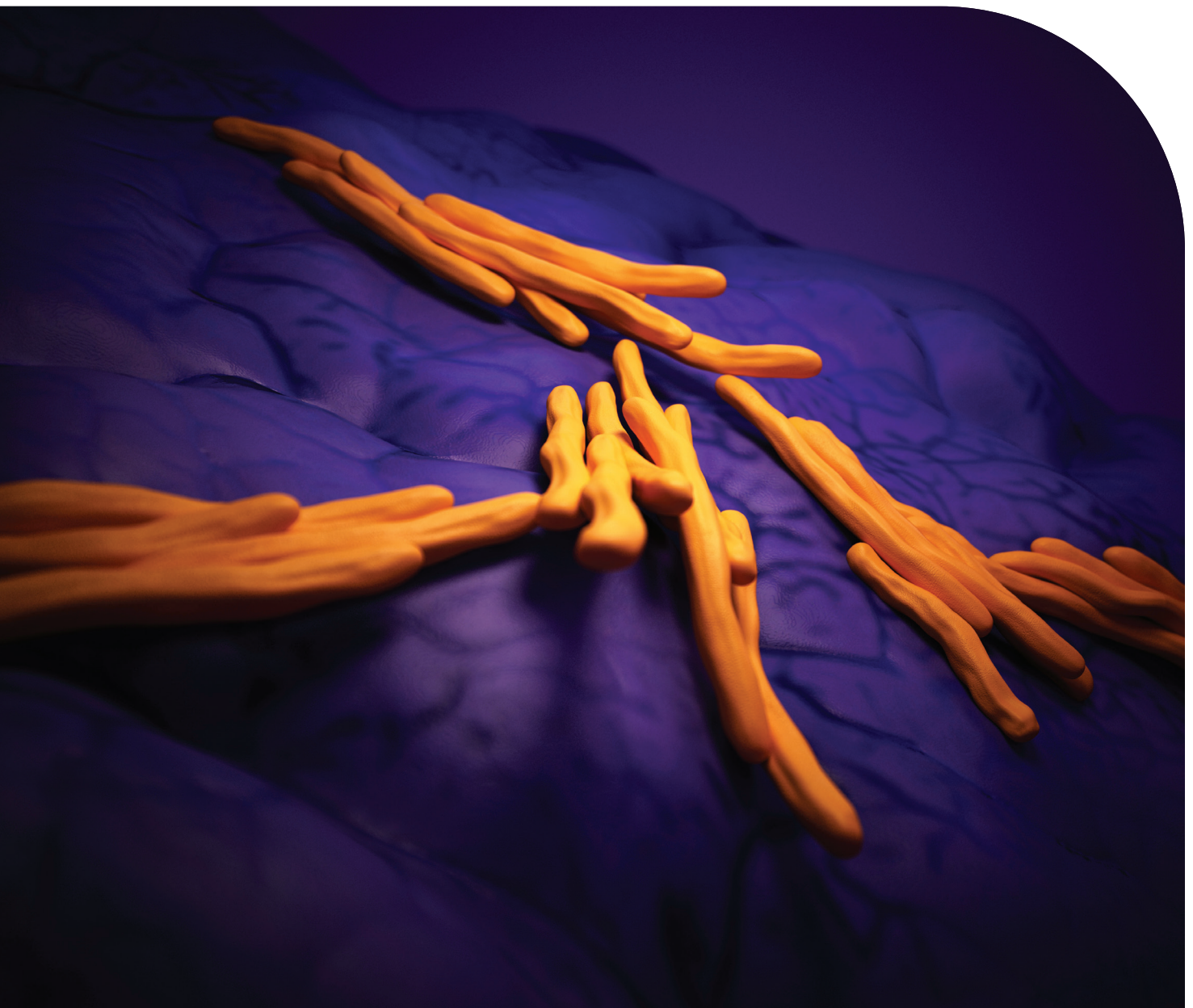


The Nontuberculous Mycobacteria (NTM) Australian Research Network **Symposium Program**

Thursday 22 to Friday 23 October 2026
Translational Research Institute (TRI)



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Symposium program

Thursday 22 October – Core curriculum

Translational Research Institute

8:00am REGISTRATION

8:30am	Welcome and patient perspective	Rachel Thomson
8:45am	Natural history of NTM infections	Michael Holt
9:05am	Host susceptibility and diagnostic workup	Pamela McShane
9:25am	Laboratory essentials and new developments	Melanie Syrmis
9:45am	Radiology in the diagnosis and treatment of NTM-PD: A clinician's perspective	Jeff Hocking
10:05am	Q&A panel discussion	Rachel Thomson

10:25am MORNING TEA

10:55am	Guidelines and management of MAC infection	Malcolm Wilson
11:15am	Guidelines and management of <i>M. abscessus</i> infection	Ieuan Evans
11:35am	Monitoring and management of drug toxicity	Alice Sawka
11:55am	What do you do when guideline therapies fail	Shannon Kasperbauer
12:15pm	Q&A panel discussion	Simone Visser

12:30pm LUNCH

1:30pm	Adjunctive therapies and non-pharmacological approaches	Andrew Burke
1:50pm	Airway clearance	Kathleen Hall
2:10pm	Mixed NTM and rare species	George Denby
2:30pm	Management of extrapulmonary NTM	Victoria Grey
2:50pm	Q&A panel discussion	Claire Wainwright

3:10pm AFTERNOON TEA AND POSTER VIEWING

3:40pm	The role of allied health in toxicity monitoring and management. Perspectives from audiology, optometry and vestibular physiotherapy with case discussions	Caitlin Kindness, Jessica-Lee Miettinen, Gretta Palmer
4:40pm	Q&A panel discussion	Malcolm Wilson, Victoria Grey

5-7pm NETWORKING, DRINKS AND LIGHT SUPPER Atrium, Translational Research Institute

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Friday 23 October – Research focus

Translational Research Institute

8:00am REGISTRATION

8:20am	Welcome	Andrew Burke
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Microbiology, biomarkers and diagnostics, host susceptibility

8:30am	Overview of new biomarkers and diagnostics	Pamela McShane
8:50am	RGM media: NTM detection in CF	Ieuan Evans
9:10am	MRL heterogeneity	Christine Duplancic
9:20am	Abstract: Does lidocaine affect nontuberculous mycobacteria yield from bronchoalveolar lavage?	Kirby Patterson-Fahy
9:30am	Abstract: Macrophage metal manipulation: Antimicrobial zinc toxicity to combat bacterial infections	Emma Dalton
9:40am	Abstract: Unveiling vulnerabilities in <i>M. abscessus</i> : Genome-wide CRISPRi interrogation of intrinsic drug resistance in <i>M. abscessus</i>	Rick Chiang
9:50am	Q&A panel discussion	Andrew Burke

10:10am MORNING TEA

Clinical and environmental research

10:40am	Abstract: Evaluating and predicting disease progression of non-tuberculous mycobacterial lung disease using cases from the Royal Melbourne Hospital	Chloe Cheong
10:50am	Abstract: The challenges of managing a child with disseminated intra-abdominal <i>Mycobacterium abscessus</i> infection after liver transplantation	Archana Koirala
11:00am	Abstract: Temporal trends and spatial variation in nontuberculous mycobacterial notification incidence among First Nations People in Queensland, Australia	Melinda Ashcroft
11:15am	Mycobacteria acquisition from potable water: Drinking water distribution systems	Amy Pham
11:30am	What does rigorous AI review actually mean? Evidence from 1,000+ papers	Shane Ehrhardt
11:40am	Q&A panel discussion	Tim Baird

12:00pm LUNCH

Therapeutics

1:00pm	Optimal dosing of amikacin, ethambutol, and clofazimine in MAC-PD	Fumiya Watanabe
1:20pm	Inhaled antibiotics	Jayesh Dhanani
1:50pm	Abstract: Development of novel inhaled AJ-099 antibiotic for the treatment of NTM lung infection	Hee-Jong (Jason) Hwang
2:00pm	Abstract: <i>Mycobacterium abscessus</i> clinical isolates are susceptible to epetaborole in vitro	Kirby Patterson-Fahy
2:10pm	Beta-lactam therapy in NTM & dual beta-lactam therapy case series	Andrew Burke, Matthew Twining
2:40pm	Q&A panel discussion	Ieuan Evans

3:00pm AFTERNOON TEA AND POSTER VIEWING

Clinical trials

3:30pm	Recent clinical trials landscape (omadacycline, inhaled clofazimine, epetaborole)	Shannon Kasperbauer
4:00pm	ENCORE – Inhaled liposomal amikacin clinical trials	Rachel Thomson
4:15pm	FORMaT study: Interim analysis	Claire Wainwright
4:35pm	Q&A panel discussion	Tim Whitmore
4:50pm	Final thoughts	Rachel Thomson, Andrew Burke

NTM forum organising committee



Rachel Thomson

Respiratory Research Unit Head, Greenslopes Private Hospital

Professor Rachel Thomson is a Thoracic Physician and clinical researcher working at Greenslopes Private Hospital and Gallipoli Medical Research. Professor Thomson has an international reputation for her research into lung disease due to NTM. She is at the forefront of research and treatment of patients with NTM infection.



Andrew Burke

Respiratory and infectious diseases physician, The Prince Charles Hospital, Brisbane, Australia

Associate Professor Andrew Burke is a dual specialist in respiratory medicine and infectious disease and Director of Infectious Disease at The Prince Charles Hospital, Brisbane. He is an investigator on multiple NTM drug trials, and his research interests include studying the pharmacokinetics of mycobacteria treatment.



Felicia Goh

BSc, PhD

Senior Principal Researcher, The University of Queensland, Brisbane, Australia

Dr Felicia Goh is a Senior Principal Researcher with the Greenslopes Clinical Unit and Gallipoli Medical Research based at Greenslopes Private Hospital, Brisbane. She obtained her PhD in Immunology at the Institute for Molecular Bioscience, The University of Queensland and CSIRO and has over 10 years' experience in managing human biobanks. Currently, she is the biobank coordinator for the Mycobacterial Biobank, a multi-site collaboration between the University of Queensland and various Health Services in Brisbane, and a project manager for the FORMaT clinical trial.



Amy Pham

BSc, PhD

Senior Research Officer, The University of Queensland, Brisbane, Australia

Dr Amy Pham is a Research Officer with the Greenslopes Clinical Unit and Gallipoli Medical Research based at Greenslopes Private Hospital, Brisbane. She obtained her PhD in Microbiology at the Frazer Institute, The University of Queensland. Her current research focuses on environmental sources of NTM and the role of potable water in exposure and acquisition.



Melinda Ashcroft

PhD

Research Fellow, Infectious Disease Epidemiology (Climate Change), The University of Queensland, Brisbane, Australia

Dr Melinda Ashcroft is an Infectious Disease Epidemiologist with the Greenslopes Clinical Unit and Gallipoli Medical Research based at Greenslopes Private Hospital, Brisbane. She obtained her PhD in Microbial Genomics in 2019 and has an extensive background in microbial genomics and the genomic epidemiology of bacterial pathogens. In 2024, Dr Ashcroft joined the UQ NTM Research Group where her work focuses on the applied and genomic epidemiology of NTM infections. Her current work integrates clinical, population, environmental, and genomic data to understand patterns and outcomes of NTM infection, recurrence, environmental and climatic drivers, and pathways of acquisition.



Alice Sawka
MBBS, MPH, FRACP

Respiratory Physician, Royal Adelaide Hospital, Adelaide, Australia

Dr Alice Sawka currently works at the Royal Adelaide Hospital as a respiratory physician with particular interest in NTM pulmonary disease, and a tuberculosis consultant with the SA Tuberculosis Service. In 2021, she undertook a clinical fellowship in the diagnosis and management of mycobacterial disease at the Princess Alexandra Hospital in Brisbane. Dr Sawka is an associate clinical lecturer at the University of Adelaide and holds a Master of Public Health from Monash University.



Scott Bell
MBBS, MD, FRACP, FAHMS, FThorSoc, GAICD

Professor and Chair of Research, Gold Coast Health and Griffith University, Southport, Australia

Scott is a Senior Respiratory Physician with an interest in adult cystic fibrosis. Scott has >300 publications and has received grant support >\$24 million. His research interests include acquisition and transmission pathways for human infection, and his research has resulted in significant changes to clinical practice and policy implementation. He has been principal investigator on pivotal CFTR modulator trials. He was the Editor of the Journal of Cystic Fibrosis (2013–2020) and co-led the Lancet Commission on the future of CF care (published 2020). He is the current Queensland Biomedical Advisor.



Geoffrey Eather
MBBS, FRACP

Respiratory Physician, Princess Alexandra Hospital and Medical Director, Metro South Clinical Tuberculosis Service, Brisbane, Australia

Dr Geoff Eather is a respiratory, sleep and mycobacterial diseases physician based at the Princess Alexandra Hospital Department of Respiratory Medicine and is the current Medical Director of the Metro South Clinical Tuberculosis Service. His main research interest includes understanding transmission dynamics of TB focusing on developing a better understanding of diagnostic testing in the immune compromised.



Malcolm Wilson
BSc, MBBS, FRACP

Respiratory and Sleep Physician, Metro South Clinical Tuberculosis Service and Logan Hospital, Brisbane, Australia

Dr Mal Wilson is a Respiratory and Sleep Physician practising at both the Metro South Clinical Tuberculosis Service and Logan Hospital in Southeast Queensland. He graduated from the University of Queensland in 2011 before completing a Fellowship in Respiratory Mycobacterial Disease in 2018. He is a current member of the Tuberculosis Expert Advisory Group (TEAG) in Queensland and the Therapeutic Guidelines (Respiratory Standing Expert Group) while remaining involved in clinical research focused on improving diagnostic tools and therapeutic options in mycobacterial diseases.



Michael Holt

BSc, MBBS, FRACP

Respiratory Physician, Royal Brisbane and Women's Hospital and Greenslopes Private Hospital, Brisbane, Australia

Michael is a respiratory and sleep physician, with subspecialty interest in bronchiectasis and mycobacterial lung disease. He was awarded Fellowship of the RACP in 2014, after completing respiratory training at The Prince Charles Hospital and a sleep medicine fellowship at Royal Brisbane and Women's Hospital. In 2015, Michael commenced his sub-specialty training with the inaugural Mycobacterial Fellowship at Princess Alexandra Hospital. He subsequently undertook further training as the Lowerre Fellow at National Jewish Health in Denver.

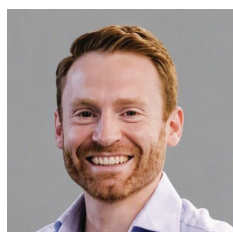


Tim Baird

BSc, MBBS, DTM&H, FRACP

Respiratory Physician, Sunshine Coast University Private Hospital, Australia

Tim is a Specialist Physician and Research Lead in Respiratory Medicine at the Sunshine Coast University Hospital, Director of Sunshine Coast Respiratory & Sleep, Associate Professor within the Griffith University Medical School, and Adjunct Fellow at the University of the Sunshine Coast Centre for Bioinnovation. Tim has a passion for bronchiectasis and respiratory infections, particularly mycobacterial disease. Tim is actively involved in clinical trials and is currently undergoing a PhD with his doctorate titled: 'Exploring microbial meta-omics in respiratory disease.' Tim's career vision is to bring cutting-edge translational research and novel treatment opportunities to the Sunshine Coast respiratory community, and to help progress the multi-disciplinary management of bronchiectasis and complex respiratory infections locally, nationally and internationally.



Ieuan Evans

BMSc, MBChB, MRCP(Resp), PhD, FRACP

Consultant Thoracic Physician, The Prince Charles Hospital, Brisbane, Australia

Dr Ieuan Evans is a Staff Specialist in Thoracic Medicine at The Prince Charles Hospital, Brisbane, and a Senior Lecturer at The University of Queensland. He has clinical expertise in the management of cystic fibrosis, bronchiectasis, non-tuberculous mycobacteria and complex pulmonary infections. He completed a fellowship at the Centre for Complex Lung Infections, Royal Papworth Hospital, Cambridge, alongside his PhD 'Developing novel therapies for *M. abscessus*'. Ieuan leads and contributes to multiple clinical trials and research programs in CF and NTM and serves on several national guideline committees, including as a section expert for Therapeutic Guidelines and as co-chair of the TSANZ NTM Clinical Practice Guideline.



Claire Wainwright

MBBS MRCP, FRACP, MD

Paediatric Respiratory Physician and co-lead for Cystic Fibrosis Services, Queensland Children's Hospital, Brisbane, Australia

Professor Claire Wainwright is a paediatric respiratory physician and co-lead for cystic fibrosis services at the Queensland Children's Hospital, and a professor of paediatrics and child health at The University of Queensland.

She started her medical and paediatric training in London and completed her training in paediatric respiratory medicine and doctoral studies at the royal children's hospitals in Brisbane and Melbourne. Her research focuses on airway microbiology, paediatric respiratory infections and early lung disease in cystic fibrosis, and ataxia telangiectasia and the clinical management of bronchiolitis and asthma. In 2018, Professor Wainwright was awarded a Member of the Order of Australia (AM) for her significant service to medicine as a respiratory clinician, and for leadership into the study of cystic fibrosis.



Victoria Grey

MBChB MPH

**Infectious Diseases Physician, Logan Hospital and
Metro South Clinical Tuberculosis Service, Brisbane, Australia**

Victoria works between Logan Hospital and the Metro South Clinical Tuberculosis Service. In 2023, she undertook a fellowship in mycobacterial disease at the Princess Alexandra Hospital and the Prince Charles Hospital. She received her medical degree from the University of Birmingham and holds a Master in Public Health from Griffith University.



Shaun Kang

MBBS (Hons) MRCP, FRACP

**Respiratory Physician, Princess Alexandra Hospital
and Gold Coast University Hospital, Australia**

Shaun is a Respiratory and Sleep Physician who completed a Mycobacterial Diseases Fellowship at the Princess Alexandra Hospital in 2024. Shaun has trained in major hospitals in Malaysia and across Queensland, Australia, and has a special interest in suppurative lung disease and mycobacterial infections.



George Denby

MBBS

**Sleep Disorders Fellow, Department of Respiratory,
Sleep and Mycobacterial Medicine, Princess Alexandra Hospital, Brisbane, Australia**

Dr George Denby is a Respiratory Medicine Advanced Trainee. He completed a Fellowship in Mycobacterial Diseases at the Princess Alexandra Hospital in 2025 and is currently undertaking a Fellowship in Sleep Disorders at the Princess Alexandra Hospital. George has trained at hospitals across Queensland and has an interest in bronchiectasis and respiratory infectious disease.



Matthew Twining

MBBS, BEmergHealth, MCLinUS

**Mycobacterial Fellow, Metro South Clinical Tuberculosis Services,
Princess Alexandra Hospital, Brisbane, Australia**

Dr Matthew Twining is the current Mycobacterial Fellow with the Metro South Clinical Tuberculosis Service in Brisbane, Australia. He is undertaking dual specialist training in Respiratory Medicine and Infectious Diseases in Southeast Queensland. Matthew has a particular clinical and research interest in nontuberculous mycobacterial (NTM) disease and is passionate about improving access to specialised NTM care, advancing treatment options, and improving outcomes for people living with NTM disease.

International keynote speakers



Pamela McShane

MD

National Institutes of Health, Bethesda, Maryland

Pamela McShane, MD, is staff clinician at the National Heart, Lung, and Blood Institute. She is a Chicago area native who attended Loyola University for both her undergraduate and medical doctorate degrees. She received the Health Professions Scholarship from the U.S. Military for medical school. After completing an internal medicine residency, Dr McShane entered the U.S. Air Force as a staff physician. During her 4 years of active duty, she deployed twice to Iraq, where she served as a critical care physician in support of Operation Iraqi Freedom. Following her military service, Dr McShane returned to Chicago where she completed her pulmonary and critical care medicine fellowship at the University of Chicago. During her fellowship training and subsequent faculty years at the University of Chicago, she developed a regional research database and clinic in bronchiectasis and nontuberculous mycobacterial lung disease.

Dr McShane went on to work in the field of nontuberculous mycobacterial lung disease at the University of Texas Health Science Center in Tyler, TX, a nationally renowned acid fast bacilli lab and clinical referral center. There, she was principal investigator for approximately a dozen clinical trials in bronchiectasis and pulmonary NTM disease. Dr McShane served as associate editor for CHEST and the Journal of Clinical Tuberculosis and Other Mycobacteria. She served as chair of the U.S. National Bronchiectasis Research Registry Consortium from 2023 until 2025.



Shannon Kasperbauer

MD

National Jewish Health, Denver, Colorado

Shannon Kasperbauer, MD, is Professor of Infectious Diseases at National Jewish Health and Professor of Medicine at the University of Colorado Health Sciences Center. She is the Director of the Infectious Disease clinic and Adult Day Unit Operations at National Jewish Health. We evaluate over 1,000 patients a year with bronchiectasis and chronic pulmonary infections including nontuberculous mycobacterial infections.

Dr Kasperbauer earned her medical degree at Wright State University School of Medicine in Dayton, OH. She completed her internal medicine training, and infectious diseases fellowship at the University of Colorado. Dr Kasperbauer has numerous publications, including book chapters and journal articles in the field of bronchiectasis and mycobacterial infections. She has given many presentations on infectious diseases, both nationally and internationally.

Invited speakers



Melanie Syrmis

Supervising Scientist, Queensland Mycobacterium Reference Laboratory (QMRL), Brisbane

Dr Melanie Syrmis is a Supervising Scientist at the Queensland Mycobacterium Reference Laboratory (QMRL), Pathology Queensland located in Brisbane. QMRL provides diagnostic services for Mycobacteria to QLD public and private health facilities and is the state reference laboratory for mycobacteria and Nocardia species, a WHO Collaborating Centre in Tuberculosis Bacteriology and involved with international and state clinical trials and research projects. Melanie has extensive experience working in routine diagnostics, Clinical Trials and R&D, having originally worked as a Senior Research Scientist at the QPID laboratory, Queensland Children's Medical Research Institute. She has developed various clinically relevant diagnostic tools for a range of infectious diseases, including Mycobacteria. Melanie's interests now focus on identification and drug susceptibility testing of Mycobacterium species in adult and paediatric populations.



Jeff Hocking

Cardiothoracic Radiologist, Qscan Radiology Clinics, and Logan Hospital, Logan, Australia

Dr Jeff Hocking completed his specialist radiology training at the Royal Brisbane Women's Hospital and attended an Advanced Fellowship in Chest and Cardiac Imaging, at The University of Toronto/University Health Network (UHN) affiliated hospitals, 2022/2023. Special interests include interstitial lung diseases, lung cancer screening, lung biopsy and education.



Kathleen Hall

Respiratory Physiotherapist

Dr Kathleen Hall has over 25 years' experience as a cardiorespiratory physiotherapist, with a special interest in the management of Bronchiectasis. She runs a bespoke private practice for clients with NTM & other Bronchiectasis conditions, is the lecturer in charge - Cardiorespiratory physiotherapy programme at ACU & works in the Adult CF/Thoracic Medicine units at PC.



Jessica-Lee Miettinen

Audiologist

Jess is an experienced audiologist with almost ten years of experience in the areas of diagnostic and vestibular audiology. Before pursuing a career in audiology, she practised as a registered nurse, bringing a broad healthcare perspective to her clinical work. She also holds postgraduate qualifications in public health and is actively involved in audiology outreach programs across the Pacific region. Jess is passionate about helping people, and is committed to making a meaningful difference in patient outcomes through high-quality, patient-centred care.



Caitlin Kindness

Optometrist

Caitlin Kindness is a therapeutically endorsed senior optometrist at Princess Alexandra Hospital and is currently acting as the advanced clinical team leader. She also works at the Institute for Urban Indigenous Health (IUIH). Working across public hospital and primary care settings, she focuses on glaucoma and diabetic eye care, with a particular interest in the development of collaborative models of care. She is passionate about accessible, culturally responsive, relationship-based care, and the role of optometry in early disease detection and patient advocacy.



Gretta Palmer

Advanced Vestibular Physiotherapist

Gretta Palmer is an Advanced Vestibular Physiotherapist at the Princess Alexandra Hospital in Brisbane. She has worked closely with the Infectious Diseases and Respiratory teams at PA for a number of years, providing consultation and education to doctors, as well as vestibular monitoring for patients receiving prolonged aminoglycoside therapy.



Christine Duplancic

National Study Coordinator

Dr Christine Duplancic obtained her PhD in molecular microbiology from the University of Wollongong. She worked as a Post-doctoral fellow in vaccine development and bacterial pathogenesis for 7 years before taking on the role of Study co-ordinator of the NTM in CF study, a national longitudinal cohort study operating at 17 hospital sites and 9 laboratories, investigating NTM infections in Australians with Cystic Fibrosis.



Fumiya Watanabe

Pharmacist, Meiji Pharmaceutical University, Fukujuji Hospital, Japan

Fumiya is a pharmaceutical researcher in Japan. His research focuses on optimizing antimicrobial dosing for NTM disease from pharmacokinetic/pharmacodynamic perspective. From May 2026 to March 2027, he is visiting the Frazer Institute at The University of Queensland as a visiting researcher, under the supervision of Professor Jason Roberts.



Jayesh Dhanani

Intensive Care Specialist, Royal Brisbane and Women's Hospital

Jayesh is an intensive care specialist at the Royal Brisbane and Women's Hospital since 2009. He completed his PhD in nebulized administration of antimicrobials for critically ill patients. His ongoing research projects seek to extend this potential method of dose optimisation.

Selected oral abstracts

Microbiology, biomarkers, diagnostics and host susceptibility

Unveiling vulnerabilities in *M. abscessus*: Genome-wide CRISPRi interrogation of intrinsic drug resistance in *M. abscessus*

Chiang CY¹, Strong EJ¹, Permana B², Forde BM², West NP¹

1. School of Chemistry and Molecular Biosciences, The University of Queensland
2. Institute for Molecular Bioscience, The University of Queensland

Background

Mycobacterium abscessus, a non-tuberculous *mycobacteria* (NTM), is an opportunistic pathogen that causes severe pulmonary infections, particularly in patients with pre-existing conditions such as cystic fibrosis and chronic obstructive pulmonary disease (COPD). It is notoriously difficult to treat due to extensive intrinsic drug resistance, resulting in success rates of only ~50%, even after a prolonged, multidrug regime. Relapse rates are also of significant concern. Here, we identify new targets which can augment existing therapy for *M. abscessus* through a saturating genome-wide CRISPRi library screen.

Method

A curated pooled CRISPRi library comprising approximately 12,000 single-guide RNAs (sgRNA) targeting 91% of predicted genes across the *M. abscessus* genome was constructed, allowing high-throughput investigation of phenotype-genotype linkage in *M. abscessus*. *M. abscessus* CRISPRi library was exposed to 8 FDA-approved antibiotics from a broad range of classes at sub-inhibitory concentrations, after which genomic DNA was extracted and sgRNA quantified via deep sequencing (Illumina NovaSeq). The synergistic targets were identified as a reduction in sgRNA abundance, compared to the control group.

Results and conclusion

Our devised strategies have successfully identified multiple genetic pathways of *M. abscessus* that serve as potential druggable targets, which synergise with front-line treatments. Examples of pathways identified include cell septation and lipoprotein glycosylation. Transcriptional silencing of those pathways resulted in a significant reduction of MIC in the presence of antibiotics compared to *M. abscessus* treated with the drug only.

This work has revealed novel chemical-genetic interactions that deepen our understanding of intrinsic drug resistance in mycobacteria. Our efforts are now invested in the development of small-molecule inhibitors of identified pathways.

Macrophage metal manipulation: Antimicrobial zinc toxicity to combat bacterial infections

Dalton, E. K.¹, Emming, S.¹, Das Gupta, K.¹, Curson, J. E.B.¹, Sly, P.², Robinson, P.D.², Schembri, M. A.¹, Ramnath, D.¹, and Sweet, M. J.¹

1. Institute for Molecular Bioscience, The University of Queensland
2. Child Health Research Centre, The University of Queensland

Background

The manipulation of the cellular distribution of different biometals, including zinc, can be engaged by macrophages and other innate immune cells for antimicrobial defence. For example, toxic concentrations of zinc may be directed towards intracellular pathogens in a process known as metal ion poisoning. Leveraging antimicrobial pathways, such as the zinc toxicity pathway, presents a potential strategy to enhance innate immune defence. A key regulator of antimicrobial zinc toxicity is the zinc exporter SLC30A1, which also has roles in constraining inflammation-driven pathology. In macrophages from people with cystic fibrosis SLC30A1 mRNA expression is attenuated and the zinc toxicity response impaired, correlating with impaired bacterial clearance. Therapies that restore SLC30A1 expression, may therefore have potential as host-directed therapies to combat bacterial infections in these patients and other vulnerable groups.

Aims

This project aimed to investigate the role of the antibacterial zinc toxicity response in the defence against bacterial pathogens of concern to vulnerable patient groups, including *Mycobacterium abscessus*. Additionally, we aimed to explore SLC30A1 mRNA delivery as a strategy to enhance bacterial clearance and reduce inflammation-mediated pathology.

Discussion

Mycobacterium abscessus was found to be susceptible to zinc poisoning in conditions relevant to the macrophage phagosome environment. Interestingly, while culture conditions that mimicked some aspects of the macrophage phagosome were important for further sensitising other bacteria to zinc intoxication, this effect was not observed for *Mycobacterium abscessus*. Current studies are investigating the role of zinc intoxication in the defence against *Mycobacterium abscessus* infection in macrophages. To explore a strategy to enhance the zinc toxicity response, we established mRNA-mediated delivery of functional SLC30A1 protein to human macrophages. Ongoing studies are investigating whether SLC30A1 mRNA delivery may enhance zinc-mediated bacterial killing and/or suppress inflammatory responses in macrophages following infection with *Mycobacterium abscessus* and other bacterial pathogens. Future studies will explore the application of this mRNA delivery strategy in cystic fibrosis macrophages to restore the defective zinc toxicity response.

Conclusion

Findings to date offer an insight into the role and potential mechanisms underlying the zinc toxicity response in macrophages and provide a foundation to further investigate SLC30A1 mRNA delivery as a host-directed therapy to enhance the macrophage antimicrobial zinc toxicity response to combat bacterial infections.

Does lidocaine affect nontuberculous mycobacteria yield from bronchoalveolar lavage?

Kirby Patterson-Fahy^{1,2}, Andrew Oaten³, Robyn Carter^{1,2},
Celine Goffinet⁴, Ieuan Evans^{4,5}, Andrew Burke^{4,5},
Rachel Thomson^{1,2,4,6}

1. Greenslopes Clinical Unit, Faculty of Health, Medicine and Behavioral Sciences, The University of Queensland, Greenslopes, Queensland, Australia
2. Gallipoli Medical Research, Greenslopes Private Hospital, Greenslopes, Queensland, Australia
3. Gold Coast University Hospital, Gold Coast, QLD, Australia
4. Department of Thoracic Medicine, The Prince Charles Hospital, Chermside, QLD, Australia,
5. Faculty of Medicine, The University of Queensland, Mayne Medical School, Herston, QLD, Australia
6. Metro South Clinical TB Service, Princess Alexandra Hospital, Brisbane Australia

Background

Nontuberculous *Mycobacteria* (NTM) diagnosis and treatment monitoring is reliant on culture from sputum or bronchoalveolar lavage (BAL). There can be discordant results between species isolated in sputum compared with BAL and/or negative BAL cultures in patients where there is a high index of clinical suspicion for NTM. Lidocaine is used to facilitate bronchoscopy, and previous research has demonstrated that lidocaine can affect bacterial yield, however there is limited evidence in NTM. This study aimed to measure lidocaine levels in BAL samples and investigate *in vitro* effects of lidocaine on NTM isolates to explore whether NTM culture positivity is impacted by the lidocaine levels NTM are exposed to during bronchoscopy.

Method

Patients undergoing bronchoscopy were recruited to have an additional BAL sample for lidocaine levels to be measured using liquid chromatography mass spectrometry. *Mycobacterium abscessus* ATCC 19977, *M. intracellulare* ATCC 13950 and clinical *M. abscessus*, *M. avium* and *M. intracellulare* isolates were used in all experiments. Minimum inhibitory concentrations (MIC) were determined using broth microdilution adapted from the Clinical Laboratory Standards Institute guidelines. The effect of lidocaine on growth was investigated by time to positivity in the BACTEC MGIT instrument. A bactericidal effect of lidocaine was investigated by an exposure time experiment replicating storage conditions of BAL samples prior to mycobacterial culture. The colony forming units (CFU) were enumerated at different time points to investigate if there was reduction in mycobacterial yield with prolonged exposure to lidocaine.

Results

Lidocaine was present in BAL samples in a range from 11 mg/L to 155 mg/L which was significantly lower than the MICs for lidocaine which ranged from 1250 mg/L – 5000 mg/L. Exposure to lidocaine at levels equivalent to those measured in the BAL samples (50, 100 and 200 mg/L) and at 5000 mg/L (0.5%) did not reduce mycobacterial CFU counts. However, time to positivity in the BACTEC MGIT system was significantly increased at 5000 mg/L (0.5%) for *M. avium* and *M. intracellulare* isolates.

Conclusions

Lidocaine is present in BAL samples at low concentrations which did not impact NTM CFU counts or MGIT time to positivity. This suggests that it is unlikely that prolonged exposure to low concentration lidocaine in BAL samples reduces NTM yield. MGIT time to positivity was increased for *M. avium* and *M. intracellulare* isolates at 0.5% lidocaine which is lower than the standard 2% lidocaine administered during bronchoscopy. Additional investigation is required to determine if brief exposure to high concentration lidocaine at the time of bronchoscopy reduces NTM yield.

Clinical and environmental research

Evaluating and predicting disease progression of non-tuberculous mycobacterial lung disease using cases from the Royal Melbourne Hospital

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Background

The clinical course of Non-tuberculous Mycobacterial Pulmonary Disease (NTM-PD) is heterogeneous, and antibiotic therapy is prolonged and challenging. Clinicians therefore face uncertainty when initiating treatment, because it is unclear which patients will benefit. Prediction models for NTM-PD aim to forecast disease progression. The BACES score, created in South Korea, predicts 5-year all-cause mortality with NTM-PD. BACES has been validated in international cohorts with varying success. It is possible that other prediction models could outperform BACES.

Methods

A single centre retrospective analysis was performed on patients with culture-positive samples from the Royal Melbourne Hospital. BACES performance was assessed using Harrell's C-index and Kaplan-Meier survival curves. Models for mortality, culture conversion, and treatment initiation were generated using LASSO-Cox regression in training sets. Model performance was assessed and compared with BACES in test sets.

Results

203 patients were included. Most had moderate BACES scores (2–3), and our mortality was higher than in the original BACES study. BACES demonstrated poor to modest discrimination in all patients and modest discrimination in patients meeting diagnostic criteria. Survival curves stratified both groups adequately. We generated models for mortality that outperformed BACES. Models for treatment initiation had acceptable discrimination, however no acceptable models could be generated for culture conversion.

Conclusions

BACES was outperformed by our mortality models, suggesting that it is not an optimal model for mortality in our cohort. However, BACES still possesses predictive merit. Predictors selected by models aligned with the existing literature. Our models can be used to decrease prognostic uncertainty and to aid treatment decisions.

The challenges of managing a child with disseminated intra-abdominal *Mycobacterium abscessus* infection after liver transplantation

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Case

A 3-year-old girl developed intra-abdominal *Mycobacterium abscessus* infection 2.5 years after liver transplant. The case highlights the substantial challenges of prolonged multidrug therapy, intravenous (IV) access, antimicrobial toxicity, surgical source control and the broader impact of prolonged hospitalisation on a young child and her family.

The patient originally presented with biliary atresia complicated by portal hypertension and catastrophic gastrointestinal haemorrhage secondary to portal gastropathy and varices, including an intraoperative cardiac arrest. Having survived the procedure, she underwent liver transplantation at five months of age. Her post-transplant course was complicated by bile leak, acute T-cell mediated rejection, intra-abdominal candidiasis, high EBV titres with hypermetabolic lymphadenopathy, and EBER-positive cells on gastric biopsy concerning for PTLD requiring multi-modal immunosuppressive therapy.

Whilst receiving PTLD directed immunosuppression, two years after transplantation, at 2.5 years of age, she developed complete necrosis of the second part of the duodenum and contiguous necrosis of the pancreatic head, together with multiple small bowel perforations. Surgical management was complex and involved aggressive but judicious debridement, stapling off the stomach, placement of drains and creation of a jejunostomy for enteral feeding. Peritoneal fluid and tissue cultures grew *M. abscessus*, alongside enteric pathogens, including *bla*_{NDM}-producing *Klebsiella pneumoniae* and *bla*_{IMP}-producing *Enterobacter cloacae*. Antimicrobial therapy for *M. abscessus* included amikacin, clofazimine, cefoxitin and bedaquiline. Definitive operative resection and bowel anastomosis was performed after 5 months.

Key management challenges

Prolonged multidrug therapy and associated toxicity

Treatment required nine months multidrug regimen, with ongoing concern for emerging drug resistance including clarithromycin resistance and increasing MICs for bedaquiline. Extended synergy testing was also performed. Prolonged amikacin exposure resulted in profound hearing loss. Tigecycline was considered as an alternative agent but a brief trial exacerbated her pre-existing pancreatitis.

Maintaining intravenous access

Repeated central line replacement under general anaesthesia was complicated by a multidrug-resistant *Pseudomonas* CLABSI, severe pruritis and the child's strong aversion to the line with frequent self-removals. She had undergone approximately 80 procedures under general anaesthesia, many related to IV access for parenteral nutrition and prolonged antimicrobial therapy. An all-oral regimen was not available.

Difficult source control

Despite extensive surgical debridement, definitive source control could not be immediately achieved due to extensive necrosis and tissue friability around the retroperitoneal bed of the duodenum and the pancreatic head. Management therefore relied heavily on prolonged antimicrobial therapy while allowing sufficient bowel and intra-abdominal healing before definitive reconstruction could be undertaken.

Psychosocial burden (on the child and family)

Her hospital admission extended to 409 days with difficulty in delivering an appropriate anti-mycobacterial regimen in an outpatient setting being a major contributor, placing a substantial burden on the child and her family, including the competing needs of a sibling with autism spectrum disorder.

Child wellbeing and development

Prolonged hospitalisation during a critical period of early childhood substantially disrupted normal developmental opportunities. Extended periods of illness, isolation and repeated procedures limited opportunities for play, socialisation, mobility and participation in normal family life, with potential consequences for physical, social, emotional and developmental progress.

Following definitive surgery with multiple bowel anastomoses, she completed six months of targeted *M. abscessus* therapy after optimal surgical source control. The planned treatment course was shortened because of the cumulative challenges of maintaining intravenous access and treatment-related morbidity, requiring a balance between the risk of Mycobacterial relapse and the ongoing harms of therapy and line-related complications. Currently, at 6 months off anti-microbials, there are no indications of infection relapse.

Temporal trends and spatial variation in nontuberculous mycobacterial notification incidence among First Nations People in Queensland, Australia

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Background

Nontuberculous mycobacteria (NTM) are environmental pathogens causing pulmonary and extrapulmonary infections. First Nations people in Australia experience higher burdens of communicable diseases, comorbidities, and systemic barriers to care, increasing NTM risk. This study examined the incidence and spatial distribution of NTM notifications in First Nations people in Queensland, Australia.

Methods

A retrospective longitudinal analysis of laboratory-based NTM notifications was conducted using the Queensland Health Notifiable Conditions Database, stratified by Indigenous status. Incidence was calculated using population denominators and Indigenous Region boundaries, with direct rate comparisons between 2011 and 2024.

Results

Between 2001 and 2024, 717 NTM notifications were recorded from 606 First Nations people, with a significant male predominance among those aged 30–44 years ($\chi^2 = 21.63$, $p < 0.0001$). NTM notification incidence was higher in 2024 than in 2011, increasing from 4.6 to 26.3 per 100,000 (incidence rate ratio (IRR): 5.74, 95% confidence interval (CI): 2.97–11.08, $p < 0.0001$). Although incidence in 2024 was lower than in the non-Indigenous population (35.81 per 100,000), the rate of increase was 4.4 times greater. Pulmonary notifications predominated (569/717, 79.36%) and were more frequent in 2024 than in 2011 (IRR: 6.95, 95% CI: 3.00–19.75, $p < 0.0001$). Extrapulmonary notifications increased by 140% from 2020 primarily due to an outbreak of *Mycobacterium abscessus* infections among incarcerated First Nations males. Marked geospatial heterogeneity was observed, with the greatest increases in notification incidence in the Brisbane, Rockhampton, Townsville–Mackay, and Cairns–Atherton Indigenous Regions ($p < 0.001$).

Conclusions

NTM notification incidence among First Nations people in Queensland has increased substantially, with a faster rate of rise than in the non-Indigenous population despite lower absolute incidence, consistent with under-ascertainment. These findings highlight gaps in detection and diagnostic access, alongside heterogeneous geographic and outbreak-associated transmission dynamics. Strengthening culturally appropriate surveillance and improving access to timely diagnosis are required to better define infection burden and inform targeted clinical and public health responses in First Nations and other underserved populations.

Therapeutics

Development of novel inhaled AJ-099 antibiotic for the treatment of NTM lung infection

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Background

The limitation of effective therapy for chronic *Mycobacterium avium* complex (MAC) highlights an urgent need for novel therapeutic strategies.

Aims

In this study, we investigated AJ-099 activity, a novel thiopeptide antibiotic with improved solubility, in NTM-MAC infection models.

Method

Minimum inhibitory concentrations (MICs) of AJ-099 and clarithromycin (CLR) were assessed using resazurin-based microdilution method and following CLSI guidelines. Intracellular activity of AJ-099 and CLR against MAC isolates were assessed in bone marrow-derived macrophages (BMDMs) isolated from BALB/c mice. Preliminary PK and repeat-dose (4 weeks) toxicity studies were performed in mice through intratracheal and intranasal instillations, respectively. *In vivo* efficacy of AJ-099 against MAC infection (SMC#7) was investigated in a mouse lung infection model by using a murine inhalation exposure system (Glas-Col). At 5 weeks post infection, AJ-099 was administered intranasally at doses of 20 mg/kg daily, whereas 100 mg/kg CLR, 100 mg/kg EMB, and 10 mg/kg RIF was administered daily by oral gavage, for 3 weeks.

Results

AJ-099 exhibited MICs ranging from 0.125 to 0.5 µg/ml against MAC strains, including macrolide-resistant clinical isolates. Intracellular activity of AJ-099 in BMDMs (BALB/c mice) MAC infection model revealed significant reduction in mycobacterial infection, compared to the control, and synergy with macrolides (CLR) against MAC strains. Preliminary PK study in mice revealed that AJ-099, following a single intratracheal dose injection, was predominantly localized to the lungs with minimal systemic exposure. A preliminary 4-week repeat-dose toxicology study of AJ-099 (10 mg/kg daily, intranasal) in mice exhibited no significant toxicity in terms of body weight, blood chemistry and clinical observations. In the chronic mouse model of MAC lung infection, the combination of AJ-099 and macrolide (CLR) outperformed the current standard of care (CLR+EMB+RIF) in reducing bacterial burden and lung inflammation. Checkerboard assays revealed fractional inhibitory concentration indexes (FIC) below <0.5, confirming a synergistic interaction between AJ-099 and CLR.

Conclusion

Collectively, these results highlight that AJ-099 is a promising candidate for the treatment of chronic NTM-MAC lung infection. Moreover, AJ-099 synergism may offer an effective treatment option in combination with macrolides in refractory MAC.

Mycobacterium abscessus* clinical isolates are susceptible to epetraborole *in vitro

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7. MetroSouth Clinical TB Service, Princess Alexandra Hospital, Brisbane, Australia

Background

The aim of this study was to investigate the clinical and microbiological factors that may influence susceptibility of *M. abscessus* respiratory isolates to the leucyl-tRNA synthetase inhibitor epetraborole *in vitro*.

Methods

Broth microdilution was used to determine susceptibility to epetraborole for 100 Australian *M. abscessus* isolates collected through a clinical trial (FORMaT) and a national study of nontuberculous mycobacteria in people with Cystic Fibrosis, which included treatment naïve and treatment exposed patients. Broth microdilution was performed as per the Clinical Laboratory Standards Institute guidelines. The patient treatment regimens, duration and timing of *M. abscessus* isolation were recorded as part of the relevant study.

Results

All *M. abscessus* isolates were susceptible to epetraborole with an MIC₉₀ of 0.25 mg/L and range 0.125 - 0.5 mg/L. The epetraborole MIC of isolates requiring 5 days incubation to complete antibiotic susceptibility testing were statistically significantly higher than those only requiring 3 days. However, the difference in MIC was less than a single doubling dilution. Subspecies, morphology, macrolide resistance and treatment exposure did not impact epetraborole MIC.

Conclusions

Clinical *M. abscessus* isolates were highly susceptible to epetraborole with a narrow range within accepted technical variability for broth microdilution. No clinical or microbiological factors were identified that significantly influenced susceptibility to epetraborole. These results suggest that further investigation of use of epetraborole in treatment of *M. abscessus* disease is warranted.

Conflict of interest

AN2 Therapeutics, Inc. provided funding.

Selected poster abstracts

1

Severe *Mycobacterium malmoeense* pulmonary disease in Australia: Limited evidence and complex management

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Introduction

Mycobacterium malmoeense (*M. malmoeense*) is a slow-growing non-tuberculous mycobacterium (NTM) that is rarely encountered in Australia, with most reported cases originating from northern Europe. Robust evidence to guide management is lacking.

Treatment typically requires prolonged multidrug therapy and is frequently complicated by significant adverse effects and variable clinical outcomes.

Case presentation

A 54-year-old man presented by ambulance in September 2025 with a one-week history of malaise, with a background of untreated *M. malmoeense* pulmonary disease, diagnosed in 2023.

His comorbidities included chronic obstructive pulmonary disease, ischaemic heart disease, chronic pancreatitis and a previous suicidal attempt. On presentation, he was in septic shock.

Investigations excluded alternative infectious sources, with findings consistent with progressive cavitating *M. malmoeense* pulmonary disease associated with systemic inflammatory response syndrome-like features and no evidence of dissemination.

Anti-mycobacterial therapy was commenced on day 25 of admission, with resolution of fever and respiratory failure one month after treatment initiation. The treatment was complicated by nephrotoxicity and hepatotoxicity, necessitating the sequential discontinuation of all antimicrobial agents. He was discharged after a 178-day hospital admission.

Discussion and conclusion

Current treatment recommendations are based on limited evidence and expert opinion. A structured multidisciplinary team (MDT) approach is essential, and improved epidemiological characterisation in Australia is needed.

2

Flushing out the culprit: *Mycobacterium abscessus* as a cause of recurrent fistula-in-ano

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Background

Complex fistula-in-ano presents significant surgical challenges, with inflammatory, mechanical, and microbiological factors contributing to recurrence. *Mycobacterium abscessus*, a multidrug-resistant nontuberculous mycobacterium (NTM), is typically associated with respiratory and skin infections but is rarely implicated in fistula-in-ano. This case highlights a rare presentation of *M. abscessus* in recurrent complex anal fistula disease.

Case report

A 34-year-old man with complex anal fistula disease underwent multiple surgeries over 4 years. Recent surgical exploration revealed a collection in the left ischiorectal fossa and a sinus tract extending to the supralelevator space, confirmed by MRI. Tissue curettings cultured *Mycobacterium abscessus* spp. *massiliense*, with histology showing non-necrotising granulomatous inflammation. Notably, the patient was a regular user of bidets, which may have facilitated the introduction of the bacterium, an organism ubiquitously present in natural water sources. He received a 4-week course of a combination of IV amikacin, ceftazidime, imipenem, and tigecycline, followed by 5 months of oral clofazimine and azithromycin. This regimen resulted in significant improvement, with follow-up MRI showing resolution of the collection and inflammation.

Methodology and results

A literature review of PubMed, Embase, Scopus, and Web of Science identified only one prior report of NTM in fistula-in-ano, emphasizing its rarity.

Conclusion

Environmental exposure to *M. abscessus* may contribute to refractory fistula-in-ano. Early recognition, microbiological diagnosis and tailored antibiotic therapy are vital to reducing morbidity and avoiding unnecessary surgical interventions.

3

The narrowing path: De novo *Mycobacterium abscessus* tracheal stenosis complicated by multiple drug toxicities

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Background

Mycobacterium abscessus is a rapidly growing, multidrug-resistant nontuberculous mycobacterium (NTM) that typically causes pulmonary disease in patients with structural lung disease. Treatment is prolonged, poorly tolerated, and frequently limited by macrolide resistance and cumulative drug toxicity. Isolated large-airway disease is rare with the few reports of NTM tracheal involvement describing laryngeal, subglottic or upper-tracheal ulceration, or infection superimposed on pre-existing airway injury. We describe de novo *M. abscessus* infection presenting as critical distal tracheal stenosis.

Case

A 69-year-old man with bronchiectasis and prior *Mycobacterium intracellulare* isolation (2014) presented in July 2025 with syncope and stridor, on a background of 6 months of progressive dyspnoea and recurrent exacerbations previously attributed to bronchiectasis. Spirometry showed a new obstructive pattern, with FEV1 falling from 2.68 to 1.42 L and FEV1/FVC from 76% to 38%. CT demonstrated distal tracheal stenosis narrowing to 4 mm at T4. Bronchoscopy confirmed ulcerated distal tracheal stenosis, and a tracheal Y-stent was inserted. Histopathology showed acute inflammation, necrosis and cartilage destruction consistent with perichondritis, with acid-fast bacilli present. Following stent insertion he developed progressive respiratory failure requiring intubation, prompting empirical therapy for presumed *M. avium* complex prior to speciation.

Multiple respiratory specimens grew macrolide resistant *M. abscessus*, and therapy was changed to an induction regimen of imipenem/cilastatin, linezolid, clofazimine and azithromycin and intravenous and conventional nebulised amikacin. Co-isolated *Aspergillus sclerotiorum* of uncertain significance was treated with azoles, with subsequent galactomannan normalisation and negative fungal cultures. After eight weeks of induction, he transitioned to consolidation therapy with oral linezolid, clofazimine and azithromycin. The Y-stent was removed for curative intent, with cultures growing persistent *M. abscessus* likely related to subsequent stent involvement. Interval surveillance bronchoscopies have been culture negative. The longer-term course has been dominated by treatment toxicity. Six months of bilateral foot paraesthesia attributed to prolonged linezolid despite therapeutic concentrations prompted rationalisation to inhaled amikacin, rifabutin, azithromycin and clofazimine. Rifabutin driven hepatitis and protracted gastrointestinal intolerance despite dose modification and low-dose reintroduction, and was replaced by bedaquiline. Other complications include clofazimine-related skin pigmentation and ongoing dyspnoea, protracted cough and dizziness secondary to inhaled amikacin despite dose reduction.

Conclusion

To date, only a single reported case has described airway stenosis as a late sequela of *M. abscessus* laryngeal and cervical-tracheal disease. This case also documented a concurrent fungal isolate, a parallel of interest although its clinical significance in our case remains dubious. To our knowledge, this is the first reported case of de novo *M. abscessus* infection presenting as critical distal tracheal stenosis with perichondritis, and highlights the ongoing morbidity imposed by the toxicity of prolonged *M. abscessus* treatment.

4

The challenges in managing disseminated *Mycobacterium chelonae* infection in an immunosuppressed patient

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Background

Mycobacterium chelonae is a rapidly growing nontuberculous mycobacterium capable of causing disseminated disease in immunocompromised hosts, though this remains uncommon and likely under-recognised. Management is complex, requiring a combination of antimicrobial therapies often complicated by significant toxicity and high cost.

Case

A 79-year-old New Zealand European man presented with a 6-month history of progressive dyspnoea and 6kg weight loss, together with 5 weeks of a painful, swollen right lower limb unresponsive to empirical antibiotics. He had been established on prednisone 20mg daily for 5 months for presumed polymyalgia rheumatica, alongside co-morbid heart failure, coronary artery disease, aortic stenosis, chronic kidney disease and metabolic syndrome. Examination revealed an ejection systolic murmur, multiple non-tender erythematous-purplish subcutaneous nodules, and a swollen, red, painful right foot and ankle. Echocardiography showed no valvular vegetation. MRI demonstrated multifocal osteomyelitis of the right foot to proximal tibia. PET-CT was not in keeping with endocarditis. Ankle joint aspirate grew acid-fast bacilli (AFB) within days, consistent with a rapidly growing mycobacterium. Blood cultures and skin nodule biopsies subsequently cultured AFB. Whole genome sequencing identified *Mycobacterium chelonae*, later confirmed on phenotypic culture.

Management

A diagnosis of disseminated *Mycobacterium chelonae* infection with osteoarticular and cutaneous involvement was made. Given extensive bony involvement and high perioperative risk, the multidisciplinary team opted for medical management alone rather than surgical debridement, alongside a tapering prednisone regimen. Empirical combination therapy with tobramycin, tigecycline, azithromycin and imipenem was commenced pending susceptibility results, which confirmed susceptibility to aminoglycosides, tigecycline and clarithromycin, susceptible with increased exposure to linezolid and imipenem, and resistance to fluoroquinolones, doxycycline and cotrimoxazole. The admission was complicated by severe deconditioning, malnutrition, hypoalbuminaemia, hypoadrenalism requiring careful steroid weaning, antimicrobial toxicity, and persistent mycobacteraemia for 5 weeks despite treatment. Repeated regimen changes for toxicity ultimately led to a bedaquiline, clofazimine and azithromycin-based regimen, with gradual clinical improvement. Oral omadacycline was not considered because of the high cost. He was discharged after 12 weeks with structured rehabilitation and close outpatient monitoring. At 3-month follow-up, blood cultures had sterilised and he continued to improve clinically, though residual foot inflammation and skin lesions persisted.

Conclusion

This case illustrates the diagnostic and therapeutic complexity of disseminated *Mycobacterium chelonae*. Treatment required prolonged, susceptibility-guided combination therapy repeatedly modified for toxicity. Access to effective antimicrobials is often limited and many of the newer agents are of high cost. This case highlights the need for vigilance for disseminated nontuberculous mycobacterial disease in patients on long-term corticosteroids and the evolving role of newer agents especially when the initial therapy is complicated by severe toxicity.

5 Climatic drivers of NTM pulmonary infection vary across Queensland, Australia: Evidence from Köppen climate zones

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Background and aims

Nontuberculous *mycobacteria* (NTM) are environmental opportunistic pathogens found in soil, dust, and water, whose aerosolisation may be influenced by local climate, including extreme weather. NTM infections are notifiable in Queensland, where pulmonary incidence increased 6-fold between 2001 and 2024. Previous studies relied on broad regional groupings that may obscure environmental heterogeneity. Using Köppen minor climate zones, we aimed to identify and quantify zone-specific meteorological predictors of pulmonary NTM case counts.

Methods

NTM pulmonary notifications (2015–2024) were aggregated by month and Statistical Area Level 2 (SA2), then across 13 Köppen zones, and integrated with Pelmorex ERA5-based meteorological variables evaluated as observed conditions, anomalies, and extreme events at 1–20 month lags. Stability-selected LASSO and Random Forest approaches were used to identify candidate predictors for zone-specific Poisson generalised linear models with population offsets. As a secondary analysis, generalised additive models (GAM) were used to assess non-linearity in selected zones.

Results

Predictor profiles varied markedly between Köppen climate zones. Most notifications occurred within 2C (tropical savanna), 3A (subtropical, no dry season), and 3B (subtropical, moderately dry winter). Warmer air temperatures were associated with higher infection rates in 2C (IRR 1.11, 95% CI 1.04–1.18, $p=0.002$). In 3A, higher wind speed (IRR 0.97, 0.95–0.99, $p=0.007$) and low-cloud-cover days (IRR 0.98, 0.96–0.99, $p<0.001$) were associated with lower infection rates. In climate zone 3A, slow-growing mycobacteria were primarily associated with temperature and humidity-related variables, whereas rapid-growing mycobacteria were more often associated with pressure and wind-related predictors. GAMs supported largely linear relationships, though 3A wind speed showed modest non-linearity.

Conclusions

Meteorological associations with NTM pulmonary infection varied substantially across Köppen minor climate zones, in the predictors identified, their direction, magnitude, and timing. Distinct associations between slow- and rapid-growing mycobacteria further highlight the complexity of climate–NTM relationships. These findings suggest broad-region analyses may obscure important local associations, and that associations may vary between NTM species. Climate-zone-specific and species-stratified approaches may therefore improve understanding of how a changing climate will influence NTM burden and inform surveillance and forecasting.

6 *Mycobacterium tuberculosis* and *Mycobacterium abscessus* pulmonary coinfection in a patient with bronchiectasis: A diagnostic and therapeutic challenge

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Background

Pulmonary coinfection with *Mycobacterium tuberculosis* (MTB) and *Mycobacterium abscessus* is exceptionally rare, with only a small number of cases reported in the literature. The coexistence of these pathogens presents significant diagnostic, therapeutic, and public health challenges, particularly in patients with underlying structural lung disease.

Case presentation

A 62-year-old woman with longstanding bronchiectasis and chronic respiratory symptoms, including productive cough and intermittent haemoptysis, underwent serial microbiological investigations over several years. Bronchoscopic specimens initially isolated *M. abscessus*, while serial chest computed tomography demonstrated progressive bronchiectatic changes. Given relative clinical stability, she was enrolled in the FORMaT observational study, and managed with active surveillance and airway clearance therapy. A progress expectorated sputum was collected and grew MTB, confirming pulmonary tuberculosis. Retrospective testing of stored respiratory specimens subsequently demonstrated MTB DNA by PCR testing in sputum collected as early six months prior, including specimens containing both MTB and *M. abscessus*. These findings suggested that MTB infection had been present for several months before definitive diagnosis.

Following discussions with both tuberculosis and nontuberculous mycobacterial (NTM) disease experts, consensus was reached to prioritise treatment of pulmonary tuberculosis using standard first-line therapy with isoniazid, rifampicin, pyrazinamide, and ethambutol. Treatment for *M. abscessus* pulmonary disease was deferred pending completion of tuberculosis therapy. Public health notification and contact tracing were undertaken, with no evidence of secondary transmission identified.

Discussion

This case highlights the complexity of diagnosing pulmonary tuberculosis in patients with established NTM disease. Overlapping clinical features, radiological findings, and acid-fast bacilli detection can obscure the diagnosis and contribute to delays in identifying MTB. Review of the literature identified a small number of previously reported cases of MTB and *M. abscessus* pulmonary coinfection. Existing literature suggests that pulmonary coinfection with MTB and *M. abscessus* is extremely rare, with only a small number of cases reported.

Conclusion

The key lesson is that patients with bronchiectasis and apparent NTM pulmonary disease who continue to deteriorate clinically or radiologically should be evaluated for possible concomitant tuberculosis. Prompt and accurate mycobacterial species identification and a high index of suspicion are essential to ensure timely diagnosis, appropriate treatment, and implementation of public health measures.

7 Disseminated *Mycobacterium abscessus* masquerading as systemic inflammatory disease: A diagnostic journey to anti-interferon- γ autoantibody syndrome

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Background

Anti-interferon- γ autoantibody syndrome (AIGA) is a rare, acquired immunodeficiency associated with severe opportunistic infections, particularly disseminated nontuberculous mycobacterial (NTM) disease. Its heterogeneous clinical manifestations can overlap with inflammatory and malignant disorders, resulting in substantial diagnostic delay. We report a challenging case of AIGA-associated disseminated *Mycobacterium abscessus* infection that initially masqueraded as a systemic inflammatory disorder.

Case

A previously healthy 38-year-old woman presented with recurrent cyclical fever, rash, widespread lymphadenopathy, hepatosplenomegaly, and persistently elevated inflammatory markers. Extensive investigations for infectious, autoimmune, and haematological causes were unrevealing. Bone marrow examination and two core lymph node biopsies showed no evidence of lymphoproliferative disease. An initial QuantiFERON-TB Gold assay was negative with an adequate mitogen response.

Over almost two years, she continued to experience recurrent constitutional symptoms with persistent FDG-avid lymphadenopathy despite repeated investigations failing to establish a diagnosis. Mycobacterial culture of an excisional cervical lymph node biopsy subsequently yielded *M. abscessus*. Notably, repeat QuantiFERON-TB Gold assays were indeterminate because of inadequate mitogen responses. In the absence of recognised immunodeficiency, AIGA was suspected. Functional testing subsequently demonstrated neutralising anti-interferon- γ autoantibodies, establishing the diagnosis.

Discussion

This case illustrates the diagnostic difficulty of AIGA-associated disseminated NTM infection. Definitive diagnosis of extrapulmonary NTM requires microbiological confirmation, and repeat tissue sampling may be necessary when initial investigations are non-diagnostic. The progression from an initially negative QuantiFERON-TB Gold assay with an adequate mitogen response to subsequent indeterminate assays due to mitogen failure was also noteworthy. Although indeterminate assays are recognised in AIGA, the significance of this temporal evolution remains uncertain.

Conclusion

Disseminated NTM infection should remain a differential diagnosis in patients with persistent constitutional symptoms and unexplained lymphadenopathy. Repeat tissue sampling with mycobacterial cultures should be considered when initial biopsies are non-diagnostic. AIGA should be investigated in HIV-negative patients with disseminated NTM infection and no apparent immunosuppressive risk factors.

Notes



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